INTEGRATING HEALTH OBJECTIVES INTO THE URBAN PLANNING PROCESS: SILVERDALE STUDY

by

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ABSTRACT

This paper describes the process of integrating health objectives into a neighbourhood design plan for the area of Silverdale in Mission, BC. In collaboration with urban planners, land owners, technical consultants, District staff and community residents, a Design Brief was developed to guide the development of a sustainable neighbourhood plan for Silverdale. The process involved working collaboratively across multiple sectors to establish planning principles for the development, soliciting public input into the process, and developing goals and objectives for each of the planning principles. The process was rooted in sustainable development theory, a key pillar of which is individual and community health. Individual and community health was fleshed out and health objectives were integrated in a deliberate way into the planning process using Trevor Hancock's Basic Framework for Indicators as a guide. Lessons were learned throughout the process that may provide insight to future healthy and sustainable urban planning.

Keywords: urban planning; public health; health objectives; sustainable development; Silverdale; Mission

Subject Terms: public health; city planning - health aspects; city planning - social aspects; city planning - environmental aspects; urban planning/public policy

ACKNOWLEDGEMENTS

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INTRODUCTION

According to the World Health Organization (WHO), urban and transport planning significantly influence the determinants of health (2003). Attempts to improve health through changing personal health behaviours without changing basic social, economic and environmental conditions are less likely to be successful (WHO, 2003). The physical and socio-cultural environments in which people live and interact greatly influence an individual or community's ability to make healthy choices (Abildso et al., 2007). The design of neighbourhood streets, workplaces, and communities often discourage healthy living choices, such as bicycling to work, buying from local food markets, and walking on trails. The sprawling urban development seen in recent years has led to an increased reliance on vehicles, a decreased sense of community and social cohesion, and an increasingly sedentary lifestyle – all contributing to decreased individual and community health (Frank and Engelke, 2001).

A central goal of urban planning is to improve the living conditions and wellbeing of residents; nevertheless, many people are experiencing a declining quality of life, which is closely connected with their environmental and social conditions (WHO, 2003). Attention needs to be focused on creating more sustainable and healthy communities that make 'the healthy choices, the easy choices.' For example, by improving a community's access to public transit, individuals may be more likely to take public transit, which would lead to less time spent sedentary in their cars, as well as less outdoor air pollution in their community.

Holland Barrs Planning Firm is a land use planning firm that is committed to sustainable planning and development. Much of their work is founded on "eight pillars" of sustainability which include: stable and diverse local and global economies, climate change and air emissions, energy supply, water and liquid waste, resources and solid waste, ecosystem disruption, food supply and *individual and community health* (Holland Barrs, 2005). Although they have been very successful in many of these areas, they have not yet fully developed *individual and community health* as a key pillar. In order to address this gap, I worked with Holland Barrs over a period of 4 months (August – December 2007) to apply a health lens to a planning process for their latest

development project in Silverdale, an area within Mission, BC. With a role of lead consultant and lead land use planner for this 500+ acre development, Holland Barrs guided and supported stakeholders in a comprehensive process of principle, goal, and objective setting for a sustainable neighbourhood design plan. Specifically, my contributions to the planning process involved discussions about health and the built environment, fleshing out health as a pillar of sustainability, and recommending a process for integrating health objectives into the neighbourhood design process through community-led and multi-sectoral approaches.

The purpose of this paper is to describe the *process* of integrating health objectives into the neighbourhood design process for Silverdale in Mission through community-led, multi-sectoral and collaborative planning. The paper will illustrate the successes, challenges, and outcomes of the Silverdale process, as well as make recommendations for future healthy urban planning processes.

BACKGROUND AND LITERATURE REVIEW

Health and the Built Environment

Based on existing literature, there is a significant link between health and the built environment. The population density, land use patterns, transportation infrastructure, noise level and food supply of a community all have significant impacts on individual and community health. Evidence also shows that housing, green/open spaces, social spaces, access to power and other built features of a neighbourhood can all play important roles in individual and community health (Ewing et al., 2005).

The density of development has an impact on the amount that people drive and consequently on air pollution in three main ways: it reduces trip lengths, increases mode choice and decreases the need for vehicle ownership (Ewing et al., 2005). As density increases, per capita hours and kilometres of auto travel tend to decline and walking, bicycling and transit tend to increase (Ewing et al., 2003). Similarly, a "mixed land use pattern" is correlated with increased walking and reduced automobile travel (Ewing et al., 2005). For example, the number of retail establishments was found to be important in the decision to walk for non-work purposes. With each quartile increase in the number of retail locations within a given neighbourhood, walking for non-work trips increased by 19% (Frank and Engelke, 2001). Physical inactivity is a major risk factor for chronic diseases, such as cardiovascular disease, stroke and cancer. Studies have shown that increases in physical activity levels are achievable through a built environment that encourages residents to engage in physical activity (Pratt et al., 2004).

Noise impacts can affect human health in various ways, including speech and sleep disturbance, startle and defence reactions, increased stress, reduced productivity in the workplace and school, and potentially discomfort and hearing impairment (WHO, 1999). It is recommended that pedestrian and cycling routes be separated from traffic by trees or sound walls where possible. Traffic calming plans that incorporate noise factors and favour strategies that avoid sudden braking or increased accelerations are also recommended (WHO, 1999).

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Built indoor environments can also have significant impacts on human health. Pollutants can be readily produced and emitted from building materials and cause harmful health effects. Of particular importance are substances known as volatile organic compounds (VOCs), which come from sources including paints, varnishes, solvents, and preservatives (McMichael and Haines, 1997). Studies have shown that these compounds can cause a complex range of vague and often subjective health complaints (Jones, 1999). Health impacts from indoor exposure to combustion products from heating, cooking, and tobacco smoke are also important harmful sources inside homes and buildings (Jones, 1999).

Social support networks and sense of neighbourhood are also important features of a healthy community. The quality and design of neighbourhoods influence the development of interpersonal attachment, feelings of security and belonging, and ties in the neighbourhood. Neighbourhood designs that enable people to walk to primary services and neighbourhoods with good public transport systems facilitate the development of sense of neighbourhood (Youngentob and Hosteleter, 2005). Especially important are open spaces, which function as meeting areas for the establishing of neighbourhood ties. Studies have shown that a better sense of neighbourhood is associated with better physical and mental health, lower stress, better social support and being physically active (Young et al, 2004). Family ties, friendships and involvement in social activities can offer a psychological buffer against stress, anxiety and depression (Young et al., 2004).

Another important feature of a healthy community includes the availability of a local food supply. Eating locally helps reduce the use of fossil fuels and green house gas (GHG) production that bringing food from further distances involves. Particulate matter in fossil fuels have been linked to cardiovascular disease, decreased lung function, increased respiratory symptoms, increased doctor and emergency room visits, new or recurring cases of respiratory illness and increased medication use (Health Canada, 2002). Approximately 16,000 premature deaths in Canada are due to air pollution (Health Canada, 2002). In addition, the effects of climate change cause increased air pollution, increased vector borne illnesses due to changes in precipitation and temperature, decreased quality and quantity of water sources, and more severe and frequent extreme weather events (Health Canada, 2002). Further health benefits of eating locally include more nutritious food intake and decreased consumption of processed foods. When food is eaten and produced locally, the nutrient content is more

likely kept intact and local food is more likely to be less processed which decreases the risk of cardiovascular disease, stroke and cancer (Lampe, 1999). Local foods have a reduced risk of food contamination and have a better taste and quality due to less time spent on the shelf, fewer preservatives and food being picked ripe rather than green. Furthermore, local food production and local food markets promote social cohesion and support the local economy (ActNow BC, 2006).

There are a number of ways in which health can be affected by the built environment. Due to the scale and type of current human economic activity and human lifestyles, we are facing unprecedented global demands that exceed our physical and ecological limits. The potential consequences are wide ranging and will undoubtedly affect population health and wellbeing in diverse ways. These challenges are discussed in more detail in an appended presentation (Appendix B).

Sustainability Matrix

The concept of "sustainable development" emerged from the United Nations Brundtland Report in the late 1980s, which recognized the need to create prosperous economies and communities without damaging the planet throughout the process so that the next generation will have the same opportunities (Holland Barrs, 2005). Core sustainability issues that arose from this report include climate change, energy security, water and watershed waste management, solid waste management, environmental protection, food security, *health*, safety, economic opportunity and responsible business practices. In order to apply these issues and make real progress in developing a sustainable community, the issues of sustainability must be considered for every aspect of a community. This approach yields a matrix where one axis has sustainability issues on it, and the other has community aspects. This matrix is displayed in Table 1 on the next page.

Table 1:   **Sustainability Matrix**

Sustainable communities matrix	Energy and emissions	Water, Stormwater, and Liquid Waste	Resources and solid waste	Ecosystem integrity	Food	*Individual and Community Health*	Economic Vitality and Stability
Land Use and Site Layout							
Transportation, Parking and Streets							
Buildings							
Open space / Landscape							
Infrastructure (energy, water, waste)							
Community, facilities and programs							
Economic and commercial activity							

Source: **Holland Barrs, 2005**

Individual and community health is a key issue of the matrix. The intent of this paper and my involvement with this project is to flesh out this component of the matrix and apply it to the Silverdale neighbourhood development. Mark Holland describes *individual and community health* by stating that:

> "At a local level, sustainability objectives highlight the need to provide a strong foundation for the economy by ensuring the provision of safe communities, healthy housing, employment education, arts and culture, adequate access to health care and social support systems when needed, and a respect for other cultures. Personal health issues including diet, exercise and other lifestyle choices are also important considerations with many economic linkages. On a larger scale, sustainability objectives also highlight the linkage the industrialized world has with the un/newly industrialized world and encourages ethical trade relationships that can be sustained and support the sustainability of the supply communities" (2005).

Fleshing out this component will involve identifying what *individual and community health* means to the community, identifying priority areas and pursuing them by setting realistic goals and objectives.

Healthy Urban Planning

There is a need for urban planning to move away from relying upon a simple land use zoning mechanism to a process that supports the creation of healthy and sustainable neighbourhoods. According to the WHO:

> "urban planning focusing on the health and wellbeing of the urban population should not be concerned solely with controlling land use, but it should require finding policies and means of implementation that achieve social, environmental, and economic goals simultaneously" (1999).

In 1999, the WHO Healthy Cities Movement developed 21 steps to healthy and sustainable neighbourhood planning with the aim of offering guidance on planning elements, methods and tools for use by local authorities. They provide a recommended step-by-step sequence as a theoretical framework for an urban planning process to address health and sustainability (WHO, 1999).

This approach calls for fundamental guiding principles which include: intersectoral collaboration, community participation, an integrated approach, partnerships and alliances, equity, health promotion, supportive environments, accountability, and the right to peace (WHO, 1999). The framework recommends 6 broad stages of planning and 21 steps. This framework is useful as a malleable template, which community members, urban planners, District staff and other key stakeholders can follow as a guide for their process. The process calls for the building of partnerships, community analysis, establishing a common vision, action planning, action implementation, and an evaluation process. The outcomes of healthy urban planning for assessment at the community level should include population health outputs, inequalities of outcome, population health inputs, inequalities of opportunity, and participation, social cohesion and civic-ness.

This approach provides a good theoretical framework for urban planning processes that address health and sustainability. This framework served as a useful reference throughout this process. This paper will analyze the successes and challenges of undergoing a healthy urban planning process, consider the outcomes of such a process and share lessons learned from the process.

Basic Framework for Indicators

The framework for health indicators used to guide the development of health objectives and indicators for this process was developed in 1993 by Trevor Hancock and was further refined by Trevor Hancock, Ron Labonte and Rick Edwards in 1999. This framework for indicators was selected because it has been developed and tested over a number of years and has proven itself to be empirically useful and conceptually strong (Hancock, 1993). Furthermore, the framework has been used by various authors and has been referenced in a number of official reports (Hancock, 1997). The framework links elements of community sustainability and well being (community, environment, and economy) while paying attention to the links between these three desired outcomes and health. The model represents the "process of change" and the two key drivers of this process: education and governance. Education and governance encompass communication, participation, empowerment, civil rights and government performance (Hancock et al., 1999). According to Hancock et al, when these elements are in place and working well, they:

> "independently enhance human health, as well as increase the likelihood that individuals, community and political decisions in the three spheres, and their links, will result in the outcome of improved health" (1999).

Figure 1 on the next page depicts the relationship between elements of a healthy community and the process by which to achieve these.

Figure 1: **Basic framework for indicators**

Figure I.   Basic framework for indicators.
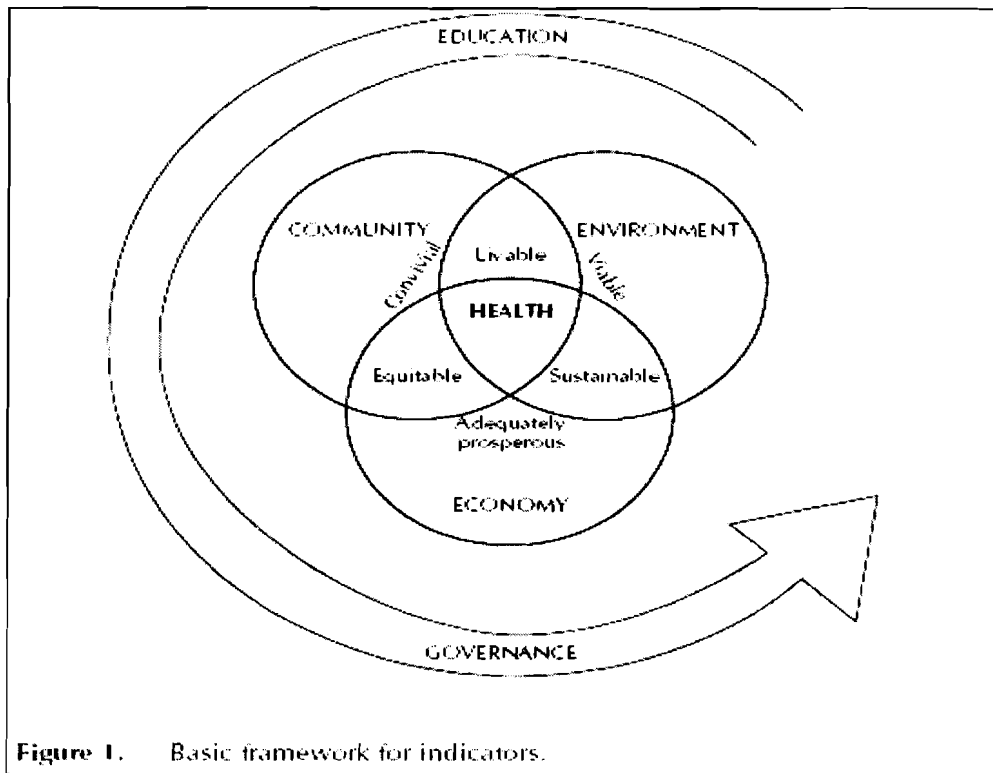
Source: **Trevor Hancock et al., 1999**

The indicator categories that emerge from this model are congruent with the categories used in a variety of community indicator projects that are focused on health status, healthy communities, 'state of the environment planning,' community sustainability, and quality of life issues (Hancock et al., 1999). Ten categories of indicators have been organized in three sets, which are: 1. Six key determinants: sustainability, viability, livability, conviviality, equity, and prosperity; 2. Process: education, participation, empowerment, civil rights, and government performance; and 3. Outcome: health status. These are listed in Table 2.

In particular, this paper focuses on the *community* sphere, which includes three key determinants: **livability, conviviality, and equity**. Holland Barrs is already very knowledgeable about the other two spheres (environmental and economic); therefore, health objectives are presented within the context of the *community* sphere (Fig. 1), which includes livability, conviviality, and equity. **Livability** encompasses housing quality, density and land use, community safety and security, transportation, walkability, green/open spaces, smoke-free spaces and noise pollution. **Conviviality** represents

family safety and security, sense of place, social support networks, and commitment to public services. **Equity** refers to economic disparity, housing affordability, discrimination and exclusion, and access to power and control. For each of these determinants and their sub-level determinants, health objectives are developed that address each of these areas in order to build a healthy community.

Table 2:   Indicator Categories (Determinants)

Determinants	Sub-level determinants		Determinants	Sub-level determinants
Sustainability	Energy use		Conviviality	Family safety and security
	Water consumption			Sense of neighbourhood
	Renewable and resource consumption			Social support networks
	Waste production and reduction			Charitable donations
	Local production			Public services
	Land use			Demographics
	Ecosystem health		Livability	Housing
Viability	Air quality			Density
	Water quality			Community safety
	Toxics production and use			Transportation
	Soil contamination			Walkability
	Food chain contamination			Green/open-space
Prosperity	A diverse economy			Smoke-free space
	Local control			Noise pollution
	Employment	Equity		Economic disparity
	Quality of employment			Housing affordability
	Economic indicators			Discrimination and exclusion
				Access to power

Source: Trevor Hancock et al., 1999

Silverdale Neighbourhood One Development

Figure 2:   **Silverdale Neighbourhood One**
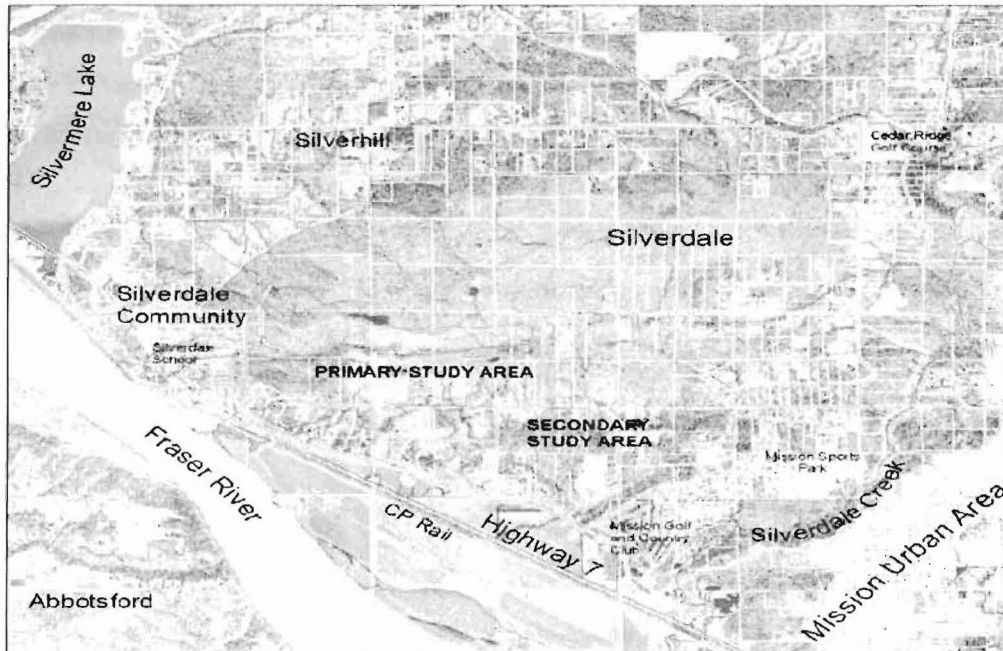
Source: **Holland Barrs, 2007, by permission**

In planning for future population growth in Mission, a large area of land to the west of Mission's existing suburban areas has been identified as a likely receptor site. Figure 2 shows a map of the Silverdale Urban Residential Area (SURA) Neighbourhood One Study Area. To guide any future urban development in that area, the District Council of Mission has adopted a "Land Use Terms of Reference" (LAN 48) policy for the Silverdale Residential Neighbourhood Plan. The policy set out conditions and directions for any future Neighbourhood Plan, and recognized the impact such future neighbourhoods would have on the character of Mission.

Council appointed a 19-member Neighbourhood Planning Advisory Committee (NPAC) to develop *"an integrated neighbourhood plan for the Silverdale Urban Residential Area (SURA) that results in a developed area representing an advanced, innovative, livable and sustainable community within the Lower Mainland"* (LAN.48, 2007). NPAC therefore became the main responsible party for creating a neighbourhood plan for Silverdale.

METHODS

Process Map and Stakeholders

A process map for the Silverdale Neighbourhood One Development was developed to guide project stakeholders through the neighbourhood planning process. The planning process for Silverdale Neighbourhood One is taking place in five major phases: 1. Establish principles of the plan; 2. Develop a design brief (including goals and objectives); 3. Develop and select plan options; 4. Develop a fully prepared plan; and 5. Submit final plan to District Council for consideration (includes a public hearing). Figure 3 lays out this process visually.

In terms of health planning, the majority of my work took place during phases one and two of the planning process: establishing planning principles and designing the Design Brief. My work involved providing support for the development of health objectives that were tied into the larger planning principles and goals. I played a consulting role to the lead consultant, Holland Barrs and was involved in community collaboration through NPAC meetings and community events, which allowed me to integrate community perspectives into the development of health goals and objectives. Specific activities included a thorough background and literature review on health and urban planning, collaboration with project stakeholder groups on what a healthy community means to them, integration of public and community input into health goals and objectives, and finally the development of proposed health goals and objectives.

Phases One and Two called for intensive public engagement and the development of guiding principles, goals and objectives for the neighbourhood development. Discussions about how health linked into principles, goals and objectives occurred in Phases One and Two. Holland Barrs and the Neighbourhood Planning Advisory Committee (NPAC) were presented with information about how health and the built environment are linked. Based on committee, Council and community member feedback, health goals and objectives were drafted within the context of established planning principles. Proposed health goals and objectives were submitted to Holland Barrs and NPAC for consideration and integration into the final Design Brief, which

terminates Phase Two of the planning process.

As illustrated in Figure 3, Phases one and two are the focus of this study and the results from this study bring the planning process to Phase three, Design Charrette #1. A design charrette refers to a collaborative session in which a group of designers and consulting stakeholders draft a solution to a design problem in an intense meeting, involving municipal officials, developers, and residents (NCI, 2007).

Figure 3:   Planning Process Map

The Planning Process
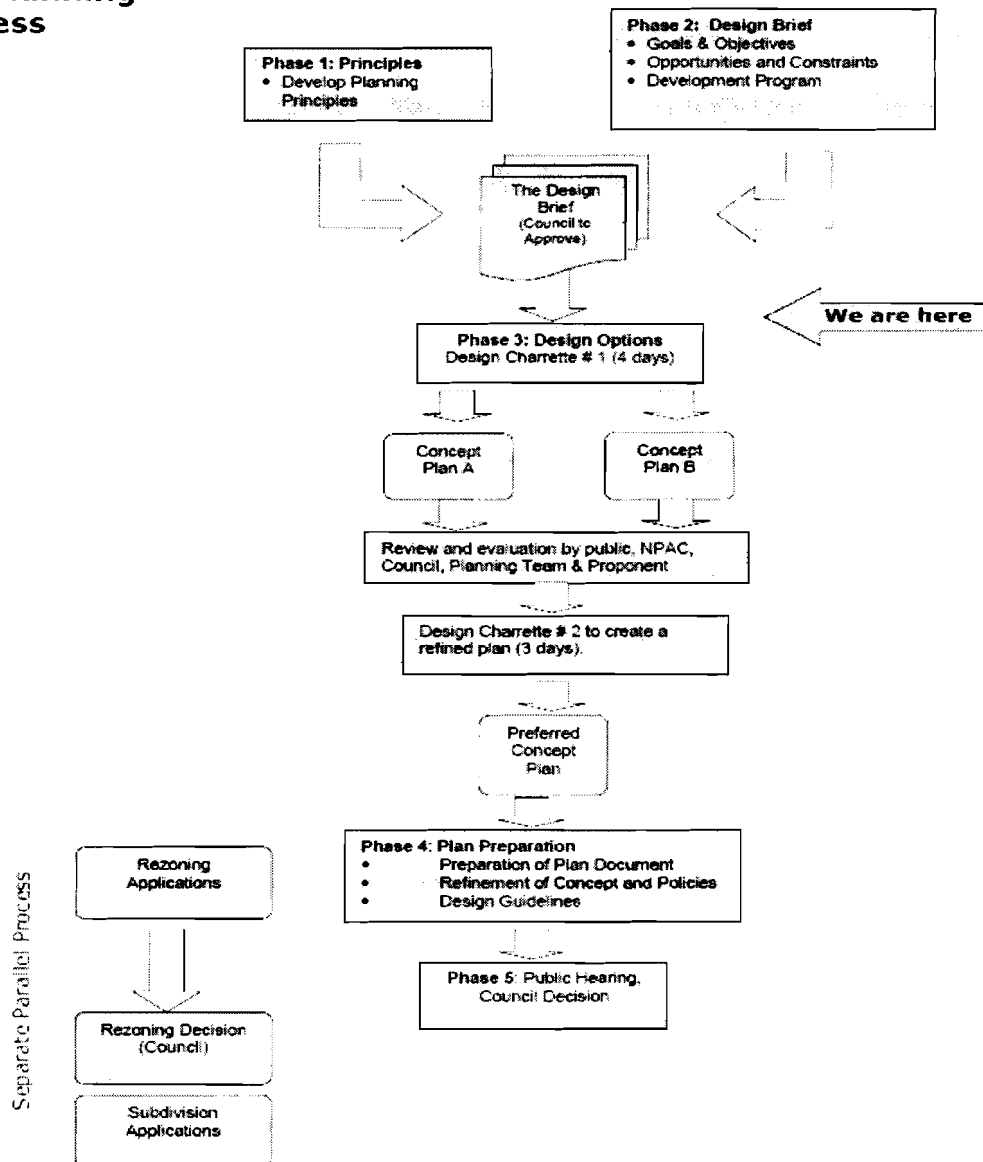
Source: **Holland Barrs, 2007, by permission**

Table 3:   Stakeholders - Roles and Responsibilities

Role	Lead	Responsibility
Lead consultant	Holland Barrs	Act as the chair/facilitator for the advisory committee; develop a work plan with project milestones and deliverables, and assist the committee reach consensus.
Lead land use planner	Holland Barrs	Lead team through all five phases resulting in final neighbourhood plan for approval.
Public health consultant	Breann Specht	Provide support to lead consultant on health related principles, goals and objectives.
District Council	District of Mission	Responsible for all final decisions related to plan direction, policies, and approvals for the Silverdale urban residential area.
District consultants	District of Mission	Engage four consultants: lead consultant, land use consultant team, senior policy planner, and an environmental peer review team.
Advisory committee	Neighbourhood Planning Advisory Committee (NPAC)	Reach agreement on an integrated neighbourhood plan for the Silverdale urban residential area.
Applicant, property owner	Property owner and technical consultants	Participate on the District's working group and NPAC; have consultants report directly to them.

Phase One: Establishing Principles

The first phase of the Silverdale neighbourhood planning process involved establishing planning principles. The desired outcome of this process was a set of "Neighbourhood Plan Principles" as well as "Identified Community Issues" that need to be addressed by the plan.

Discussions on planning principles began by considering priorities for the District of Mission as a whole. The District of Mission created a set of objectives for 2006-2008, which addressed economic, social and environmental development priorities. A District vision statement for this period was created *"to build a safe, healthy, and inclusive community that is abundant in economic, cultural, and recreational opportunities."* The priorities and vision for the District of Mission provided impetus for the sustainability principles approach of integrating social, economic and environmental values to provide Mission with a unique, innovative, progressive and environmentally responsive land use

pattern.

The 19 community members were asked what they thought was most important for the sustainability of this site from an environmental, socio-cultural and economic perspective (supported by Hancock et al's three spheres). Based on these discussions, NPAC and stakeholders came up with a list of 10 proposed planning principles for the Silverdale neighbourhood development. To complement these discussions and frame future committee work, Holland Barrs gave a comprehensive presentation on climate change and ecosystem challenges and the importance of sustainable development. This presentation took place during a NPAC meeting and allowed committee members to improve their understanding of sustainable development and the potential risk to their community by not addressing sustainability issues and challenges. Selected presentation slides around climate change and sustainability challenges are included in Appendix B.

Another important process during this phase was to hold a Public Ideas Fair. This Fair was designed in a way to solicit community member feedback and have them validate or modify the proposed planning principles.

Public Ideas Fair

The Public Ideas Fair for Silverdale Neighbourhood One was designed to share information, explain the planning process, and gather attendees' ideas on the future of the community. The ideas, stories, and comments collected during the Public Ideas Fair were intended to contribute to shaping the principles that guided planning of Neighbourhood One.

Public input was gathered through a feedback form and two exercises that engaged attendees and captured their ideas. The feedback form allowed participants to comment on critical issues and the draft principles directly. The exercises – community mapping and sketch design – assisted participants in describing their knowledge of the area and giving shape to their ideas about the future neighbourhood.

Phase Two: Developing the Design Brief

Phase two of the process involved producing a statement of goals and objectives that the plan must achieve, with these expressly addressing community and landowner issues and setting a clear direction for design. As lead consultant, Holland Barrs

recommended that NPAC develop goals and objectives for each of the sustainability principles through committee meetings using a "mini-charrette" process, which is outlined below. The purpose of this activity was to derive key goals and objectives and a development program for the Design Brief. During committee meetings, members worked on maps and sketches so that they could "see" the implications of what the Holland Barrs had been discussing. The Neighbourhood Planning Advisory Committee formed small working groups to focus on individual sustainability principles. They reported their findings to the whole committee.

The small group discussions for each principle were structured as follows:

Background & context of the Neighbourhood One site: Involved information being shared at committee meetings and presentations by consultants responsible for the detailed technical studies. Summary reports were circulated a week in advance to allow committee members time to review.

Case studies: Examined best practices and learning from other projects and communities that effectively addressed the specific principle(s) being discussed. The health features of the case studies were also discussed. This was presented in the form of display boards, maps, pictures, PowerPoint presentations, etc. Site visits also contributed to this element.

Exploration: Refined collective understanding and generated various possibilities for goals and objectives through discussion and sketches.

Goals and objectives: Captured the major goals, objectives and program elements from the discussion and sketches. These were all consolidated into a preliminary Design Brief for discussion with the committee in December and then used as a guide for charrettes in January and February 2008.

Background and context information about health and the built environment, healthy community case studies, and health goal and objective exploration also occurred during small group meetings. Health discussions were framed within the context of sustainability theory and discussions centred on how to achieve individual and community health through smart and sustainable land use design.

RESULTS

Phase One: Planning Principles

The principles represent preferred sustainable development guidance. These principles influence the development of more specific goals, objectives, development program and site design. Through public and community input, NPAC and stakeholders developed guiding principles for the Silverdale neighbourhood plan, which are:

1. Preserve and protect environmentally sensitive areas while providing as much human access as is compatible with good environmental practices.
2. Create a well-designed neighbourhood that promotes a high quality of life.
3. Develop compact, vibrant, mixed-use neighbourhoods that are connected to each other and complement the broader community.
4. Respect the history, culture and unique identity of Silverdale
5. Provide diverse housing opportunities that include local and future demand.
6. Plan for a variety of effective and useful transportation options.
7. Develop a viable new community that can support the wider district economy.
8. Create buildings and infrastructure, which are good for people's health and reduce environmental impacts.
9. Foster a caring, inclusive neighbourhood that provides opportunities for all citizens.
10. Encourage a healthy, local food supply.

After much discussion, principles 9 and 10 were deleted by NPAC because they were felt to be too vague and open to misinterpretation or felt not to be relevant to the planning for Silverdale.

Public Ideas Fair

The Public Ideas Fair allowed community members to become engaged in the Silverdale planning process and to express what they would like to see and not see in a neighbourhood plan for Silverdale. Community members were able to comment on the draft principles. Highlights from community member comments on selected principles are listed below:

Principle #2: Create a well-designed neighbourhood that promotes a high quality of life.

> *"Farm markets to create bonding. Having a market with fresh meat and vegetables to avoid people buying packaged foods that are clogging the land fills."*

Principle #3: Develop compact, vibrant, mixed-use neighbourhoods that are connected to the rest of Mission.

> *"Neighbourhoods with local grocery, baker, pharmacy, etc. so that people can walk to buy groceries, etc."*

Principle #4: Respect the history, culture and unique identity of Silverdale.

> *"Consideration for Silverdale's current residents must be addressed as well as honouring their history and identity of a rural community."*

Principle #5: Provide diverse housing opportunities that include local needs and future demand.

> *"Low income, seniors, young families, affordable and accessible."*

Principle #6: Ensure a variety of effective and useful transportation options

> *"Transportation is crucial. This is a very large area and our culture is addicted to cars. We must address trying to encourage people to use transit/walk/bike rather than drive. If seniors are to live there, they also need transit."*

Principle #8: Create buildings and infrastructure, which are good for people's health and reduce environmental impact.

> *"Good parks with good accessibility."*
>
> *"Sport venues are a must, i.e. walking, biking, softball park, curling rink."*
>
> *"Let's showcase the world what a "green" community can look like! Let's spend more now for longer term gain and sustainability."*

Comments from the Public Ideas Fair were used to validate and refine the proposed principles and to guide Phase Two of the process, which included the development of goals and objectives for the Design Brief. Public comments specifically related to health were teased out and used for the development of health goals and objectives.

Phase Two: Design Brief

A draft Design Brief was created and submitted by NPAC as a final product of Phase Two, which is intended to be used to inform urban planners and architects during the charrette process. The Design Brief provides a detailed set of instructions used to guide the charrette design teams. There are four types of instructions: sustainability principles, goals and objectives, opportunities and constraints information, and the development program.

In order to tease out specific health objectives for the proposed principles and goals, objectives were conceptualized by using both the Sustainability Matrix and the Basic Framework for Indicators prepared by Hancock et al. as references. Using Hancock et al.'s framework, health objectives were developed for each of the determinants of interest, **livability, conviviality and equity**. For each determinant, sub-level determinants were fleshed out and health objectives were developed for each of these based on existing literature and supporting evidence. For example, based on Hancock's framework, housing is a sub-level determinant of livability; therefore, health objectives around housing availability and range and mix of housing types were developed. Table 4 illustrates this process using *housing* as a sub-level determinant. A detailed list of all health objectives for each sub-level determinant can be found in Appendix A.

Table 4:   Housing health objectives

Determinants	Sub-level determinants	Health objectives
Livability	Housing	• Offer a wide spectrum of housing options to enable people of a broad range of incomes, ages, and family types to live within a single neighbourhood. • Minimize homelessness through social housing units. • Include flexible housing types that may change size and use over time.

Specific planning indicators and process indicators were also outlined for each sub-level determinant. Planning indicators are those that can be measured immediately after the charrette process and can be used as a way to weigh and compare both Plan Options. Process indicators however, cannot be measured until residents are living in the community and community health can be measured. Table 5 shows the process for developing indicators using *housing* as the sub-level determinant. A more detailed list using all sub-level determinants can be found in Appendix A.

Table 5:   Housing indicators

Planning indicators:
- Housing stock (# of homes, apartments, mobile homes, etc)
- Different housing types (# and % of seniors housing, emergency shelters, etc)
- Proportion of homes that have basic services (%)
Process indicators:
- Number of homeless people (#)
- Housing availability overall and by type (vacancy rates)
- Housing tenure (temporary, owner vs. renter occupied)
- Proportion of those using specialized housing (seniors housing, shelters)
- Proportion of houses in need of repair or considered sub-standard (%)

The proposed health objectives and related planning and process indicators were submitted to Holland Barrs and NPAC for consideration and integration into the broader eight principles, as well as derivative goals and objectives for the final Design Brief. Thereafter, proposed health goals and objectives were used as a reference during

structured NPAC committee meetings, which involved background/context, case studies, exploration and actual development of goals and objectives. Through this group process, the following goals and key indicators were outlined for each of the eight principles. These principles and goals will be included in the Design Brief, which will guide the charrette process, taking place in February 2008.

Goals for Principle #1: Preserve and protect environmentally sensitive areas while providing as much human access as is compatible with good environmental practices.

1. Protect species at risk and critical wildlife habitat.
2. Preserve and enhance fish habitat and riparian areas.
3. Preserve wetland features and function.
4. Control invasive species.
5. Create a connected network of natural open spaces for environmental conservation and recreation uses.
6. Manage human-wildlife interactions and provide opportunities for environmental education.
7. Protect the neighbourhood from wildfire risks.
8. Maintain the natural beauty of the landscape.

Key Indicators

- Acres and % of green space (total, active, passive)
- Km of wildlife corridors preserved and created
- Area and % of wetlands preserved
- Area and % of important habitat preserved
- Area and % of wildlife habitat restored or enhanced
- Type and amount of invasive species removed/managed.

Goals for Principle #2: Create a well-designed, neighbourhood that promotes a high quality of life.

1. Ensure that urban design enhances the aesthetic quality and character of the neighbourhood.
2. Ensure health and safety through design.
3. Provide public space(s) for gathering, celebration and recreation.
4. Ensure that the neighbourhood is accessible to all users.

5. Design comfortable, aesthetically appealing streets.

6. Make schools the focus of the neighbourhood.

7. Provide active recreational spaces and facilities.

Key Indicators

- Number and size of community public spaces
- Number of units that are universally accessible
- Number of publicly accessible view points
- Number and type of public facilities (recreational, health, social, cultural)
- Amount of active park space

Goals for Principle #3: Develop compact, vibrant, mixed-use neighbourhoods that are connected to each other and complement the broader community.

1. Create one or more neighbourhood centres.

2. Cluster development to create a compact community that uses land efficiently.

3. Create a mixed-use neighbourhood with a range of services and amenities.

4. Ensure a high level of connectivity between neighbourhoods.

Key Indicators

- Number, type, and total size (sq ft) of uses in neighbourhood centre(s).
- Population and unit densities
- Number of residential units within 5 minute walk of commercial centres/public facilities
- Number of road and trail connections to adjacent neighbourhoods

Goals for Principle #4: Respect the history, culture and unique identity of Silverdale.

1. Reflect the history and culture of First Nations and Pioneer settlers.

2. Protect the physical elements of Silverdale's history and culture.

3. Value the existing community of Silverdale and its unique identity.

Key Indicator

- % of historic buildings and archaeologically significant features preserved.

Goal for Principle #5: Provide diverse housing opportunities that meet local needs and future demands.

1. Provide a variety of housing types that can address the needs of different incomes, ages, family types and household sizes.

Key Indicators

- \# and % of different housing types
- Range of unit sizes
- % of rental accommodation
- % of housing considered affordable for average (median income) Mission family

Goals for Principle #6: Ensure a variety of effective and useful transportation options.

1. Plan for reliable, frequent transit service.
2. Create a pedestrian-oriented neighbourhood.
3. Provide convenient bicycle routes.
4. Reduce the negative impacts of parking.
5. Develop complete, low impact streets.

Key Indicators

- Number of residential units within five minute walking distance of potential transit stops.
- Length of trails
- Level of connectivity in the street and trail network.

Goals for Principle #7: Develop viable, new neighbourhoods that contribute to the District of Mission economy.

1. Plan for job creation and commercial activity.
2. Create a financially viable project.

Key Indicators

- Area of planned commercial space in neighbourhood centre(s)
- Area of employment lands set aside
- Number of live/work, work/live spaces
- Number of new opportunities for job creation planned

Goals for Principle #8: Create buildings and infrastructure, which are good for people's health and reduce environmental impacts.

1. Manage stormwater to maintain water quality and recharge aquifers.
2. Minimize use of potable water.
3. Preserve air quality and reduce greenhouse gas emissions through use of energy efficiency and renewable energy.
4. Reduce solid waste.
5. Ensure that landscape planting enhances biodiversity, wildlife habitat, and ecosystem function.
6. Design healthy buildings.

Key Indicators

- Post-development stormwater infiltration rates
- % of impervious surfaces
- % of native, drought-resistance species in landscape plantings
- energy efficiency of detached residential buildings
- energy efficiency of attached residential buildings
- energy efficiency of commercial and institutional buildings
- % total energy needs supplied by renewables

Through this process, a significant portion of the proposed health objectives and indicators were integrated into the Design Brief. Specifically health objectives around housing, transportation, sense of neighbourhood, community safety, and land use/mix were integrated into the Design Brief. Several proposed key health indicators were also extrapolated and will be used as a way to evaluate the different Plan Options during the charrette process. Proposed health objectives and indicators were consistent with the sustainability matrix and sustainability theory and will be well integrated into the final sustainable neighbourhood development for Silverdale. Based on the Design Brief however, there are some major gaps and unaddressed health areas that may pose future problems to the community. Health goals and objectives around food security, community inclusiveness, and citizen equity were not adequately addressed in the Design Brief. Proposed principles #9 and #10 addressed these areas, but were deleted by NPAC early in the process. For future neighbourhood and urban planning

developments, a more concerted effort to build a case for food security, community inclusiveness and citizen equity should be built into the process.

Evaluation

An evaluation scorecard will be used to assess how the Neighbourhood Plan Options meet the community objectives and will satisfy the indicators. Based on the evaluation score for both Plan A and Plan B neighbourhood designs, a Plan Option will be selected and further refined in a second charrette process. The preferred concept plan will then be selected and presented for Council decision.

DISCUSSION

Successes

The main success of this process was its innovation and its contribution as a pilot process for Holland Barrs Planning Group. As a pilot process, it allowed the opportunity for lessons learned and may serve as a useful reference for future healthy urban planning processes. The successes, challenges, and recommendations from this process will be useful in providing insight for others planning to integrate public health objectives into sustainable development and urban planning. This process may therefore provide a stepping-stone and direction for future work in this area.

While there is much literature on the relationship between health and the built environment, healthy urban planning and community health indicators, there has been very little documented literature on the actual process of integrating health objectives into the urban planning process. Having documented the process and applied health objectives and indicators to a real life setting, there are actual measurable criteria. This process allows for an evaluation process, which may provide real impetus for future work and research in this area.

In terms of the process itself, there were both many successes and challenges along the way. Framing health within the context of sustainability was strategic and proved to be quite successful, particularly in working with urban planners and environmental health consultants. Sustainability theory has been established and recognized for over 20 years and provides a theoretical framework for much development and planning work. This perhaps lent more credibility to the process and allowed for an already high level of expertise and experience in sustainable development. Furthermore, by framing health as a facet of sustainable development, we were able to draw on well-supported literature and theories that have been tested and applied for many years. Health itself was framed from a social determinants perspective, which was much more applicable and relevant to sustainability theory. Not one of the guiding principles touched on health directly, but health objectives were addressed through a social determinants lens in each and every principle. For example,

providing a diverse range of housing and affordable housing use an equitable framework minimizes poverty and provides a supportive environment that provides people with an opportunity to lead healthier lives.

Including health as a key facet of sustainable development was relatively well supported. It was difficult for community members and other stakeholders to argue that individual and community health should not be a development priority. Promoting health by creating and building healthy communities was well supported and it was relatively easy to convince stakeholders that it needs to be included throughout the process. Providing evidence for the relationship between health and the built environment was a successful way to build support and to help people understand how the built environment can directly affect their health. For example, presenting the effects of air pollution on cardiovascular disease and that *"16,000 Canadians die prematurely each year due to air pollution"* (Health Canada, 2007) was a very powerful way for people to understand the effects of air pollution in their community.

Another major success throughout the process was the Public Ideas Fair. The Fair allowed the broader community to become engaged in the planning process and share their ideas and concerns about the development project. The Fair brought a more diverse range of people to the planning table, allowed the neighbourhood planning process to become richer by bringing a diversity of opinions, priorities, and values. Given that NPAC only has 19 members and there was not a selection process for this group, having outside public involvement brought a more representative opinion of the actual Mission community and its future residents.

Challenges

There were several challenges that occurred during the process. A major challenge was adhering to the process timeline that was developed in the early stages and approved by both NPAC and council. The time it took to complete the first two phases of the process was delayed by two months, which added stress to the group dynamics and meant that the charrette process had to be delayed. Achieving consensus, establishing a common vision among citizens, planning staff, the main landowner and consultants, and agreeing on the exact number and wording of principles all took longer than predicted, adding tension.

Establishing group cohesion was one of the biggest challenges in this process.

The Neighbourhood Advisory Planning Committee did not function in a cohesive way and a lot of time was spent managing group dynamics and responding to concerns raised by some committee members. Confusion over roles and responsibilities, along with different priorities and viewpoints among the committee and project stakeholders, led to a lack of focus and direction. The roles and responsibilities of NPAC and other stakeholders in relation to consulting staff should have been articulated better and more detailed guiding principles for group work should have been established.

Despite efforts, it appeared that community members were not empowered throughout this process. The Neighbourhood Planning Advisory Committee did not appear particularly open to new ideas and different options, and was not particularly well educated about sustainability, public health or the planning process. The group lacked community leaders with a specific knowledge of urban planning and/or community health issues, and who would therefore be able to lobby for more sustainable and healthy urban planning. Furthermore, the committee members were rather guarded against new ideas, which further limited the depth and innovativeness of the planning. In the future, it may be useful to seek involvement of respected community leaders on the committee that are committed to healthy community planning to motivate and inspire the group, as well as challenge committee members to expand and deepen their thinking.

One of the most important lessons learned throughout this process was the need for a more representative or balanced community-led committee and the importance of a fair selection process for such a committee. In this case, members for the NPAC were selected on a first-come, first-served basis. As a result, many of the committee members, although from the area in question, also appeared to have a vested financial interest in the project. This seemed to create a power imbalance and property owners had a strong influence on the group members and its progress.

Another result of the member selection process was that the Neighbourhood Planning Advisory Committee was not representative of the wider community of Mission. There needed to be in place a selection process whereby such representation could have been achieved. As well, there should have been a quota for certain demographic groups that are representative of the community. For example, there should have been seniors, disabled persons, youth, and people from diverse ethnic and economic backgrounds on the committee, allowing for a move diverse and representative committee.

Recommendations

Integrate health as a key facet in sustainable development

Concepts of public health should be integrated into sustainable development theory. Sustainable development has been long established, but health as a key pillar of sustainable development needs to be further developed and strengthened. Most people cannot deny the importance of individual and community health; therefore this commitment and support needs to be leveraged and built upon. Improving individual community health requires a multi-sectoral response, which is also consistent with sustainability theory. Sustainable development requires collaboration across sectors and stakeholders and integrating health into this process is a strategic way to achieve improved individual and community health.

Establish guiding principles for group dynamics and processes

Guiding principles for group work should be established to ensure that the group operates based on a respectful and ethical framework. Stakeholder roles and responsibilities should be clearly outlined so that everyone understands what they are responsible for and how they can contribute to the process. The scope, goals and objectives of planning should be articulated clearly to stakeholders and an environment that encourages communication and dialogue needs to be established. The lead process facilitator needs to be skilled in facilitating dialogue. This will allow for better group dynamics and a more respectful and effective process.

Build partnerships with appropriate stakeholders

Building appropriate partnerships with key actors is an essential component of healthy urban planning. Healthy urban planning requires a multi-sectoral response and the involvement of a diverse group of stakeholders. One of the most important partnerships however, is with the community itself. Community members need to be empowered throughout this process and recognized as valued stakeholders in the process. Given the importance of building partnerships with the community, particular attention needs to be paid to the selection of appropriate and representative community members. As learned throughout the Silverdale process, there should be a rigorous community member selection process in place that ensures that the committee is

representative of the broader community of interest.

There needs to be cooperation among public health and urban planning professionals

Health professionals and urban planners typically do not have much interaction; therefore providing more opportunities for engagement between these professions is an important area of work. For example, urban planners and health professionals should be brought together through conferences and workshops or through project collaboration. There needs to be more opportunities for urban planners and public health professionals to flesh out health as a key pillar of sustainable development and to develop a common vision and identify shared priorities.

Communities need to be empowered and educated about health and the built environment

Involvement of an empowered community is critical to the healthy urban planning process. Issues around sustainability and healthy communities need to be communicated to committee members and the wider community. Tangible and clear means for community participation need to be established from the beginning. For example, the Public Ideas Fair allowed community members to become engaged in the process and feel that they are empowered and are contributing to the development of their neighbourhood. Furthermore, community members need to be educated about the link between health and the built environment and provided with previous analyses and case studies that help build a case for healthy urban planning. It is also important to solicit involvement of a respected and trusted community leader that understands and supports sustainable and healthy urban planning.

Health integrated plans and policies

Health integrated plans and policies need to go beyond the built environment. They should also complement the built environment and support healthy communities. This is consistent with Hancock et al.'s framework, which emphasizes the importance of the drivers of healthy communities (education and governance). Health policies and plans are needed in order to drive the actual process. For example, no-smoking policies or noise law policies need to be in place in order to maximize a built environment that is designed to discourage smoking or noise pollution. Community events also need to be

put in place to encourage healthy lifestyle behaviours. For example, blocking off roadways for cycling would be a good way to increase community physical activity levels.

Political commitment

There needs to be commitment from municipal level government to healthy urban planning and support for a thorough multi-stakeholder process. Government needs to be presented with case studies and cost-benefit scenarios that support the importance of healthy urban planning. Research findings that link health and the built environment need to be presented to government to help build a case for investment. There is a need to advocate in the media through press conferences and other means to gain public and government attention.

Social determinants of health approach

Planning should be approached from a sustainability lens and health objectives should be built into broader social determinants principles and goals. There is a need to acknowledge that the planning process fundamentally affects the social determinants of health. The planning process, including those related to land use, housing, transportation, and urban design need to consider the broad scope of environmental, economic and socio-cultural factors that contribute to well-being or harm human health (Frumkin, 2005). Urban planning professionals and public health professionals need to work together to establish a common vision and approach to healthy urban planning that acknowledges the fundamental link between the planning process and the social determinants of health.

CONCLUSION AND CRITICAL REFLECTION

Although there were many challenges throughout this process, overall, it was quite successful and the desired outcome of a neighbourhood plan with integrated health goals and objectives was achieved. Perhaps the most important outcome of this process however, was the lessons learned and resulting recommendations that may be a useful reference to guide and shape future healthy urban planning.

This process was innovative in that it merged public health planning and urban planning in a neighbourhood design process. I believe there is a big need for public health professionals to practice in this area and work with stakeholders from multiple sectors to affect change to the built environment and to create healthy environments. It is standard practice for environmental health consultants to be part of the urban planning process and conduct studies on the study area. Likewise, I think that public health professionals should be part of the urban planning process in a more deliberate way and should conduct studies on the study area with respect to health. For example, public health professionals may be able to conduct studies on housing and health through case studies and be able to make recommendations for planning objectives in this area.

During this process, there was good evidence to support the relationship between health and the built environment, as well as good literature on developing and evaluating community health indicators, but more research was needed on integrating health objectives and indicators into the urban design process, as well as case studies on this process. I hope that this paper will provide impetus for public health professionals and urban planning teams to conduct future research and practice in this area. There is a need to present a strong case for health as a part of the development process and provide examples of successes so that we are able to convince those involved in the neighbourhood development process that this is an important area of work. These messages also need to be communicated clearly to the community members from the study area so that they understand the importance of health as a key facet of sustainable development and provide tangible means and results for achieving this. Most people are supportive of creating healthier communities, but the challenge is

in clearly communicating how this can be achieved in a real and measurable way using case studies and examples.

Another lesson learned throughout this process was the importance of fostering a healthy process. In order to achieve a healthy community, there needs to be a healthy planning process in place. I think that increased time and effort needs to be invested in creating and fostering a healthy group process, which includes increased community participation, effective intersectoral partnerships, strong political commitment and healthy public policy. I think that we need to focus on empowering the community members themselves as key stakeholders in the process and build their human development capacity by providing opportunities for them to learn, engage, explore and collaborate. Trevor Hancock's model has since evolved to place human development at the centre of healthy communities (BCHC, 2006). Likewise, I think that in order to have the outcome of a healthy community, we need to build the human capacity of the community members themselves and harness community leaders that are committed to making their community a more sustainable and healthy community.

I think is an exciting area of work for public health professionals that will likely see growth and change over the years to come. Sustainable development as part of the urban planning process is now standard practice and although health is often included in this theory, it has not been fully fleshed out. I think there is enormous opportunity for public health professionals to become part of an integrated, multi-sectoral and collaborative team that is engaged in sustainable and healthy neighbourhood development.

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APPENDIX A: Proposed Health Objectives and Indicators for Silverdale Neighbourhood Design Process

LIVABILITY

1. Housing

Planning Objectives:

- Offer a wide spectrum of housing options to enable people of a broad range of incomes, ages, and family types to live within a single neighbourhood.
- Include flexible housing types that may change size and use over time.
- Minimize homelessness by developing social and affordable housing units.
- Design and develop quality homes with basic services in the home being met.

Planning indicators:
- Housing stock (# of homes, apartments, mobile homes, etc)
- Different housing types (# and % of seniors housing, emergency shelters, etc)
- Proportion of homes that have basic services (%)
Process indicators:
- Number of homeless people (#)
- Housing availability overall and by type (vacancy rates)
- Housing tenure (temporary, owner vs. renter occupied)
- Proportion using specialized housing (seniors housing, shelters, etc)
- Proportion of houses in need of repair or considered sub-standard (%)

2. Land Use/Density

Planning Objectives:

- A diverse mix of activities occurring in proximity (e.g. residences, shops, schools, workplaces, parks).

- A connected roadway, walkway and bikeway to reduce the distances that must be travelled to reach a destination.
- Commercial and other public activities are located downtown and other activity centres.

Planning indicators:
- Proportion of mixed-use buildings (%)
- Distance to amenities from home (metres)
- Proportion of commercial and public spaces located downtown or other activity centres (%)
Process indicators:
- Residents perception of building/structures and reflection of culture and community (qualitative)
- Availability of commercial buildings/space (office vacancy rates)
- Usage of shops, restaurants, and museums, and facilities (% of residents)

3. Community safety and security

Planning Objectives:

- Minimize crime and maximize safety by making sure there is good lighting, good safety infrastructure and surveillance systems in place.
- Take measures to lower vehicle operating speeds, such as more visible speed limit signs.
- Make public stairways open, accessible and safe.
- Create community designs that allow neighbours to watch over each other's property.
- Map out neighbourhood walking paths and install mile markers along trails, beaches, neighbourhoods, and city blocks.
- Build bicycle boulevards or bicycle paths that are a safe distance from the road.

Planning indicators:
- Proportion of well-lit streets (%)
- Number of speed limit signs (#) per km radius
- Proportion of open and accessible public stairways (%)
- Proportion of bike paths that are within 5 metres from the road (%)
Process indicators:
- Overall community crime rates (%)
- Number of accidents (#)
- Number of block parent or neighbourhood watch groups in community (#)
- Residents' perceptions and attitudes about personal safety and community safety (qualitative)

4. Transportation

Planning Objectives:

- Develop good public transportation infrastructure and situate residences close to transit.
- Minimize amount of people the use and own private automobiles by designing good alternative transportation options.
- Minimize residents' exposure to traffic-derived air pollution.
- Develop convenient methods for taking bicycles onto subways and buses.
- Create secure parking for bicycles.

Planning indicators:
- Proportion of population living in proximity of dense traffic (%)
- Proportion of population exposed to elevated concentration levels of traffic-derived air pollution (%)
- Proportion of population exposed to air quality in excess of standards (%)
- Proportion of residences that are accessible to transit within 500 ft or 0.1 mile (%)
Process indicators:
- Public transit ridership numbers (#)
- Number of automobile owners (#)
- Proportion of people that use their car for at least 30 minutes everyday (%)
- Traffic flow (commuting time, congestion and delays)

5. Walkability

Planning Objectives:

- Develop neighbourhood shops and restaurants that are accessible by foot, bicycle, or wheelchair.
- Develop safe sidewalks and walking routes to encourage walking.
- Develop well-lit, accessible jogging, walking and bicycle paths.
- Convert downtown centres into pedestrian malls.

Planning indicators:
- Proportion of public spaces that are accessible (%)
- Number of trail and bicycle paths (#)
- Proportion of well-lit paths (%)
- Distance between people and amenities
Process indicators:
- Proportion of residents receiving daily recommended physical activity levels (%)
- Number of people that use pedestrian malls (#)

6. Green/open space

Planning Objectives:

- Create green and open spaces for the community to use, while preserving and protecting natural spaces and environmentally sensitive areas.
- Provide active recreational spaces and facilities.
- Separate parking lots from buildings with green space; develop parks or playgrounds in vacant lots or rooftops.

Planning indicators:
- Number and size of community public spaces (#)
- Amount of active park space (#)
- Number of publicly accessible view points (#)
- Number of trees (#)
- Number of spaces that are universally accessible (#)
Process indicators:
- Residents' satisfaction with the extent and quality of green space (qualitative)
- Proportion of community that uses green/open spaces (%)

7. Smoke-free space

Planning Objectives:

- Create a community that discourages smoking.
- Put in place infrastructure to support smoke-free places (e.g. no public ashtrays).

Planning indicators:
- Number of public ashtrays (#)
- Number or no smoking signs (#)
Process indicators:
- Proportion of smokers (%)
- Existence of by-laws, ordinances, or policies regarding smoking in public spaces
- Residents' perceptions about smoking in public spaces (qualitative)

8. Noise pollution

Planning Objectives:

- Streetscape features such as plants and shrubs should be built into neighbourhood plan.
- Buildings designed with noise reduction features.
- Improved bus design and maintenance practices.

Planning indicators:
- Proportion of buildings with noise reduction features (%)
- Number of plants and shrubs along streets (#)
Process indicators:
- Proportion of population exposed to noise in excess of standards (above 65 dB) (%)
- Residents' perception of noise levels in their community (qualitative)

CONVIVIALITY

9. Family safety and security

Planning Objectives:

- Create well-designed homes with safety features that allow families to adequately deal with emergencies.
- Create homes that are accessible to elderly and disabled populations.
- Create homes that have good security features to prevent burglary and vandalism (e.g. alarm systems).
- Create child/domestic abuse protective services and crises centres in the community.

Planning indicators:
- Proportion of homes with built in safety and emergency features (e.g. carbon monoxide detector) (%)
- Proportion of homes that are fully accessible to elderly and disabled (%)
- Proportion of homes that have an alarm system in place (%)
- Number of child/domestic abuse protective services and crises centres in the community (#)
Process indicators:
- Child abuse or neglect (reported cases)
- Domestic abuse (reported cases)
- Residents' perception of safety in the home (qualitative)

10. Sense of neighbourhood

Planning Objectives:

- Develop physical places that are accessible, facilitate, and encourage social, spiritual or cultural interaction (e.g. community centres).
- Foster distinctive, attractive communities with a strong sense of place.

Planning indicators:
- Number and type of social/public facilities (recreational, health, social, cultural)
- Number of social/public that use natural features and attractiveness of existing land (#)
Process indicators:
- Membership in social organizations or groups (#)
- Residents' perception about trust between people (qualitative)
- Residents perception of whether there is a sense of community of feeling of belonging (qualitative)

11. Social support networks

Planning Objectives:

- Create areas for people to gather (e.g. central space for neighbours to gather).

Planning indicators:
- Number and type of social/gathering places
Process indicators:
- Support group membership (#)
- Proportion of people living alone (%)
- Residents' perception about ability to turn to someone during difficult times (qualitative)
- Residents' perception about social support (qualitative)

12. Public services

Planning Objectives:

- Create accessible health and public services.
- Develop appropriate healthcare facilities that meet needs of community (e.g. hospitals, clinics).
- Create accessible arts, cultural, historical and educational spaces for residents.

Planning indicators:
- Number of hospitals and clinics
- Number of child care centres
- Number of libraries
- Number of arts/culture/education spaces per projected population
Process indicators:
- Availability of health professionals per population (rate); access to services (%)
- Hospital bed occupancy rate (rate)
- Residents' satisfaction with child care (qualitative)
- Residents' attitudes and (dis)satisfaction with public services (qualitative)

13. Demographics

Planning Objectives:

- Develop appropriate housing, buildings, spaces, and services for a range of income levels, so that basic needs for everyone are met.
- Develop appropriate retail mix for the range of demographics (e.g. pharmacies for elders).

Planning indicators:
- Project community demographics (projection of age, size, ethnicity, etc)
- Appropriate retail in place for projected demographics (e.g. pharmacies)
- Appropriate buildings and services in place for projected demographics (seniors housing, childcare centres)
Process indicators:
- Population size (#)
- Age (median, average, distribution by age groups)
- Family structure (elderly dependency rate, child dependency rate)
- Ethnicity, mother tongue (race or ethnicity, language spoken)
- Residency and mobility (migration – in, out, net)
- Birth and fertility rates
- Marital status
- Population density
- Gender
- Employment status

EQUITY

14. Economic disparity

Planning Objectives:

- Ensure education for all by designing accessible schools.
- Create public services that are accessible to entire population.
- Create opportunities for economic growth and business development.
- Put in place food aid infrastructure to assist any that might be in need.

Planning indicators:
- Access for all projected youth from the community to attend elementary and secondary school (#of schools per population)
- Number of projected job opportunities (#)
- Number of food aid hampers placed throughout community (#)
Process indicators:
- Income distribution among community (% of population in different income brackets)
- Poverty rate (%)
- Proportion on employment insurance, social assistance, welfare (%)
- Proportion of population that has access to basic needs (%)
- Child poverty rate (%)

15. Housing affordability

Planning Objectives:

- Create a range of housing types for all income levels: affordable home ownership, affordable rental housing, social housing, transitional housing, emergency shelters.

Planning Indicators:
- Affordable home ownership (% of housing)
- Affordable renal housing (% of housing)
- Social housing (% of housing)
- Transitional housing (% of housing)
- Emergency shelters (% of housing)
Process indicators:
- Number of people living in affordable housing
- Policies and programs for affordable housing
- Inclusionary zoning
- Rent restrictions
- Resale price restrictions
- Density bonus
- Secondary suite policy
- Housing fund
- Demolition policy
- Residents' perceptions of housing affordability (qualitative)

16. Food safety and security

Planning Objectives:

- Foster community gardening and community building.
- Encourage production and consumption of local foods.
- Promote relationships between food growers.
- Promote social cohesion through local food markets.

Planning indicators:
- Number of community gardens (#)
- Number of farming lots (#)
Process indicators:
- Proportion of daily intake of locally produced foods (%)
- Proportion of local farmers in area (%)
- Attendance at local food markets (#)

17. Discrimination and exclusion

Planning Objectives:

- Promote equity in employment and political opportunities.
- Encourage equal opportunities among population groups (e.g. sports, cultural activities, community events).

Planning indicators:
- Number of cultural/spiritual buildings or spaces per population group (e.g. mosques)
Process indicators:
- Equal opportunity policies
- Discrimination complaints
- Equity in participation in
- Proportion of people from vulnerable populations employed compared to non-vulnerable populations (ratio)
- Proportion of vulnerable populations participating politically compared to non-vulnerable populations (ratio)
- Residents' perceptions about discrimination in the community (qualitative)

18. Access to power

Planning Objectives:

- Build in urban design features that allow the public to interact with politicians, businesses and civil society.
- Create infrastructure that allows resident to access information (e.g. public computer terminals, access to internet, media).

| Planning indicators: |
| --- |
| - Proportion of places with access to public computers (%) |
| - Proportion of buildings that are designed to engage with residents (e.g. welcoming entrance, public information desks, etc.) (%) |
| Process indicators: |
| - Proportion of population with access to the internet (%) |
| - Participation levels in decision-making (#) |
| - Participation levels in civil society, businesses, etc. |
| - Residents' perceptions with accessibility/availability of information and opportunities for participation and influence (qualitative) |
| - Perception of sense of power and ability to influence or control one's living and working conditions (qualitative) |

APPENDIX B: Sustainability Presentation to NPAC (September 27, 2007)

Why Sustainability?

- We are no longer living in "an ecologically empty" world. The world is now "full" of humans and their furniture.

- Limits - exhausted many natural resources and exceeded the ability of earth to absorb wastes

- Out of balance


Ecosystem Impacts
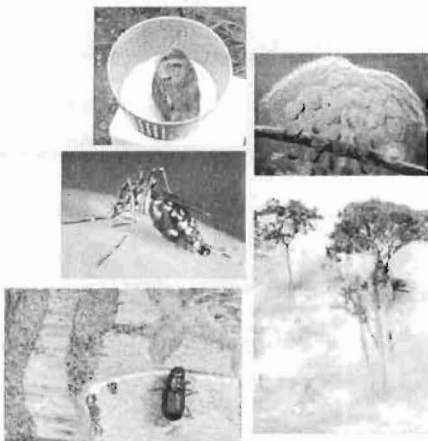
- **Biodiversity**
  - Loss of habitats
  - Extinctions
  - Monocultures
  - Loss of genetic diversity
  - Invasive species

- **Pine Beetle**

- **Deforestation, ecosystem malfunction and collapse**

- Hydrological Change

Climate Change

- Atmospheric Carbon (20 yrs to act)
  - under 550 ppm = 1% GDP
  - Over 550 ppm (10-20 %GDP) (Stern Report – '06 UK)

- Rise of sea levels worldwide

- Higher intensity weather events

- Species extinction (30 to 50%)

- Negative impacts on communities and ecosystems:
  - Flooding
  - Forest fires
  - Droughts
  - Pine Beetle

We need to reduce our emissions and adapt to the change that is coming.
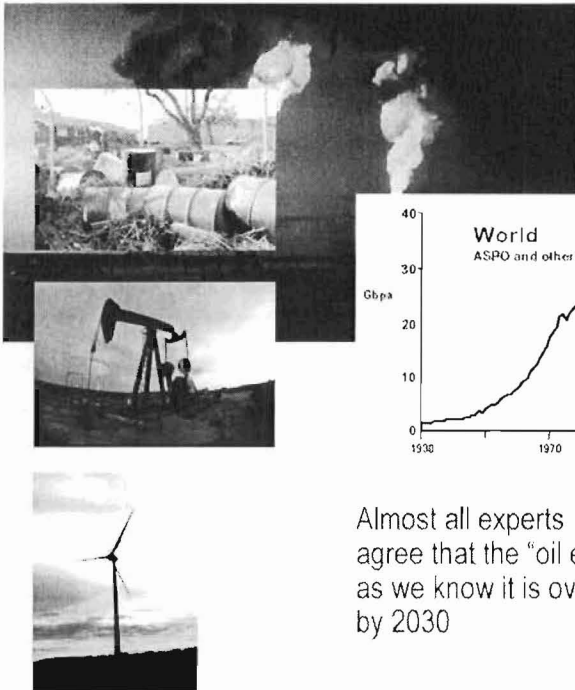
Energy – *Peak Oil*
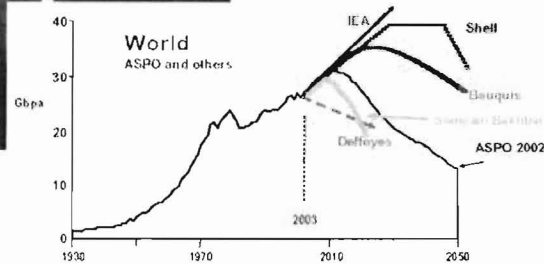
Almost all experts agree that the "oil era" as we know it is over by 2030

There are huge implications for how we design human settlements

Many other changes

Wastes and resource use

No more water – populations doubling

Aging and urbanizing populations

Economic change

Health challenges

Aging population

Sustainable Development

1987 UN Brundtland Report

Study on Economy and Environment relationship

OUR COMMON FUTURE
THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

- Current economic directions will undermine the planet's life support systems and exhaust its resources

- Damage will eliminate any economic advantage gained

Economic Activity

Environmental & social impacts