Sustainable Neighbourhood Concept Plan

Draft for Community Review

May 11, 2009
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The City of Fort St John acknowledges the contributions and participation of our staff, consultants, and especially the community members involved in the events leading up to this Neighbourhood Concept Plan.

Image 1: The Fort St. John Sustainable Neighbourhood Charrette Team, October 2008

The City would also like to thank the Province of British Columbia for providing the funding for the project and BC Hydro for its financial contribution.
A message from Mayor Bruce Lantz:

The Sustainable Neighbourhood Concept Plan was undertaken in order to explore how the concepts vital to a sustainably-designed neighbourhood would apply in Fort St. John. From the onset, it was important for all participants that the neighbourhood not only be functional but that its design features be purposeful, be relevant and contribute to the greater whole of our community. Throughout the process we were challenged to change our perceptions of what an urban environment should look like and how it would impact the natural environment.

The Charrette planning process was also a new experience for us. Council and staff from the City of Fort St. John were pleased to share the experience with both members of the community and experts from a variety of disciplines. The Charrette allowed all of us to blend our knowledge and our experience into one unified vision. It provided us with an opportunity to create a new urban space through a creative, interactive process.

On behalf of the City, I would like to thank all the community members that contributed their time and energy to the process. This process would not have been successful without their involvement. Their contribution will also influence future policies around urban development throughout our community.

The City would also like to thank the Province of British Columbia for providing the funding for the project and BC Hydro for its financial contribution.

Mayor Bruce Lantz
1.1. Overview of the Concept Plan

The objectives of the Charrette Process and Concept Plan are:

1. To adopt a proactive and engaging planning process;
2. To create a new neighbourhood that embodies the community’s long-term goals and objectives; and
3. To demonstrate new approaches for guiding future mixed-use development in the Peace River region.

The Concept Plan expresses a set of recommendations that are based on the outcomes of the Charrette process that took place in October 2009 and is described herein. The Plan joins different types and sources of skill, knowledge and input to develop a conceptual neighbourhood plan with sustainability principles. The Plan is a comprehensive and connected set of recommendations for a sustainable neighbourhood including land use, municipal systems, energy, transportation, and conceptual design ideas.

The Concept Plan is not intended to be a regulatory document. The importance of the Concept Plan lies in the application of the sustainability principles, and the intentions behind the interconnected decisions and ideas. The Concept Plan is focused on a specific plan area for the Sustainable Neighbourhood, and considers the context of the larger community. The Plan is intended to be used to guide policy, planning and design decisions for future development of the Plan Area. It is intended that the Plan be used as a conceptual step toward more detailed planning and regulatory steps including Official Community Plan sub area planning and zoning amendments in the future, and further to support the City’s further strategic thinking and planning about the property as an owner and local government. The approach and principles from this process also provide the City with tools for planning future mixed-use development throughout the community, to meet the City’s future growth demand and planning intentions.
The Concept Plan is organized in four parts:

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In **Part 1**, the End-State goals for the Sustainable Neighbourhood are presented and explored, as well as the policy context and information that is specific to the Sustainable Neighbourhood.

In **Part 2**, the plans and opportunities for land use and systems that were developed through the Charrette process are presented, explained, and rationalized based on the costs and benefits.

- The **significance and context** of this Plan for the City is explained. It is a key opportunity to address challenges and be innovative by densifying a residential area, and to effectively contain the City’s development.
- The **land use plan** is a medium density residential development with mixed housing densities and forms; natural places that remain connected and preserve their integrity; community and commercial places; and a mixed-use residential and commercial area that provides convenient choices for local residents and connects with the existing neighbourhood to the west of 86th Street, and the hospital site.
- The **systems plan** explains how the infrastructure of the neighbourhood works and how it makes the neighbourhood sustainable. Energy system possibilities are described, which were explored at the charrette. A stormwater system drains rainwater and surface water in swales that follow the tiered topography of the site, and gathers the water in small detention areas. The transportation system is a pattern that follows the topography of the site, and an efficient hierarchy of street types that provide lots of choices for how to move around.
- A dimensioned **model** for the site is presented, to provide a feel for the scale and relationship between the elements of the Plan.
- The **capital and ongoing costs** of the neighbourhood to the taxpayers and to the City is analyzed and the results are presented. The figures for a cost-effective medium-density mixed-use Concept Plan are compared to a more expensive low-density development alternative, and recommendations are made to adopt the medium-density mixed use.

In **Part 3**, conceptual design guidelines are outlined. The guidelines are not regulatory, nor are they detailed. The purpose of the guidelines is to convey a sense of the character and intent for the neighbourhood that came out of the Charrette and how to achieve the desired outcomes.

In **Part 4**, the recommended next steps are discussed. One of the top recommended actions is to coordinate development and planning with the hospital project that is proceeding, to ensure that the mutual benefits for the City are realized. Research planning steps are outlined for consideration by the City. And finally, some suggestions are put forward on how to keep the plan alive, and to build upon the excitement that has been generated for moving forward with the sustainable neighbourhood.
1.2. The Planning and Design Process

Context for a Community-Driven Planning Process

The Sustainable Neighbourhood Concept Plan represents the culmination of more than five years of work and progress by the City of Fort St. John’s elected officials and staff to move towards community-based, integrated sustainable planning. Some key policy components leading to this Concept Plan are further described below.

Comprehensive Development Plan, 2005

In 2005 the City undertook a Comprehensive Development Plan to identify the growing needs the City would face in the next 10 years. An important part of this analysis included a growth management plan that identified the best uses of lands available for the expected density increase and what additional lands and uses would be needed to meet this future growth.

The lessons and recommendations from the Comprehensive Development Plan was one of the guiding factors for the 2008-2009 Sustainable Neighbourhood Plan Charrette. Highlights from this report are that:

- Over the next ten years there will be a need in the rural areas for approximately 412 to 885 additional residential units;
- In the urban area residential unit needs will range from 617 to 1325 units;
- In response to this population increase, there will be additional local commercial demands, and a growing need for lands designated for home industrial, large scale home business and approximately 100,000 to 170,000 sq ft of office space. It was recommended that the city consider retrofitting current vacant commercial space into mixed use and office spaces.

Vision 2020, 2006

In 2006, the City of Fort St John conducted a community-based and long-range plan that focused on 5 areas of concern: quality of life, economic diversification, community development, environmental stewardship and corporate support. The sustainable neighbourhood plan has incorporated the Council and Community priorities that arose from Vision 20/20 wherever possible in this Concept Plan and its recommendations.

General guiding priorities from Vision 20/20 were applied to the Sustainable Neighbourhood Charrette and Concept Plan:

- To energize and grow through regional partnerships and community initiatives
- To ensure all future developments are reviewed through an environmental perspective
- To provide better pedestrian services, facilities and to ensure the safety of pedestrians
- The need to attract more healthcare professionals to the area
- To improve roads
Metro Quest, 2007-2008

The City of Fort St. John and MetroQuest worked to create a community based vision to guide growth. The process was called Bright Future, and it employed various tools and types of collaboration to create a vision. Highlights from this process that informed this Concept Plan include:

**Housing Development**
- Housing needs to be well designed, more compact and green.
- Emphasize access to quality parks, green space, walking tails, even if private yard space is more limited. Provide choice, preserve green space, affordability.

**Agricultural and Natural Land**
- Should be preserved for food security and maintaining the regional character.
- Should discourage urban encroachment on any farm or sensitive area greenspace.

**Environmental Programs**
- The City of Fort St John wants to become an environmental leader through the use of sustainable and environmental best practices whenever possible.

Through a survey during the MetroQuest process, residents’ top priorities were identified as: neighbourhood safety; environmental concerns; compact development to conserve greenspace, energy etc.; and alternative transportation choices.
Purpose and Process for the Sustainable Neighbourhood Charrette

Image 2: Participants at the Charrette Stakeholder Workshop

Resulting from the Council and Community direction in Vision 20/20 and the Comprehensive Development Plan recommendations, the City determined that it needed to conduct a community Sustainable Neighbourhood Design Charrette to be framed by the community based sustainability values that have arisen from the previous visioning exercises and process. The Charrette was focused on developing a Concept Plan for a specific 37 ha Plan Area, which is identified in the Concept Plan. The goals for the Concept Plan, informed by the charrette process, were:

- A very open slate!
- Convert site to primarily residential use
- Integrate plans with the hospital site where practical
- Integrate spatial and system design
- Develop guidelines with broad potential
- Focus on implementation
- Be sustainable ...

The charrette process, background information, and design instructions are outlined below. For detail refer to the Design Brief in the Appendix.

The Charrette was scheduled at a preliminary conceptual planning stage for the Sustainable Neighbourhood, in order to create an inclusive, interactive and creative way for all interested parties to work together through the planning process. Experience has been that a positive outcome tends to results from stakeholders’ active engagement in creating the ideas for the plan: stakeholders not only accept the plan, but they actively support and demonstrate a strong interest in implementing the Plan which they helped to create. The charrette process includes the development of visual representations and guidelines through an interactive dialogue between City staff and the community. The consultation team brings in expert design, facilitation and sustainable planning skills that support the public decision making process and representation of the plans and designs being created in the Charrette.
The intent of the Charrette’s community process was:

- To adopt a proactive and engaging planning process;
- To create a new neighbourhood that embodies the community’s long-term goals and objectives; and
- To demonstrate new sustainable planning approaches and methods that can benefit the Peace River region.

The multitude of ideas, designs, and visual representation that emerged from the Charrette process have been explained in this Concept Plan. The purpose of the Concept Plan is to present the outcomes on the process in the form of guidelines and recommendations that can be used by the City and future developer to implement a community based, integrated sustainable neighbourhood plan that remains true to the intent of the participants and the hard work they invested -- and significant progress and results that were achieved-- over the 4-day Charrette period.

An important responsibility of the consulting team in the neighbourhood planning Charrette process was to ensure that the outcomes from the public process are interpreted into an understandable, implementable guide for City staff, the broader public, and the development community. This is accomplished with the development of this Concept Plan.
End-State Goals: A Guide for Sustainable Community Planning

The Sustainable Neighbourhood community planning process was initiated with a workshop focused on End-State Goals, in October 2009. End-State Goals are more than principles for sustainable planning; they represent general sustainable planning concepts for the community to consider and understand during the initial neighbourhood plan visioning stages. The End-State goals represent the macro final condition the community would like to see their neighbourhood, area, or City resemble. The End-State Goals were an important component of the Charrette process because they helped to create the framework and vision to organize the planning and design Charrette. The End-State Goal workshop, led by the consultant team, was an opportunity for mutual learning. City staff were introduced to the charrette process, and the consultant team learned more about the site and important community context.

The following 10 end-state goals framed the Charrette Planning and Design Goals:

Residents Can Work, Shop, and Play Close To Home.
Homes are close to basic community services, places of employment, and amenities. The connectedness of street layouts and pathways provide easy and safe access to all points within each neighbourhood. Public spaces tend to be alive day and evening. The mix of land uses contributes to a strong property tax base. A surprisingly small amount of land is dedicated to commuter roads, parking and rights-of-way.

Residents and Workers Frequently Choose To Move Around Without a Car, since they find many other options as convenient, comfortable and more affordable. People can choose to walk, cycle, take transit or use neighbourhood electric vehicles, without any significant loss in time or convenience. Healthy options like walking and cycling are attractive to many individuals, especially in warmer weather. With lots of homes close to jobs, transit is economically viable. Youth, seniors, and people with disabilities are independently living within each neighbourhood. Even the downtown neighbourhoods are free from congestion and pollution. Residents everywhere are coping well with the higher price of fuels, and the flexibility of choice helps to make the community more resilient to sudden shortages or price hikes.

Ecological Functions within the Neighbourhood are Preserved and Enhanced: Sensitive Areas Are Protected, and Residents Have Easy Access to a Diversity Of Natural Landscapes And Green Spaces.
Development respects, maintains, and restores the natural functioning of the landscape, especially rivers, streams and wetlands. Landscaping includes multi-layered plantings that actually increase net habitat for many species, relative to pre-development conditions. Trees, gardens and hedgerows have become
cost-effective ‘green infrastructure’ contributing to a quieter and more pleasant micro-climate, shading buildings, cleaning and retaining storm water flows and improving air quality.

The Natural Resource Demand by Each Neighbourhood Is Consistent with the Long-Term Capacity of the City’s Infrastructure and the Region’s Resource Base.

Flows of water, materials and energy into and out of neighbourhoods are minimal. Residents conserve naturally, buildings and vehicles are efficient and climate sensitive, and infrastructure systems loop and cascade resources through multiple uses. The low operating costs of green buildings and infrastructure contribute to the long-term quality of life of residents, and the competitiveness of the municipality and its businesses. Efficient use of resources also reduces the city’s vulnerability to shortages in supply, sudden price hikes, and new environmental regulations.

Housing Meets the Needs of the Whole Community

A variety of housing provides affordable and attractive choices for all the people who make up a community, including families, empty nesters, single parent families, childless couples, seniors on fixed income, and one-person households of various ages. Housing choices allow residents to live in a community throughout their life, and let people of varying income levels choose to live near their work, favourite schools, and other amenities.

Each Neighbourhood Is Designed And Managed To Complement And Enhance Performance Of Surrounding Land Uses, Including Adjacent Neighbourhoods And The Region As A Whole.

Financial incentives and other policies help to ensure that the design features of buildings, parcels and whole neighbourhoods supports regional targets for infrastructure loading and ecological carrying capacity. Deficiencies and scarcities in one neighbourhood are intentionally remedied during the design of neighbouring sites. The pace and scale of new development is controlled to avoid dislocating existing businesses and services.

Neighbourhoods are prepared For Emergencies, and are inherently Resilient When Faced With Major Changes in the Outside World.

Emergency planners are prepared for surprises, and for a range of plausible disasters. First responders live within the neighbourhoods. Each neighbourhood has the capacity to withstand sudden temporary shortages of water, food, energy and other critical services. Residents and businesses are comfortable thinking about risk, and know how to respond and
work together. Urban planners and engineers are pro-active, and have designed
neighbourhoods so they are flexible, capable of adapting with ease to changes in climate,
technology, demographics and economic conditions.

Every Neighbourhood Is Distinct: The Spirit of the Whole Community is Honoured
A strong local identity is rooted in the long history of the community, its pioneering traditions, culture and natural features. This sense of place is reinforced in the design of the built environment, and the manner in which
neighbourhoods are integrated into urban, rural and natural surroundings. Gateways, and other
prominent features of neighbourhoods, serve to reinforce the character of the community and Peace region. Design pallets for buildings help local designers play with the key themes, and evolve an increasingly distinctive style appropriate to the region.

Neighbourhoods are Designed and Operated to Minimise Crime, and to Provide Residents and Visitors with a Safe, Secure Environment.
CPTED (crime prevention through environmental design) principles guild all development on site, so connections
between buildings and open spaces encourage community members to watch out for each other. Buildings and facilities offer individuals the level of control they need to feel safe at all times. Neighbourhoods work together to assist people with physical addictions and mental problems, providing everyone in need with a warm safe place to sleep, and access to social services.

Everyone Has a Voice in Directing Community Development: And Key Stakeholders Regularly Collaborate On How to Align Future Policy
Community members are engaged early and continuously in planning, design and development. Local and regional
governments facilitate a positive, active level of engagement. Governments, public agencies, businesses, utilities and community organisations come together on a regular basis to discuss long-term policy, and where consensus exists, to align their plans, policies and programs.

Design Objectives Informed the Charrette Process
For each of the ten End-State Goals, the Design Brief (in Appendix 1) explains the rationale for these goals by referring to the existing municipal policy in the Official Community Plan, and the community’s related input in MetroQuest and Vision 20/20 processes. For each of the ten End-State Goals, the Design Brief also includes a series of corresponding design objectives to be accomplished by the Charrette Team, in order to meet the goal within the Plan Area. These
objectives provided the Charrette Team with parameters and direction for their collaborative design work. See an example below, End-State Goal 2. Refer to the Design Brief in the Appendix for detail.

**Image 3: Example of End-State Goal No. 2, and associated design objectives.** For more refer to the Design Brief in the Appendix.

**Participation in the Charrette**

The participants on the Charrette Team are listed in the Acknowledgements section. Members included the designers and planners from private practice and local government, engineers, experts in local utilities and environment, Fort St. John residents, neighbours of the Sustainable Neighbourhood site, developers, and students.

The design team, shown as the “Inner Table” in the image below, worked together for the 4-day charrette, both as a whole and in various sub-groups. The “Outer Table” was assembled for periodic participation in parts of the process. The purpose of the Outer Table was to expand the sum capability of the design team, and to involve a wider network of people in the process. Members of the public were also invited to join in the process by giving their thoughts about the design solutions that were achieved during the Charrette Process.
Key Information about the Sustainable Neighbourhood Site

This section provides a snapshot of information about the site area: physical information and conditions, applicable land use regulation, and information about neighbouring lands for context.

Snapshot of the Sustainable Neighbourhood site

- 37 ha in area, owned by the City of Fort St. John
- Located between 86th Street and 79th Street, and the continuation of 108th Avenue and the continuation of 115th Avenue; except the lands dedicated to the hospital, a private property on the NW corner of the mentioned quarter-section, and the City’s water reservoir.
- The land has been allocated by the City for implementation of a sustainable neighbourhood
- On adjacent land to the south of the Sustainable Neighbourhood, the city has provided land for a new hospital to be constructed by Northern Health. The hospital site is 16 hectares in area.
Plan 1: The Sustainable Neighbourhood site in context with the community of Fort St. John

Image 5: Photographs of the Sustainable Neighbourhood site
• Topography: grade is most prevalent on the eastern portion of the site, where the road access to the north/east could be limited by road grade. The reservoir, on the eastern edge of the site, is the highest elevation in Fort St. John.

Image 6: Fort St. John topographical landscape, with Sustainable Neighbourhood site indicated by a star

• The site is currently undeveloped. A water supply reservoir is located on the eastern edge, and is not in the Sustainable Neighbourhood area.
• The site is not in the Agricultural Land Reserve.
• An estimated value of the site was $3.8 million, for unserviced lots. Further valuation exercises will need to be undertaken in the development process (see Next Steps section).
• Existing land use policy: The site is currently zoned as A1 “Agricultural”. A1 allows minimum of 12 acre parcels, with one single detached dwelling and one accessory dwelling. The City of Fort St. John has determined that the future use of the site should be principally residential.
Neighbouring Lands - Context Information

Brief information about the lands surrounding the Sustainable Neighbourhood site is provided below. The Charrette explored the appropriate interface with these surrounding lands, and recommendations are in Part 2 of the Concept Plan, under the subheading ‘Coordinated Development with the City as a Whole and with Neighbouring Lands’.

Southern Regional Lands, Adjacent to Site

The Regional Lands, located just south of the Hospital Site are approximately 200 hectares in area. The Regional Lands were proposed for heavy industrial use. However, through a recent regional community consultation process it has been recommended that this site not be zoned for heavy industry.

Northern and Eastern Lands, Adjacent to the Site

These lands are currently within the Agricultural Land Reserve (ALR). The use of the lands is regulated by the provincial Agricultural Land Commission (ALC) to protect the lands for agriculture and encourage the use as such. The site is bordered by 119th Ave, which functions as a route for freight transport including dangerous goods. Application has been made by the property owner to remove the land east of 119th from the ALR.

Western Lands, Adjacent to the Site, and the 112th Ave Connector

This is an important interface and future connection with the Sustainable Neighbourhood. These lands have recently been developed with single-family detached dwellings. The development of the Sustainable Neighbourhood will result in the extension and connection of 112th Avenue.

Figure 1: Excerpt from Zoning Bylaw Map (Bylaw 1977, 2008) indicates current A1 zoning
eastward, which will functionally connect the western lands with the Sustainable Neighbourhood.

Commercial Development Context

The City of Fort St. John’s OCP policies on commercial development are outlined below. This information provides some important context for the type and quantity of commercial development that could be considered for the Sustainable Neighbourhood.

Current City Commercial Areas, as identified in the OCP:

- **100th Street Traditional Commercial Node**, represents the local “downtown” and entails a wide range of retail, office, financial, institutional, service, entertainment, food & beverage, and accommodation uses, as well as multiple family residential, and social & cultural facilities, all concentrated within the core area of Fort St. John.
- **96th Street Mall Area Commercial Node**, at 92A Street and 100 Street and north of the Alaska Highway which encompasses primarily retail, entertainment, accommodation, service, and food & beverage uses.
- **Chuill Triangle Commercial Node** is City’s primary commercial node, located between, 116th Street and 108th Street and 100th Avenue, encompassing the area big box type retail facilities and other highway oriented commercial uses which require large sites for parking and storage.
- **Southeast Entrance Commercial Node** means the area immediately west of 72nd street near the intersection of 72nd Street and the Alaska Highway which accommodates a power centre concept, including uses such as big box stores, outdoor malls, visitor accommodation, and uses catering to travel and transportation needs.
- **Highway Commercial** includes automobile oriented uses that need good highway exposure and convenient road access. These uses generally include motels, restaurants, tourist attractions, service stations, and auto repair facilities.

Estimated capacity and suitability of commercial uses in the Sustainable Neighbourhood:

Currently there are no commercial services accessible by walking, short cycle or drive of the Sustainable Neighbourhood. There are no local commercial and neighbourhood services in close proximity to the existing residential areas to the west and south of the Sustainable Neighbourhood. In reference to the End-State goals, it makes sense to plan for shopping and working opportunities close to home, and to develop this new neighbourhood to the benefit of adjacent neighbourhoods. Thus some commercial land use seems very appropriate for the new development.

The City is currently working to revitalize the downtown area of the City to strengthen a sense of local community in the City core. It is important that any new commercial development, in or near the proposed Sustainable Neighbourhood does not compete, but complements the revitalization efforts of the downtown. This would mean encouraging small local and service commercial along the 112th Ave. and 86th St. Area, and avoiding any destination shopping or city-wide attractions in this new area.
Integration of appropriate commercial activities will require zoning for mixed use, residential/neighborhood commercial uses, and an appropriate Development Permit Area. Small commercial spaces, adequate for local markets, cafes and services, and offices, can be expected to meet local needs, including the area west of 86th Street. Services may also complement the hospital services, expanding on the health and wellness character of the neighbourhood. This type of locally oriented commercial activity is unlikely to compete with other commercial nodes, or the downtown revitalization project.

Commercial development is described in the Part 2 of the Concept Plan, under Land Use, as well as in Part 3 Design Guidelines.

Residential Development Context

The City of Fort St. John’s population is expected to grow for at least the next 40 years. Over the next ten years the projected demand for housing totals approximately 412 to 885 additional residential units in the rural areas; and of 617 to 1325 units in the urban areas. For more detail refer to the City of Fort St. John Comprehensive Development Plan (2005). The MetroQuest vision created by the community sees the gradual creation of more intense nodes of mixed development in key areas of the city, leading to more vibrant and walkable neighbourhoods. Under this scenario, the City of Fort St. John has sufficient capacity to accommodate much or all of the forseeable population growth within current city limits. The Design Brief that drove the Charrette process was developed in line with the knowledge and direction provided by this previous work.

Site History and History of Built Form in the City of Fort St. John

Fort St. John is the oldest non-native settlement in British Columbia, as well as being one of the oldest native settlements. The town's history dates back to Alexander Mackenzie's arrival in 1793. The region is now known as the traditional home of the Beaver people, one of several groups of Athapaskan-speaking people who lived along the route of what is now the Alaska Highway. The Beaver have always been a strong Nation connected to their territory as exemplified in 1898 when the Beaver Indians refused to allow stampeders to pass through their territory during the Klondike gold Rush. The following year, the Federal Government "negotiated" Treaty 8 with the Beaver and other affected groups. This treaty, however, is often criticized as one of the most flawed among such agreements.

In 1913, the first settlers arrived to take up land in the Peace River Block. The next major influx of people arrived in the late 1920s, when the 2nd Homestead Act allowed prairie farmers to settle in the Peace District after drought had wiped out their farms. The Second World War brought modern transportation to Fort St. John, with the building of the Alaska-Canada Military Highway (the Alcan). In only nine months, a tote road was pushed through to Fairbanks, Alaska, changing life along the route forever. The year 1951 marked the beginning of the region's fame as a major producer of oil and gas. Transportation improved at a rapid rate after that. In 1952, the Hart Highway finally connected the region to the rest of British Columbia, and in 1958, the Pacific
Great Eastern Railway arrived in Fort St. John. That ease of transportation has allowed the region’s agricultural and forest industries to compete in distant markets.¹

Image 7: Photos of historical building forms

Historical building forms in the northern Peace River area provide a pallet of styles and settlement configurations that are adapted to the climate and geography of the area, and offer a foundation for creating a distinct and coherent sense of identity for the Peace River Region. The various types of buildings and village settlement patterns that have grown up on the land over the last hundred and 50 years should be both adapted for new uses and referenced in new design.

It is interesting how early pioneers adopted some of the temporary construction styles used by first Nations as they traveled in search of opportunities for forestry, mining, and agriculture (see image above). Circular encampments were located on level areas next to open drainage areas or ponds – ‘coulees’. Individual farmsteads often developed into clusters or circles of buildings around the central yard, with a ‘main house’ or community store close to the centre. Forts and other official trading posts often developed first as a cluster of three buildings forming a common open ‘U’-shaped area, facing to the South. As settlements grew, villages developed wide thoroughfares along their main street or high street, allowing a variety of traffic, parking, organized activity and socializing.

Throughout a rapid period of growth and change from the 1900’s to today in Fort St. John, the predominant built form has only recently begun to vary from the early wood single family residential two-storey home, and the main street commercial development pattern.

¹ http://explorenorth.com/librarycommunities/canada/bl-ftstjohnhistory.htm
Site Servicing Context

Due to the location of the water reservoir on the eastern edge of the site, the upper area of the site will require the establishment of a new pressure zone, due to the existing topography and the vicinity of the water reservoir having an inadequate water pressure for both domestic use and fire protection.

The image below shows a tentative servicing plan for the adjacent hospital site.

Figure 2: Image of servicing plans (water, sewer, and stormwater) for the new Hospital Site directly south of the Sustainable Neighbourhood
Environmental Conditions

The Sustainable Neighbourhood site has a naturally occurring strong north easterly wind in the winter, and south westerly wind in the summer.

The City of Fort St. John has been noted as one of the sunniest communities in British Columbia. However the latitude limits solar exposure in the winter season, when the City receives an average of only 76 hours of sunlight per month. In this context it is important that climate sensitive design maximise solar exposure, especially in gathering spaces.

Throughout most of the year, Fort St. John has a mean temperature below the North American average. Climate-sensitive design reduces the impact of the wind and extends the period of comfort. During the winter season, Fort St. John receives some measurable amount of freezing precipitation on one day out of every three days. Climate-sensitive design ensures that snow and rain accumulate where wanted or can be removed quickly and efficiently, as addressed in the existing City of Fort St. John Winter City Design Guidelines.

Fort St. John’s sun and weather averages are shown in the image below.

Image 9: Environment Canada weather information for Fort St. John
Open Space, Park and Greenways

The environment and its well-being are important to City resident. The Official Community Plan (OCP) encourages environmental conservation, protection and enhancement. The City of Fort St. John has a wide variety of parks, natural areas and trails located throughout the City. The City owns approximately 82 hectares of parkland, including the Fish Creek Community forest, 3 baseball diamond areas, 3 park/playground combinations, 12 open areas, and 4 playgrounds, with an additional 9 playgrounds on school properties.

The Current City standards and park requirements are 3 to 3.5 ha of parkland per 1000 people.

Fort St. John residents support expansion of the current network of linking paths and trails for walking, bicycling and cross country skiing throughout the City. Residents have also indicated the need for enhancing protection for local environmentally sensitive areas throughout the City. A new recreation greenway to the south of the Sustainable Neighbourhood has become popular almost immediately. In addition, the need to preserve the environmental features and intrinsic ecological value on the site are recognized and respected in the Concept Plan. In particular see Part 2 Land Use section, under the subheading ‘Greenways, Open Spaces and Sensitive Areas: Preservation and Enhancement’, as well as the Design Guidelines.

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2 OCP pg 6  
3 OCP pg 28  
4 OCP pg 28  
5 OCP pg 28
PART 2: BUILDING A CONCEPT PLAN FOR THE SUSTAINABLE NEIGHBOURHOOD

This section outlines the proposed land use and systems design for the Sustainable Neighbourhood, as developed through the Charrette. The Plan is conceptual, which means that it deals with the broad issues of land use, density, form, amenities and connectivity – and the high-level implications and opportunities. The Plan does not address the detailed aspects of street and building design, nor do they address site specific issues of landscaping, and the character of the development as experienced by residents and visitors. After the Concept Plan is finalized, a next step is to refine the key concepts through a process of detailed design and master planning (see Next Steps section).

2.1. Broad Planning Implications for the City

Implications and Key Opportunities for Future Development

The implications of Sustainable Neighbourhood planning reach beyond the confines of the Sustainable Neighbourhood site. The City is very interested in developing an approach that can be tested and refined and eventually applied community-wide. The projected growth in population for the Fort St. John area, and the continuing strength of the local economy, makes this an especially opportune time to explore alternatives for residential development within the city. Planning and developing a sustainable neighbourhood can help to accelerate positive changes already occurring in the city, and also introduce new best practices. These benefits can be leveraged across all future development.

In essence the current neighbourhood plan is a learning demonstration. And as such, it warrants an extra degree of effort by the community as a whole, and collaboration with a full range of stakeholders. It is a microcosm for addressing many of the existing challenges within the city. And it is a ‘classroom’ where new approaches and new technologies can be introduced to the Fort St. John area in a controlled and gradual fashion, developing local skills and supportive policies, and providing residents and decision-makers with familiarity and confidence.

Past planning initiatives in the Fort St. John area have emphasized the importance of changing the planning practices particularly with regards to urban form, transportation, security, quality of streetscape, housing choices and affordability. A sustainable neighbourhood plan provides an important next step in this planning process, bringing these issues, and the broad community visions and goals, down to earth.
Some of the most important opportunities that are created by the sustainable neighbourhood plan are briefly summarized below:

- **An integrated design process that engages the full community.** Rather than following a traditional design process where experts make many of the decisions in advance, and then try to ‘sell’ these choices to the community, Fort St. John can follow a process of workshops, training and charrettes. This alternative engages local experts and knowledgeable residents right from the beginning in an integrative design exercise. Thus the design charrette that underlies this sustainable neighbourhood plan is part of the learning demonstration.

- **A planning framework that moves from visions to actions.** This demonstration provides opportunities to translate the visions developed by the community through MetroQuest and the 2020 visioning process. The first step is to create a set of clear End-State Goals, and compatible design strategies. Such a planning framework provides a rational and adaptive approach to creating a specific a neighbourhood plan that fits tightly into the larger needs of the community. By giving proper attention to goals at each stage of the process, alignment will be achieved between all of the policies and strategies on one hand, and the goals and visions on the other. In essence this neighbourhood plan is an expression of how visions can be translated into a living and breathing community.

- **A collaborative process to city building.** The workshops, charrettes and continuing design discussions for the demonstration neighbourhood can engage, in positive fashion, a larger group of stakeholders than is normally achieved through a more traditional planning process. The collaborative process creates opportunities for more synergy. This is especially relevant for a Sustainable Neighbourhood that is adjacent to regional lands with residential development, industry, a major transportation corridor, agricultural land and existing neighbourhoods in the city. Everybody needs to learn to collaborate if this neighbourhood is to be an implemented example of sustainable planning.

**Exceptional opportunities**

In addition to the general opportunities listed above, a demonstration neighbourhood offers an exceptional opportunity to address two of the most challenging issues currently facing Fort St. John:

1. **Firstly, how to densify a residential area?** The City needs a really successful example of how increasing density can improve quality of life, lower costs, enhance long-term sustainability and adaptability, and operate within the very extreme weather conditions that characterize the Fort St. John community. If this neighbourhood can achieve such objectives all at the same time, then it will be possible for the city as a whole to move forward much more firmly and rapidly with policies that support infill, neighbourhood renewal, densification rather than sprawl.

2. **Secondly, how to effectively contain the city?** Fort St. John needs a process and guideline for creating urban form that is efficient and lasting. Many towns and cities worldwide are struggling with sprawl, and the associated costs of servicing, commuting, loss of rural lifestyle and landscapes. In Fort St. John, on the edge of two extremely
beautiful river valleys, it is especially important to win this battle. The edge of the city needs to be defined and developed in ways that protect natural and agricultural areas, provide easy access to nature, and buffer land uses so they coexist in harmony. The Plan Area for the demonstration community represents an ideal opportunity to explore this issue, because the land is located right at the edge of the city. Moreover the adjacent agricultural land is currently under review for possible removal from the ALR and conversion to residential development. Hence the challenge for the demonstration is not just to develop a prototype sustainable neighbourhood, but to use that neighbourhood, and the collaborative planning process, to begin the process of establishing around the perimeter of Fort St. John a permanent effective urban boundary.

The outcomes of the Charrette, regarding community and regional implications resulted in the following recommendations:

- It is critical that the City (and Regional District) set permanent functional boundaries for their development and expansion. This will require edge planning and with real collaboration on policy.
- To accommodate all foreseeable growth, the city should develop infill existing areas, and plan some high-quality density developments such as the Concept Plan.

These issues were discussed in the Charrette, with a graphical image to show a potential future of uncontained growth. The implications of the alternative, which is uncontained development (i.e. no boundary), are not aligned with the community’s stated values and ambitions that are expressed in the End-State Goals for the community of Fort St. John nor are the implications affordable to the City. See image below.
Figure 3: An image of what uncontained development would look like, if there are no containment boundaries set

Plan 2: Creating an effective and permanent urban containment boundary

An effective and permanent urban containment boundary
A recommendation arising out of the Charrette is to consider expanding the scope of this sustainable neighbourhood demonstration to include the creation of an effective and permanent urban containment boundary.

Clarification of the long-term urban boundary provides important context to the neighbourhood design. For example, it is difficult to complement adjacent land uses when the use of lands to the east, north and south of the property are still unclear. The ultimate land use in these locations will have significant impact on the infrastructure for the neighbourhood, impacting circulation routes, amenities (like views and trails), and access to all kinds of services from shopping to nature trails. Adjacent land use also affects choices about what type of development should be allocated to the perimeter areas of the neighbourhood. In reality, it is very difficult if not impossible to complete a sustainable neighbourhood demonstration plan in this location without clarification of urban boundaries.

Not only are the urban boundaries important in terms of neighbourhood plan, but they also represent a major challenge for the city around the entire urban fringe as a whole. Because this particular neighbourhood is located on the perimeter of the city, and largely surrounded by lands that are undergoing transition, the site is an excellent opportunity to develop a robust set of guidelines and on-going collaborative relationships for urban containment decisions.

Expanding the scope of the exercise for urban containment policy could be achieved in three basic steps:

1. Organise a short workshop drawing from past practices in other areas, and incorporating the perspectives of key stakeholders in the Fort St. John area -- especially regional government, Agricultural Land Commission, provincial ministries, and affected public.

2. Organize a mini charrette to explore creative design solutions for using the sustainable neighbourhood plan to demonstrate effective urban boundary setting. Build upon the existing working relationships and goodwill from the design charrette, and on the information and ideas already collected.\(^6\)

3. Integrate the preferred design solutions into the sustainable neighbourhood demonstration project, and support the design solutions with policies that are aligned across all of the stakeholders.

Preliminary design solutions for an urban containment strategy

The Charrette generated a number of design options for the eastern edge of the sustainable neighbourhood site. A site tour was also made to better familiarize the design team with rural land uses and roads and views to the east and north of the neighbourhood. A preliminary design concept was developed, as shown in Plan 2. Improvements to this design concept should be

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\(^6\) It is not uncommon for design charrette to encounter difficult or complex issues that cannot be easily resolved within the time available. A common solution in such circumstances is to organize a short follow up mini charrette to engage key individuals in resolving the issue in ways that it can be re-integrated into the overall design.
possible through engagement by key stakeholders and a more thorough information collection exercise. The early design solutions offer a good place to begin. Some of the key features of the design concept are briefly described below:

- **Preserve the spectacular views to the northeast of the site.** For some people these views are even preferred to the views to the Peace River to the south. The views include both rural and natural land in a beautiful tapestry of colors and forms.

- **Take advantage of the views to the north and east.** Ideally many of the residential units that line 86th Street should be multi-storey units, with windows and balconies oriented in many directions, including the north and east. In addition the watchtower / citadel above the water storage tank should offer viewing platforms that allow visitors to enjoy the views to the north and east.

- **Convert 86th Street to a pedestrian friendly Parkway with traffic calming features.** Currently the majority of traffic on 79th is truck traffic bypassing Fort St. John. In the future it would be practical and efficient to route such traffic up 261st Rd., next to the train tracks, concentrating the goods movement into one location. A survey of the area suggests that it would be feasible to construct a connecting pieces road from 261st to the Northern bypass road. The few residences currently existing on 261st are set well back from the road and could be partially insulated from traffic noise through appropriate landscaping.

- **Connect the sustainable neighbourhood to the rural lands on the east of the bypass by creating an additional local road loop lined with multi-unit residential development (as shown on Plan 2).** The road loop could connect directly to the sustainable neighbourhood at the northeast corner, and into 112th Ave at the southern edge. This is essentially creates a large circulatory route around the neighbourhood, and a very pleasant edge to the city. The small incursion into the current ALR lands is warranted as a way to recover the costs of land acquisition and of converting the bypass into a Parkway. It also allows for the neighbourhood to be physically rounded-out, instead of cut abruptly on the east. The loop road gives the neighbourhood a face to the north and east. The additional residences that would it be located just to the east of the bypass road would not obscure the views from residences on the other side due to the changing topography. Everyone can benefit from the spectacular views in the area.

- **Create a permanent and fruitful relationship between the eastern edge of the sustainable neighbourhood, and the adjoining rural land.** This could mean establishing covenants on the agricultural property adjacent to the residential property that restrict uses to certain types of agriculture, and that allow for participation in agricultural activities by residents in the neighbourhood.
Image 10: Current Bypass looking south

Image 11: 261st, heading North from highway

Image 12: Railway crossing at 261st, looking east
Coordinated development with neighbouring lands

The Sustainable Neighbourhood Concept Plan demonstrates how a medium density residential development with a supported local commercial hub, and open space system can be planned. The implications of the Concept Plan must be considered in the context of the City’s overall growth management and phasing. The Concept Plan would yield approximately 932 residential dwelling units, and approximately 1922 people could live in the neighbourhood when it is built out. In addition, 6,000 sq m of space for commercial use (in mixed use commercial and residential form) would be developed. For the City to consider is how this new residential and commercial capacity fits with the City-wide development plans and anticipated demand.

The coordinated development of this neighbourhood with the adjacent areas is important. The working relationship and planning collaboration with the New Hospital Site is paramount, and is detailed in the following sections: Land Use and Systems; special Design Guidelines (Part 3); and approach to collaboration in Next Steps (Part 4). The Charrette outcomes and recommendations for some of the other adjacent areas are outlined below.
Areas 1 and 2 on Figure 4 Above (west of the site)
The development of the Plan Area will result in the extension and connection of 112th Avenue eastward, which will functionally connect the western lands with the Plan Area. The Sustainable Neighbourhood and the new hospital development will bring a vibrant commercial neighbourhood centre that links the existing and new neighbourhoods, as well as the shared community facilities (school, community centre, etc.), more transit service, etc.

Area 3 on Figure 4 above (South of the site)
Regional Lands to the South of the City lands were being considered for rezoning at the time of the Charrette. It was noted that previous public consultation around using these lands for industrial were not supported by the public. Recommendations from charrette participants for future use: retain a portion of the land in the ALR (particularly the wetter land directly adjacent to the existing greenway, and the stretch of connecting forested land running South of the greenway next to 79th ); rezone a portion of the Regional lands for low-medium density residential, mixed use development along 86th Street; and possibly some live/work or very light industrial and business zoning in the area adjacent to the ALR. There was no support for intensive industrial uses or truck parking on this site.

Area 4, East of the site
These lands are in the ALR. As discussed above, the Concept Plan proposes that the agricultural function continue on a majority of this land, and that a containment boundary and buffer be formed.
Green Connections

The Sustainable Neighbourhood site and adjacent ALR lands fall directly in the middle of important natural riparian and green corridors and parks. There are strong natural east-west riparian corridors, running on the north and south sides of the City, via the Stoddart Creek and Peace River. It was noted that throughout the City area, the north-south green or connecting riparian corridors could be stronger. It has been suggested that there is a better chance of connecting green corridors in a north – south orientation through the city to meet with the existing riparian east west corridors, in order to create a complete system.

The green corridor in the Sustainable Neighbourhood, which was identified in the Concept Plan, will ideally meet and continue through the hospital wetlands. This could become a significant north – south natural corridor for the city, if it is enhanced and an adequate box culvert is located at its intersection with the rail line and the highway intersection. According to local participants, this informal natural corridor is currently used by large and small fauna; enhancing it will protect and encourage future flora and fauna migration and speciation in the area, alongside increased human use.

2.2. Land Use

The City intends that the site be used principally for residential development, and the Charrette was geared to a ‘sustainable residential neighbourhood’ output. The land use plan presented in the Concept Plan resulted from the design instructions for a medium density residential neighbourhood, with a mixed use commercial area located in a synergistic location with the new hospital facility. There also three institutional facilities proposed, in close proximity to the mixed use ‘heart’ of the neighbourhood. The Land Use plan is based on an appreciation and preservation of the site’s environmental features, and an opportunistic approach to developing resilient systems.

Land Use Plan
Plan 3: Conceptual Neighbourhood Land Use Plan

Land Use Budget

The Land Use Budget for the Sustainable Neighbourhood includes 932 residential units and 6,000 sq m of commercial space, in addition to civic and institutional spaces and greenways for which areas are not quantified in the land use budget.

- The Land Use Plan could be considered “medium density compact mixed use”. It is substantially different than it would have been if the Plan Area has been planned for a traditional “low density suburban” model, in the following ways:
  - Almost twice as much commercial and community use area. And the commercial and community uses are mixed with residential units (apartments above commercial units) to bring a diverse mix of housing types, vibrant streets resulting from both residents and shoppers being concentrated in the same area.
  - A broader choice of housing types that appeal to people in different stages of the life cycle (young, old, family, single, family, etc.), incomes, and lifestyle preferences. In a low density suburban model the predominant type of housing is a single family house with some duplexes and apartments. In the Land Use Budget for the Sustainable Neighbourhood, about 40% of the homes are ground-oriented (meaning that residents enter their front door directly from the street: includes single family dwellings, duplexes, and townhouses), and about 60% of the units are apartments. The new neighbourhood in the Sustainable Neighbourhood will bring demanded variety to the
existing housing stock in Fort St. John which has lots of single family dwellings (55-61% of housing stock). None of the homes and lots in the neighbourhood will be large lot single family, but many of the dwellings in the neighbourhood will have a ground-oriented form that is familiar and consistent with the Fort St. John community character.

- More residential units, and a more efficient use of land. The gross density for this Land Use Plan is 28 units per ha (11.3 units per ac). On a broad density scale this is considered a moderate residential density; however in the Fort St. John context this represents a significant departure from the existing lower density development.
- A greater intensity of land uses is proven to result in the following benefits:
  - lower development costs per unit, and more units to contribute to land developments such as roads and municipal services, (see Cost and Value section),
  - a more climate-friendly neighbourhood, with energy savings due to the many attached units, and with a density that makes basic transit service viable,
  - a more vibrant and connected neighbourhood, with a variety of types of people, and a greater opportunity to easily access shops, schools, and recreation places, and
  - successful commercial areas that benefit from a local clientele and a local workforce.

### Table 1: Land Use Budget for the Sustainable Neighbourhood

<table>
<thead>
<tr>
<th>Plan Area (37 ha) General Land Use</th>
<th>Budgeted Area and Intensity for Land Use</th>
<th>Specific Unit Counts Associated with Land Use Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Neighbourhood (includes parks, schools, roads)</td>
<td>90% of Plan Area</td>
<td>56 mini lot single family (6% of total units)</td>
</tr>
<tr>
<td></td>
<td>occupies 33.3 ha (82.3 ac)</td>
<td>42 mini duplex lots (2 dwellings per lot = 84 units) (9% of total units)</td>
</tr>
<tr>
<td></td>
<td>932 residential units</td>
<td>108 single townhouses (12% of total units)</td>
</tr>
<tr>
<td></td>
<td>Gross density: 28 units per ha (11.3 units per ac)</td>
<td>138 stacked townhouses (15% of total units)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>516 apartment units (55% of total units)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 apartment units above commercial uses (3% of total units)</td>
</tr>
<tr>
<td>Commercial and community services</td>
<td>10% of Plan Area; 3.7 ha (9.1 ac)</td>
<td>6,000 sq m ((64,586 sq ft) commercial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= approx 15 units @ 400 sq m (4,305 sq ft) per unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Areas of community and institutional use have not been specifically calculated.</td>
</tr>
</tbody>
</table>
Intent and Rationale for Land Uses

Through the Charrette process the participants agreed that the Sustainable Neighbourhood should become a City pilot and model for sustainable neighbourhood planning in Fort St. John, exemplifying the best practice examples of a complete community.

Each of the land use types in the Land Use Plan (Plan 3) forms a part of the larger whole for the sustainable neighbourhood, and is outlined below:

- Residential
- Mixed Use Residential and Commercial
- Civic, Culture and Institutional
- Greenways, Open Space and Environmentally Sensitive Areas

Residential Land Use

The majority of built form in Fort St. John is single detached dwellings. In the 2001 census, single detached housing made up 55-61% of the housing types developed in Fort St. John. Only 35% of the housing stock in the last census was multi-family and the majority of this was apartment buildings. The community has expressed the need for a wider range of housing options and an increase in the numbers of Multi-Family Dwellings:

The City of Fort St. John’s policy and direction is that the Sustainable Neighbourhood should be used primarily for residential. The Charrette participants determined that the site should emphasize a wide range of multi-family housing styles, to expand the limited current design type and pattern of townhouses and small apartment blocks in the City. A wider variety of housing options serves the aging demographic in our society, smaller family size, different types of household composition, and a wider variety of household incomes.

The following types of residential land use for the Sustainable Neighbourhood are outlined below:

- Mini Lot single family residential (approximately same dimension and size as R1A zone)
- Mini Lot, Zero-lot-line Duplex style layout
- Townhouses, 2 or 3 floor individual
- Townhouses, 3 storey stacked
- Low-rise apartments (3 to 4 storeys)

Mixed use residential use is also included in the Land Use Plan, and addressed below in a separate section “Mixed Commercial and Residential”.

During the Charrette a number of residential housing types were discussed, and each of the types has not been specifically included in the Concept Plan. However, the residential land use types that are not represented are included in the Appendix, for future reference and application. The Concept Plan is a work in progress, and these housing forms may be useful for future iterations of the Plan, or for other sites in Fort St. John.
Mini Lot Single Family Residential

The “mini-lot” single family residential housing type is approximately the same size and dimension as the existing small lot zone (R1A) in Fort St. John. This housing type will provide for smaller lots and smaller footprint homes, while still preserving single family qualities. It will bring lower cost family homes as an alternative to large lot detached homes. It will also encourage intensive and economical use of streets, utilities and services. In ground services will be provided through a green service corridor system for residential neighbourhoods. Parking will be via street-accessed single-car garages.

Table 2: Profile of Mini Lot Single Family Residential

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
<th>56</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>North eastern area</td>
</tr>
<tr>
<td>Gross density</td>
<td>18 units per ha (7 units per ac) gross density</td>
</tr>
<tr>
<td>Lot Dimensions</td>
<td>12.2 m (40 ft) width x 25 m (115 ft) depth</td>
</tr>
<tr>
<td></td>
<td>The lots, particularly front yard, are shallower than existing R1A zone</td>
</tr>
<tr>
<td>Lot size</td>
<td>305 sq m (3,283 sq ft)</td>
</tr>
<tr>
<td>Building size</td>
<td>220 to 300 sq m (2400 to 3200 sq ft)</td>
</tr>
<tr>
<td>Uses</td>
<td>single family residential, home office</td>
</tr>
<tr>
<td>Orientation</td>
<td>emphasis on orientation of homes to the street</td>
</tr>
<tr>
<td>Access and Parking</td>
<td>Possible rear lane system for utilities; street widths in the area are narrower than standard local road</td>
</tr>
<tr>
<td>Open space</td>
<td>greenways connect the neighbourhood and provide environmental services (e.g. stormwater)</td>
</tr>
<tr>
<td>Servicing</td>
<td>Municipal</td>
</tr>
</tbody>
</table>
Mini Lot, Zero-Lot-Line (Duplex Style Layout)

Each dwelling unit occupies its own lot; the units share a wall (hence the name ‘duplex’) on the shared property line. Both the homes and garages are duplex, reducing construction costs and saving heating energy.

Table 3: Profile of Mini Lot, Zero-Lot-Line Duplex Style Layout

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
<th>42 duplex buildings, for a total of 84 dwelling units on 84 lots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>These dwelling types are located in the central area of the upper slopes of the Sustainable Neighbourhood; also some of these units are located to the west closer to the community centre.</td>
</tr>
<tr>
<td>Gross density</td>
<td>23 units per ha (9 units per ac)</td>
</tr>
<tr>
<td>Lot Dimensions</td>
<td>9m (30 ft) width x 30m (100 ft) depth</td>
</tr>
<tr>
<td>Lot size</td>
<td>270 sq m (2,906 sq ft)</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Building size</td>
<td>120m (1300 sq ft) to 200 sq m (2200 sq ft)</td>
</tr>
<tr>
<td>Uses</td>
<td>Duplex residential, home office</td>
</tr>
<tr>
<td></td>
<td>One dwelling per lot; the two units’ shared wall is on the property line.</td>
</tr>
<tr>
<td>Orientation</td>
<td>Shared wall of duplex is built on the property line.</td>
</tr>
<tr>
<td></td>
<td>The building plans can be slipped and shifted to create more private entries.</td>
</tr>
<tr>
<td></td>
<td>Option to construct a green utility corridor at back, no utilities buried under street (except stormwater as necessary). Residents see the green utility corridor as part of their back yard, thereby extending their virtual territory. The green corridor is a shared space for: children’s play, walking, biking, cross-country skiing etc.</td>
</tr>
<tr>
<td>Access and Parking</td>
<td>Single vehicle garage (half of a duplex garage) and one off street parking space in forecourt.</td>
</tr>
<tr>
<td>Open space</td>
<td>greenways connect the neighbourhood and provide environmental services (e.g. stormwater)</td>
</tr>
<tr>
<td>Servicing</td>
<td>Municipal</td>
</tr>
</tbody>
</table>
Image 15: Typical layout for mini-lot duplex type of housing

Cross Section through
S.F. Mini Lot Neighbourhood 1:200

Image 16: Conceptual section drawing for a series of mini-lot duplexes
Townhouses, 2 or 3 floor individual (i.e. not stacked)

This is a townhouse option that could be achieved under existing RM1 zoning, possibly with small modifications. It is a somewhat more compact concept than townhouses currently seen in Fort St. John. It results in compact homes that have private street entrance. This type tends to be chosen by younger and older populations with one to three person households (e.g. single person households, couples without children, households with a small child, and active seniors capable of using stairs regularly), and also lends itself to spacious home offices as an optional use for a portion of the available indoor space.

With shared multiple walls, there are advanced energy efficiency standards.

There are lower per unit development and servicing costs / unit than single family and duplexes.

Table 4: Profile of Townhouses, 2 or 3 floor individual

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
<th>108 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>These townhouse units are mixed in (on larger lots) with the previously described duplex lots. This type is also located on the lower slopes of the neighbourhood, near the neighbourhood centre. There are also some of these types of dwellings in the north-west quadrant near the single family lots.</td>
</tr>
<tr>
<td>Gross density</td>
<td>36 units per ha (12 units per ac)</td>
</tr>
<tr>
<td>Lot size</td>
<td>Minimum lot size approximately 1,200 sq m (3,937 sq ft), which approximately yields a 6 unit townhouse development</td>
</tr>
<tr>
<td>Building size</td>
<td>Unit widths are approximately 5m (16ft) to 8m (25ft). Unit floor area is approximately 90 sq m (1000 sq ft) to 160 sq m (1800 sq ft). Usually two storeys in height</td>
</tr>
<tr>
<td>Uses</td>
<td>Residential, home office</td>
</tr>
<tr>
<td>Orientation</td>
<td>Row houses, each with a street entrance. Units usually share sidewalls</td>
</tr>
<tr>
<td>Access and Parking</td>
<td>Shared vehicle garages plus off street parking spaces. Garages may be at back (lane) with a common courtyard at front (see site plan below)</td>
</tr>
</tbody>
</table>
Open space | Units share some congenial street space or common courtyard for social contact.
---|---
Servicing | Municipal

Image 17: Typical "courtyard" site layout for townhomes

Image 18: Typical layout of townhouse - ground floor
Townhouses, 3 storey stacked

This townhouse type results in compact homes that maintain a private street entrance. This housing form tends to mix the generations in a healthy way: units on the ground floor are often chosen by seniors for the ease of single-story living; and upper floor units (which occupy the 2nd and 3rd storeys) tend to be selected by couples without children, households with a small child, and active seniors capable of using stairs on the upper floors.

Table 5: Profile of Townhouses, 3 storey stacked

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
<th>138</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>In the area with lowest elevation and close to 112th and the community centre. Some units of this housing type are also located along the east boundary of the site, optimizing views of the river valley.</td>
</tr>
<tr>
<td>Gross density</td>
<td>40 units per ha (16 units per ac)</td>
</tr>
<tr>
<td>Lot size</td>
<td>Minimum lot size approximately 1800 sq m (19,376 sq ft), which approximately yields a 10 unit development.</td>
</tr>
<tr>
<td>Building size</td>
<td>Unit widths are approximately 5m (16 ft) to 8 m (25 ft).</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Unit floor area is approximately 80 sq m (900 sq ft) to 1500 sq m (1500 sq ft)</td>
</tr>
<tr>
<td></td>
<td>Buildings are usually three storeys</td>
</tr>
<tr>
<td>Uses</td>
<td>Residential, home office</td>
</tr>
<tr>
<td>Orientation</td>
<td>Stacked row houses, each with a street entrance.</td>
</tr>
<tr>
<td></td>
<td>Ground floor units are single level (with optional basement) and have level street entrance and private patios. Upper units are two floors and have street stair entrance.</td>
</tr>
<tr>
<td></td>
<td>Units usually share sidewalls</td>
</tr>
<tr>
<td></td>
<td>Ground floor units have a private terrace and upper units have private balconies and rooftops.</td>
</tr>
<tr>
<td>Access and Parking</td>
<td>Shared vehicle garages plus off street parking spaces.</td>
</tr>
<tr>
<td></td>
<td>Garage entrances may be from street or lane</td>
</tr>
<tr>
<td>Open space</td>
<td>Units share some congenial street space for social contact</td>
</tr>
<tr>
<td>Servicing</td>
<td>Typically use a lane system for servicing.</td>
</tr>
</tbody>
</table>
Image 21: Section drawing of a stacked townhouse - single-level unit on ground floor, and 2-level unit on 2nd and 3rd storeys

Image 22: Plan drawing of stacked townhouses

Low-Rise Apartments (3-4 storeys)

This housing form already exists in Fort St. John. It has the merit of appealing to the needs of many types of households: seniors and the disabled who cannot or do not wish to maintain a detached home or townhouse; those who wish to live in smaller, simpler units; those with lower incomes; and those who are not permanently located in the community. An elevator to single-storey units (which can be designed as accessible, see Design Guidelines) makes the building accessible. It can be achieved under existing RM1 or RM2 zones. Shared walls and floors
contribute to energy efficiency. This type of housing has lower development and servicing costs / unit than any other housing form.

Table 6: Profile of Low-Rise Apartments (3 -4 storeys)

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
<th>516</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>Eastern area</td>
</tr>
<tr>
<td>Gross density</td>
<td>Approximately 50 units per ha (20 units per ac)</td>
</tr>
<tr>
<td>Lot size</td>
<td>To be determined, depends on lot layout</td>
</tr>
<tr>
<td>Building size and type</td>
<td>Typical buildings are 3 storey, wood framed, with a shared street entrance. New Building Code provisions would allow for 4 storey, wood framed, buildings. RM1 zone height limit would have to be amended to allow 4 storeys. Unit floor areas vary from approximately 40 sq m (500 sq ft) to 90 sq m (1000 sq ft), and vary in configuration from bachelor to 2-bedroom units.</td>
</tr>
<tr>
<td>Uses</td>
<td>Residential, home office</td>
</tr>
<tr>
<td>Orientation</td>
<td>Common entrance from the street</td>
</tr>
<tr>
<td>Access and Parking</td>
<td>Shared vehicle garages plus off street parking spaces. May use a lane system for servicing and parking</td>
</tr>
<tr>
<td>Open space</td>
<td>Easily incorporate shared facilities such as meeting rooms, fitness and laundry, as well as outdoor space</td>
</tr>
<tr>
<td>Servicing</td>
<td>Municipal</td>
</tr>
</tbody>
</table>
Figure 5: Spatial Layout of Residential Land Use Types. In general the density is lowest in North and higher in south and west where the ground is level and activity is more intense. The residential types and forms are mixed throughout the neighbourhood.

Mixed Residential and Commercial

A mixed use—residential and commercial—land use includes both residential units located above street-level commercial street fronts, and live-work studios. The purpose of this land use type is to create attractive, fine grained commercial street fronts with apartments above, using shared street entrances. With a variety of uses round-the-clock occupancy is more likely and street activity more vibrant for a safe and congenial community. The residential component provides a more ‘urban village’ type of apartment choice. Also, live-work studios could be accommodated beyond what is presently allowed in C1 Zone and Home Occupation Definitions. Advanced building energy efficiency standards result from this efficient use. The commercial component and vibrancy is critical to creating a neighbourhood with sustainable attributes. More specifically, the close proximity of different uses enables a choice of travel, the mix of uses creates a vibrant local economy, and the mix of people and activity, daytime and evening, creates a more interesting environment and greater social capital.
### Table 7: Profile of Mixed Residential and Commercial

| Qty in Sustainable Neighbourhood | 30 residential apartment units, above commercial  
6000 sq m (64,586 sq ft) total combined commercial units |
|----------------------------------|--------------------------------------------------|
| Location in Sustainable Neighbourhood | Particularly appropriate to the commercial frontage along the new 112th Ave corridor north of the hospital, and on 86th.  
Location criteria is that neighbourhood or local needs can be met in a walkable radius from a predominantly residential area, and where neighbours can meet while shopping or dining etc. See discussion in the System section, ‘Transportation’ for Walkable Radius Plan.  
Mixed -use residential/ commercial sites are successful where there is already a natural, active node in the neighbourhood, such as a place where recreation, parks, community centers, corner stores or a major civic feature has already begun to be developed or will be developed in the near future. In other words, successful siting for this zone occurs when the development is planned for a location where people are already going to, or will be going to, such as the planned hospital site, which is also across from an active sport park and greenway. The multi-use residential/ commercial zone further activates a node where additional neighbourhood amenities are already occurring in the neighbourhood. |
| Density | Floor Area Ratio (calculation: total floor area divided by total lot area) approximately 1.2 |
| Building size and type | Small units are preferred to maintain neighbourhood scale and encourage local business, markets, and services that build neighbourhood character and add to the uniqueness of the streetscape. Large external franchises can degrade the ownership of the space by the local neighbourhood.  
Commercial unit frontage widths should be restricted – approximately 5m (16ft) to 12m (40ft)  
Size of apartment units on upper storeys may vary. |
| Uses | Ground storey: commercial. Not designed to compete with major existing commercial nodes, but rather to complement them and allow for the creation of local character. Uses should be pedestrian oriented, meet the needs of local residents, and generate activity at all times of the day and evening in order to create a vibrant streetscape and neighbourhood.  
Upper storeys: residential, home office; or live/work (combined use or single use) |
Orientation

The mixed-use neighbourhood creates a street level civic space. This is not meant to compete with major commercial nodes, but complement them and allow for the creation of local character.

Street oriented commercial frontage with minimal setback from a sidewalk.

Residential units are 2nd and 3rd storeys above and typically set back from street front. Shared street entrance (lobby).

For more, see Design Guidelines.

Access and Parking

Access to parking from the rear, and street parking for commercial uses.

Open space

Residential units generally have roof terraces and balconies above the commercial units. Residential units with a view of the street make for “eyes-on-the-street” safety.

Servicing

Municipal

Typically use a lane system for servicing.

Image 23: Mixed Use Residential and Commercial development – an example of streetscape

Civic Cultural and Institutional Uses

The development of civic and institutional land uses in the Sustainable Neighbourhood will increase the value and interest of this new neighbourhood to the community as a whole. Since the property is owned by the City of Fort St. John, there is an expectation that when the site is developed the City will use the concepts in this Plan to ensure the maximum community benefit. The specifically proposed land uses have been referred in the Charrette as ‘amenities’, and it was
acknowledged that their development will require funds or land that may be leveraged from the development of the site and community partnerships.

The Charrette process identified that civic, cultural and institutional uses should be located within the most active part of the Sustainable Neighbourhood. These community uses will be vibrancy generators for the neighbourhood. The specific civic, cultural and institutional land uses are outlined below: an educational center, a community garden, a community centre, and a soft interpretive component in the natural area around the reservoir. Also see Design Guidelines and Next Steps sections of the Plan for more.

Figure 6: Locations for key civic, cultural and institutional uses

The Campus: A Multi-Generational and Multi-Use Education Facility

Through conducting a 10 minute walking radius from the site a future need was identified for a school to serve the future residents of the Sustainable Neighbourhood and residents in the recent development west of the site. The participants and representative from the School Board and University of Northern BC emphasized that the growing trend in multi-generational and multi-use education facilities was a promising direction for the educational facility here. Location is shown on Figure 6.
Figure 7: Artistic interpretation of multi-generational multi-use education facility includes college, library, daycare and school

Multiple uses of this facility can include:

- Daycare
- Youth Centres
- Post Secondary satellite education
- Elementary or secondary education, depending on need
- Library
- Summer science program
- English as a Second Language (ESL) programming
- First Nations and Continuing Education Programs
- Strong Start Program

Potential partners for the development of this facility were also identified:

- University of Northern BC / Northern Lights College / School District #60
- North East Community Resources
- North East Native Advancing Society (NENAS)/ Treaty 8
- Metis society / Friendship Centre
- Northern Health, for youth programming
Saa maa coulee: A combined Neighbourhood Centre, and a Community, Art and Culture Centre

In the location that became known during the Charrette as the *Heart of the Neighbourhood*, a need was identified for a community, art and culture centre. This civic and cultural centre is an opportunity to meet community need for these uses on the City-owned property through the development process. Through the conceptual and design development of this space, the Beaver name *Saamaacoulee*, which means *Edge of the Sun*, was chosen to celebrate the First Nations Heritage in this area and the location’s viewscape across the City. Location of the Centre is shown on Figure 6.

![Saa Maa Coulee Neighbourhood Centre](image)

**Figure 8: Conceptual ideas for the Saa Maa Coulee Neighbourhood Centre**

Community, art and cultural uses and programming in this community centre are expected to vary to meet the demands of residents and in response to the initiative of individuals and groups. Based upon the design charrette discussions, likely uses include a farmers market, organized and informal indoor sports, small studio rental space, daycare space, a work-out gym operated through City of Fort St. John Leisure Services, and youth programs. More specific uses might include:
(a) Recreational use, including rental space:

- Volleyball
- Racquet sports
- Indoor Basketball and Soccer
- Yoga
- Indoor young adult sport space, ie. Skate/bike park and/or climbing wall

(b) Arts and cultural uses:

- Year round farmer market
- Small theatre space
- Rental art studios
- Potters area
- Weavers and quilter area
- Local art gallery

Potential Partners for the Centre were also identified:

(a) Recreation partners: organized sport leagues, sport and leisure services

(b) Arts and culture partners: Arts Council; Irish, Scottish, tap ballet dance groups; potters and weavers guilds; quilters guild, Stage North; Farmers Market; music instruction groups, a potential private art gallery.

Civic Use: Community Educational Garden and reconstructed Heritage Farmstead

The site’s history as an historic farm site was recognized as significant to plans to preserve and enhance a unique neighbourhood character. To ensure that this important history is celebrated and carried forward in the development and use of the site, a Community Educational Garden concept has been developed. Components include a community garden, a demonstration or education garden, and an area garden composting site. Location is shown on Figure 6.

Suggested uses include:

- community learning garden
- demonstration garden
- community garden with individual plot rentals
- petting zoo
- North Peace Fall Fair
- Fort St. John Farmers Market

Identified project partners include:

- Horticultural Society
- Northern Environmental Action Team (NEAT)
- 4H
- Community Garden Society
Civic Use: Public Look Out at the Reservoir

The view from the crest of the hill, on top of the reservoir was agreed to be one of the most valued locations on the site. Participants and the visiting elected officials explored many options and ideas regarding the best public use of the reservoir site. Ultimately the more active and intense options were rejected, and consensus was reached on preserving the reservoir as a safe container for drinking water, and as a quiet site for views and contemplation by all City residents. In addition it was imagined that around the reservoir on the south and west could be located a multi-functional low-impact green area to serve the neighbourhood.

To optimize the existing building it was imagined that a free standing rampart could be erected around the reservoir, with corner view platforms, and with a board-walk and railing for safe movement around all sides. A light fabric could be mounted (like tents) over the reservoir itself to protect the water supply, prolong the durability of the structural membrane, and provide an evocative visual form to complement the neighbourhood theme and to provide a more distinctive sense of place. Some angle parking and an on/off lane could be provided next to 79th. The end result might be a kind of ‘citadel’ for the City that would offer easy access to visitors and residents wishing to share in the spectacular views of neighbourhood, City and surrounding lands.

Greenways, Open Spaces and Sensitive Areas: Preservation and Enhancement

As the title for this land use type indicates, this land use type is two-fold: preserving ecological features, and enhancing nature for recreation and appreciation.

Through the Design Charrette process, participants outlined important site sensitive natural areas, view corridors, areas requiring enhancement, and internal green pedestrian path connectors.

An Ecological Systems Approach was followed to identify natural areas and green corridors for development and preservation. This approach involves mapping the natural green corridors, sensitive areas or habitat and riparian systems from the outset of a planning process. The map is used as a base layer for spatial design of the neighbourhood’s layout, and the interconnectivity and viability of the natural areas and green corridors remains intact.

Greenway Corridor – Preservation, and pathway along edge of corridor

Through local and current knowledge of the site, it is known that a natural occurring green corridor intersects two old irrigations ponds (dugouts) to the west of the site, and have naturally re-vegetated with wild vegetation. A spring ecological and endangered species survey is recommended for this area of the site. This corridor was identified as an important route for moose, deer and bear to move across the larger regional natural systems. In the larger of the dugouts, where natural vegetation has grown up around the pond, there is an active magpie nest that needs adequate buffering from development.

For guidelines on co-existence of objectives for ecological preservation and recreational trail access, see Design Guidelines, Transportation (trails).
Green Buffers / Screens

- Buffer for density transition and neighbourhood enhancement
- A 5m wide planted, tree-buffer is recommended between the new medium density neighbourhood and the adjacent low density private property to the north of the site and in the north-western corner of the site. The buffer would be a development requirement.
- Planted vegetation buffer to mitigate offsite impacts of both new neighbourhood and neighbouring agricultural land on each other. A buffer will ensure the separation and protection of the ALR lands from encroaching residential and industrial development and to protect future owners form farm aerial spraying, farm runoff and noise pollution associated with working farms, such as large equipment and blueberry canons. Best practice examples from other municipalities average a 15m green buffer, with at least one row of planted large shade trees to be located on the private property and incurred at the expense of the developer. Increasingly municipal ALR buffer policies are to not accept cash-in-lieu of planting.

Grass Land Open Space: Preservation and Enhancement

The crest of the hill around the current reservoir represents local prairie grass habitat. A protected open space area of 10 to 15m around the reservoir (following natural contours of the hill) is reserved for gardens of natural prairie grass vegetation is to be protected and enhanced. A natural path should be constructed around the reservoir to ensure public access is confined to a limited area. A passive interpretive center (e.g. signage) on the prairie grass ecosystem is to be installed.

For information about green streets, trails, and stormwater systems see Systems section and Design Guidelines (Part 3).

Figure 9: A conceptual drawing from the Charrette of contextual green connections and natural areas
Views

The retention of view corridors in the concept plan is a fundamental design objective which has been achieved through two over-arching strategies. First, the road system is primarily a series of arcs following the contours of the hill. This produces dwellings arrayed on the slope so that most have a view to the south and west. These are all single depth, ground entry units, so all have front and back windows. And second, multi-level townhouses primarily border the site to the east, overlooking the river valley. This optimizes the number of dwellings that capture that special view.
Phasing of Development

The Fort St. John Community Comprehensive Development Plan (2005) outlined community priorities to guide development phasing for the city as a whole. These priorities formed the principles for determining phasing of the Sustainable Neighbourhood, which were then fine-tuned to meet the site’s particular infrastructure and development feasibility needs.

At the October 2004 public meetings we obtained input on development and phasing principles. In general, there was solid support for most of the principles. While all the principles were seen as valid, we were able to rank the principles from highest to lowest, as set out below:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (highest)</td>
<td>B. Develop close to existing areas of similar types of development before expanding into newer areas (e.g. new industrial next to existing industrial)</td>
</tr>
<tr>
<td>2</td>
<td>A. Develop close to existing roads, water, sewer, power and other utilities, and gradually build outward</td>
</tr>
<tr>
<td>3</td>
<td>F. For uses that require good highway or rail access, develop closer to the highway or rail corridor first, then grow away from the corridor</td>
</tr>
<tr>
<td>4</td>
<td>E. Allow uses that do not require community sewer system and community water system services to develop in areas that do not have those services</td>
</tr>
<tr>
<td>5</td>
<td>D. Promote more compact forms of development to avoid urban sprawl</td>
</tr>
<tr>
<td>6 (lowest)</td>
<td>C. Establish phasing patterns that work to reduce travel times and distances for residents/employees</td>
</tr>
</tbody>
</table>

The participants gave the highest level of importance to Principle B which indicates we should develop close to existing areas of similar types of development before expanding into newer areas.

Principle A was also given a high level of importance. This principle means we should develop close to existing roads, water, sewer, power and other utilities, and gradually build outward.

Image 24: Excerpt from Comprehensive Development Plan (2005) - Phasing Principles

During the Charrette Process, possible phasing scenarios were explored based on different perspectives and emphases:

- **Views**: maximising development phasing that reduced the impact of views over subsequent development phases under construction
- **Servicing**: maximizing development phasing that takes the ease of servicing and access to existing infrastructure into consideration
- **Market conditions**: maximising the development of housing types that will provide developers with the greatest return on investment.
Figure 11: Three phasing schemes explored at the charrette: views, servicing, and market conditions

The following direction for determining phasing was developed to integrate the priorities from both the Comprehensive Plan and the Charrette:

- Develop close to existing roads, water, sewer, power and other utilities and gradually build areas further away.
- Develop mixed-use commercial areas and sites, before single family residential. Unlike neighbourhood commercial, mixed-use residential/commercial, is supported by its own residential units. In addition, the proposed mixed use location on 86th and 112th location will be further supported by the current development to the west, which is void of any local, walkable commercial. For this reason, this area needs to be the first phase of development along with the hospital.
- Develop complementary built forms, styles and heights, when adjacent to previous edge development
- Promote more compact, complete development first, to ensure that new greenfield developments are not car dependant.
- Prioritize development adjacent to institutional and facilities development to allow for roads and works development cost sharing or development cost credits.

Using the above phasing criteria and prioritization, the following Phasing Plan outlines the areas to be developed in chronological sequence:

**Phase 0** – The mixed-use commercial development along 112th should develop at the same time as development across the road on the hospital site. It is not clear when that would be, but it should be as soon as possible and before the majority of the residential unit construction occurs. Similarly, the public amenities will be developed as the opportunity arises.

**Phase 1** – The higher density developments along 112th and adjacent to the hospital would be the first phase of development as this is the most accessible, produces the higher return on investment and maximises existing servicing.
**Phase 2** – The residential areas on the southern slopes of the site

**Phase 3** – The residential developments on the northern parts of the site would develop last as these are more difficult to service and are furthest away from existing development.

Plan 4: Conceptual Neighbourhood Phasing Plan
2.3. Systems Plan

Introduction
The charrette process involved several specialists and practitioners in systems, who explored the physical flows for energy, water and waste materials. Their collective knowledge and exploration about resource impacts and opportunities informed the spatial layout and design of the Sustainable Neighbourhood.

The cost analysis (refer to Value and Cost section) illustrated that infrastructure costs can be reduced through wise layout and design during planning. Various systems can be integrated (e.g. water supply system integrated with street design), and the infrastructure system investments can become part of the local neighbourhood character and success (e.g. intentional street design for a vibrant community will enhance the vitality and success of businesses in a mixed use area). The results and opportunities for innovation in system design and layout are explained throughout this section.

The Charrette process paid special attention to the long term costs and benefits, and to the ecological changes and constraints that are likely to occur over the lifespan of the neighbourhood as a result of factors like climate change, economic fluctuation, societal changes and influences, and innovations that emerge.

The systems for the sustainable neighbourhood that are outlined in this section are:

- Multi-modal transportation
- Energy
- Municipal systems: water, stormwater, and sanitary

Multi-Modal Transportation System Plan

Multi-Modal Transportation System Intent
The transportation plan created for the Sustainable Neighbourhood is shaped by multiple intentions and factors, including

- intent to connect to neighbouring areas including the hospital site, and to the rest of the city
- topography: the steepness of the site, particularly the north-east part of the site; and a desire to work the transportation routes into the contour of the site
- strong intent for a sustainable transportation system that gives equal priority to multiple of transportation choices
- combined function of the transportation system to coordinate with the stormwater and municipal services
Figure 12: The closely spaced yellow topographic lines in the Sustainable Neighbourhood site area indicate steeper slopes on the east and north-eastern part of the site.

Figure 13: Context for Neighbourhood Transportation Network - excerpt from the City of Fort St. John Transportation Network Plan.
Plan 5: Conceptual Transportation Network Plan for the Sustainable Neighbourhood

Street Types

The intent and function of each of the types of transportation route are described below. Each type is represented on the Transportation Network Plan (above) in specific locations. The cross-section designs for the street types are included in the Design Guidelines section of the Plan. The intent of each street type is to move people by whichever mode they choose: in vehicles, on bikes, walking, scooter, etc.

Boulevard: Mixed-Use and Street Beautification

The boulevard is intended for the area located along 86th St. and along the 112th Ave. extension in the western portion of the site, where the mixed-use residential/neighbourhood commercial will be located. (This hub area is close to the education facility and the community garden, as well as the hospital.) The boulevard also serves as a main route to reach the residential areas.

Note that the conceptual connection of the Boulevard with the 79th Street Bypass (as shown in the Transportation Network Plan, Plan 5) would require further study due to the hill in the area. An intersection in this area would need to meet requirements and good design standards for sight distances.
This street type accommodates a mix of people travelling by different modes of transportation, and perhaps transferring from one mode to another while they are in this area. The street functions not only to move people, but also as a civic space to meet and mingle. There are smaller and more intimate spaces (local roads and green connectors) that filter away from this main boulevard as well, which lead people between their various destinations.

Components of this street include:

- green boulevard
- street-side transit exchange
- sidewalk and pedestrian area
- 2 lanes of vehicle traffic, plus provision for on-street parking

See Design Guidelines for a conceptual cross section of the boulevard street type.

**Local Green Streets**

Local Green Streets are located the residential core of the development. The layout of the streets follows the contours of the site; this minimizes disturbance of the site’s topography, and ensures that the roads are not too steep for walking, cycling, etc. The street function is to move residents to and between homes and neighbourhood destinations by multiple modes of transportation. When travelling by non-motorized vehicle people may cross over the local green streets and neighbourhood path connectors (below). The street system also has a function to convey municipal services for the neighbourhood. The water and sanitary services will be underground, and the stormwater will be led to swales on the downhill side of the streets.

Especially in a winter climate, rear service lanes in residential areas could present a challenges for snow removal particularly if the lanes are narrow (6 metres is suggested), and are a low priority for snow removal. A decision for (or against) implementation of rear lanes would require further discussion and evaluation with respect to the value to the front streetscape that a rear lane offers (no driveway crossings, no garages, less off street parking along front of houses) versus the valid snow-clearing and practical challenges.

A rear green utility corridor design (differentiated from rear lane because residents would not access utility corridors by vehicle) could offer some compromise. While a green utility corridor design still implies that garages are accessed from the fronting local green street (a negative, from a pedestrian-friendly street design perspective), it would not necessarily need to be cleared for vehicle access in the wintertime since residential vehicle access would not be required. When there is no snow, the corridor could provide bicycle access and outdoor ‘common’ space among neighbours. When there is snow, perhaps the corridor would be used for cross country skiing and walking.

For a cross section of local street type, see Design Guidelines.
Non-Vehicular Pathways

Neighbourhood Path Connectors
Between all cluster and multi-family developments, pedestrian green path connectors will be built, at the expense of the development, to ensure adequate pedestrian circulation, through each development and between developments and local road systems. These connectors will be secured by right of way.

Trails
Multiple use non-motorized trails will traverse the neighbourhood, to serve both recreation and commuting purposes. See Transportation Design Guidelines for suggestions on accommodating both cyclists and pedestrians.

Transit and Carpooling
It is anticipated that transit will service the neighbourhood along the Boulevard, with a major roadside stop and facility on the Boulevard near the mixed use area and the hospital. A small transit shuttle service throughout the neighbourhood may be a possibility into the future: BC Transit will work with municipalities to provide transit service from new areas of sufficient residential and employment density, to key destinations within the community. The density of the neighbourhood is spatially planned with higher-density residential types in the western and southern portion of the site, in close proximity to the hospital and mixed use areas. This concentration of density could be expected to create sufficient demand for transit at build out. The hospital will be a significant demand generator for transit service, to the benefit of neighbourhood residents in the new and existing neighbourhoods. For more on transit thresholds refer to BC Transit (e.g. http://www.bctransit.com/corporate/resources/pdf/res-urban-20.pdf). Perhaps incentives to use transit could be included with the sale of lots, and with students at the education facility. Carpooling among residents could be encouraged with preferential parking for carpool vehicles. For more ideas see Design Guidelines, Transportation.

Walking and Cycling
As shown in Figure 14 above, the neighbourhood’s scale allows for convenient walking and cycling the area, and ability to reach shops, school, transit stop, etc. A rule of thumb for a walkable distance is considered approximately a five-minute walk for many people in average conditions, which equates to about 400 metres. Research shows that many people will also walk up to about ten minutes (approximately 800 metres) to reach a commercial centre or other destination, if the route is pleasant and safe. This underscores the importance of pedestrian friendly street design, and the availability of short-cut walking routes (path connectors, trails) in the neighbourhood.

Of course the relative speed of cycling makes slightly longer travel distances viable, if there are good routes and facilities for bikes like bike lanes, good quality bike racks, etc.
Figure 14: Walkability Radius for the neighbourhood. The centre point of the walking radius is the planned Transit Stop.
The intent of scoping an Energy System is to identify possible energy sources and explore any feasible opportunities for the Sustainable Neighbourhood to pursue a variety of energy sources and a neighbourhood system. See Design Principles for information about designing for energy efficiency at a site and building level.

There is a strong case for the City to engage in energy system design, with the Sustainable Neighbourhood as a pilot project:

1. **Public Interest** – The marketplace for energy is typically outside or local control, and is not secure about long term conditions and plans. A local community, particularly the Energetic City, can be leaders and work in concert with many players to figure out how to use energy resources in optimal ways that helps maintain public interest at a time of rapid change, increased foreign ownership and deregulation.

2. **Air Quality** – Air pollution is almost entirely related to energy emissions and, thus, a sustainable long-term energy system design is also a pathway to improving air quality.

3. **Climate Change Protection** - A majority of Fort St. John’s energy supply is provided by fossil fuels in the form of natural gas, propane, and transportation fuels. The burning of these fuels results in increased concentrations of carbon dioxide, methane, nitrous oxide, and ozone,
trapping radiation in the atmosphere and contributing to global climate change. Energy system design can help a community like Fort St. John to manage the transition to renewables, and use the precious, relatively clean and rapidly diminishing fossil fuels like natural gas as a bridge to the future.

4. **Smart Growth** – This style of development which is proposed in the Concept Plan simultaneously improves livability while reducing dependence on fossil fuels (i.e. the automobile), and creating opportunities for more efficient energy generation and distribution within the community.

5. **Community Economic Development** – Energy system design can include investments that create local jobs and businesses, for example in the operation of neighbourhood or regional energy supply systems where the money is circulated locally. Energy investments also serve to reduce lifecycle costs and increase comfort and health of buildings and infrastructure. Businesses and homes cost less to operate and the work force becomes more productive and satisfied.

6. **Resiliency and Security** – Lessened demand for energy can reduce the community’s vulnerability to major increases and fluctuations in fuel prices, and possible fuel shortages in the future. An energy strategy can also ensure some critical amount of local energy generation to help see the community through disasters or unexpected interruptions in supply.

**Energy Opportunities Explored**

As shown in the Energy Possibilities map below, a number of energy possibilities for the Sustainable Neighbourhood were explored.

**Solar:** The City of Fort St-John has been recognised as one of the sunniest communities in BC. However, Fort St-John receives an average of approximately 76 hours of sunlight per month during the winter. Solar energy is most applicable at a site and design level, for passive and thermal energy. For more on this see Design Guidelines, Energy.

**Wind:** There is limited potential for wind energy generation on the site. However, further consideration of wind energy potential on ridge located to the north-west of the site is warranted. A larger wind farm project is underway 20 km to 30 km west of the site.

**Natural Gas:** available, non-renewable and diminishing but relatively clean resource.

**Waste Heat:** A unique opportunity for an energy network on this site is to tie in the new hospital through an agreement, as this facility would provide a significant and long-term waste heat source.

**Biomass:** Due to business competition and confidentiality it is challenging to assess the available sources and potential. In Fort St. John some biomass sources were identified including the oriented strand board (OSB) plant and sawmill, both located in the south east part of the City.
Figure 16: Energy Possibilities plan, used for exploring possibilities at the Charrette

District Heating System – What it is

- Multiple fuel sources can be adjusted due to respond to shortages in types of fuel (e.g. natural gas), price, and regulatory requirements.
- Used for space heating and domestic hot water (also potentially cool water).
- It minimizes the heating equipment and space demands in buildings.
- The basic idea is to create an energy precinct, i.e. the Sustainable Neighbourhood, where most buildings will ultimately be connected to a district energy system. The system is designed to evolve over time, at low cost. Buildings are required to be constructed with technology suitable for district energy, including exterior connection hardware and plumbing for district hot water, cool water and electricity. A district energy facility is located within the energy precinct. Phase One of the district energy system begins with a single, all-purpose natural gas fired boiler, sized to meet the first phase of development. Boilers are added as needed. As the development builds out, and demand aggregates, Phase Two begins with the addition of a co-generator to supply base electrical loads in addition to hot and cool water, and the boilers become back-up systems. Natural gas is supplemented with another energy source that ultimately becomes the predominant energy source for the energy precinct.
Energy System Options related to the Sustainable Neighbourhood

Three main energy system options exist at various scales. To pursue the appropriate choice, the City would need to do some further research and deliberation. The main question to ask, and answer, is whether there enough heating load and demand within the applicable area.

A) A larger-scale district energy system could be further explored for set-up and operation, and include the Sustainable Neighbourhood. A district energy facility, i.e. a biomass plant, could potentially be established on an industrial site that is located in relatively close proximity to the Sustainable Neighbourhood (~1km). Wood fibre and chips sourced from the local area would be burned at the facility. The ~1km distance to the Sustainable Neighbourhood may result in approximately 1% heat loss over the distance of travel. If this option was to be further considered, the City would need to consider if there is a sufficient heating load and demand to justify the project. Also, in keeping with the principles of a firm growth boundary, the City would need to be clear that the property between the subject area and the district energy facility would not be developed.
**Figure 17: Scoping ideas for a District Energy Facility**

B) **A smaller and centralized district energy loop** could be set up for the Sustainable Neighbourhood and the Hospital. Using a hospital as the starting point for an evolving district energy system is a common strategy. Hospitals have a large base load, and require back-up boilers and professional staff. By connecting the surrounding residential and commercial heating and energy demands to the hospital, it becomes possible to create significant economies of scale with widespread improvements reliability, adaptability, space requirements, energy consumption, emissions, and costs. The viability of this option depends on the hospital’s interest to be part of the system, and the City’s confirmation of its commitment (as a land owner, and government) with respect to the Sustainable Neighbourhood.

C) **Reduced energy demand, at a site scale.** The imperative to reduce energy demand at a site level is a strong outcome of the Charrette process. This strategy is recommended to be implemented throughout the neighbourhood for certain, and it can occur either with or without a district energy system or loop (a and b above). As outlined in the Design Guidelines Energy section each home in the Sustainable Neighbourhood will be constructed to meet a progressive energy standard for efficiency, oriented for maximum solar access, and wired to be solar ready.

**Transportation**

A walkable neighbourhood is a key part of a progressive energy plan for the Sustainable Neighbourhood, because it significantly reduces vehicle trips and greenhouse gas emissions. It takes twice as much energy for someone to commute by single occupant vehicle from home to workplace, as the energy that is needed to operate an office building. A neighbourhood with transportation choices is achieved by creating an intensity and mix of land uses within close proximity (see Land Use Plan), and a system of streets and paths that cater to non-vehicular transportation modes as well as cars (see Transportation). Over time it may be possible for the neighbourhood’s central civic facilities to expand to include a car co-op, ride-share system, and shuttle system.
Municipal Systems: water, stormwater, sanitary

Current State: Municipal Servicing

The OCP prioritizes servicing priority for the residential development in areas where servicing is linked to existing infrastructure, minimizing excessive servicing costs to the rest of the City.

The site is currently undeveloped. A municipal water reservoir is located on the highest point of the site (eastern edge). The site is not currently serviced by the municipal water, stormwater, and sanitary systems. As part of the hospital development, the area will be serviced with potable water, storm drainage system, and sanitary sewer along 112th Avenue and 86th Street. Those services will be only be installed on the perimeter of the subject site. Therefore, internal services for the neighbourhood will be installed at a later date with corresponding development phases.

Municipal Servicing: Future

The intent for municipal water, stormwater, and sanitary sewer service systems is to work with the natural features and ecosystem of the Sustainable Neighbourhood. The approach is to view the system products as resources to be used, rather than an inconvenience to be carried away. A “green infrastructure” approach reduces the impacts of development on a community’s water resources, and mitigates against the impacts of climate change (e.g. higher magnitude and increased frequency of storm events). Inherent values include:

- minimizing the life cycle cost of the systems
- protecting the environment, and where appropriate enhancing recreation opportunities
- protecting habitat
- maintaining stream hydrology and stream water quality
- minimizing the amount of soil that is carried offsite by water (sedimentation)

A green infrastructure approach includes both natural infrastructure (e.g. wetlands, open areas) and engineered infrastructure systems that humans design to imitate what nature does, and to lessen the impact on the ecological system (e.g. swales for drainage and reducing the velocity of runoff so that it does not harm streams and habitat).

While principles are useful, their application to a unique site such as the Sustainable Neighbourhood is essential. The attributes to be mindful of in the Sustainable Neighbourhood include:

- sloped site, particularly the eastern part
- clay soils that limit the infiltration of water
- peak stormwater events are summer storms and spring melt
- environmentally sensitive areas
Since the site is currently in a natural state, the build out of the site (roads, buildings, etc.) will certainly alter the hydrology of the site. Approval processes and permits will be required. Suggested practices include:

- Adopting the principle of minimal impact to the aquatic environment by adhering to the Land Development Guidelines for the Protection of Aquatic Habitat (Ministry of Environment, Lands and Parks) and Water Land and Air Protection stormwater management guidebook.
- Design of stormwater discharges should be based on Best Management Practices in the publication titled “Urban Runoff Quality Control Guidelines for B.C. (Ministry of Environment, Lands and Parks)”
- Creating a “green design” incentive for development

The above principles have been adopted by the District of Uclulet. While Uclulet obviously has different conditions and application, the exploration of these principles may also be helpful to the City of Fort St. John. A general resource on green infrastructure planning is The Green Infrastructure Guide (2007) by Susan Rutherford, West Coast Environmental Law:


Water Systems: stormwater and potable water

Stormwater

Two approaches to stormwater management were discussed during the charrette: a buried pipe for stormwater, and a swale system. Both warranted consideration. While a swale brings the advantage of a natural system that is described above, the frozen water could be an issue during cold times of year. Also, the impermeability of clay soils limits the effectiveness of the swales’ capacity to infiltrate water but still serve as a conveyance control to reduce runoff volume. A third consideration is that the swales require a considerable width of space within a road right-of-way, and require particular design attention to allow driveway crossings and prevent vehicle parking etc. in the swales.

Since the Sustainable Neighbourhood site slopes, the design of swales (e.g. along streets) must be designed appropriately for this system to function. As shown on the Conceptual System Plan above, a tiered series of swales are recommended to be designed and installed to gather rainwater and runoff, and convey the water to lower elevations. The maximum design conditions are during summer thunderstorms and during the spring thaw. As shown on the Plan below, detention areas are planned. These pond / detention areas would likely be dry for parts of the year, and would contribute to the open space system.

See more about stormwater design, in Design Guidelines, Water.
Plan 6: System Plan – stormwater, sanitary

Figure 18: The site slopes and drains surface water westward, generally
**Potable Water**

Due to the existence and location of the water reservoir at the highest elevation of the site, the upper elevations of the site located beneath the water pressure zone and will require a pump station to be installed to service the neighbourhood with a potable water supply.

Buildings will be designed to use water efficiently, and to raise the consciousness of occupants to water use with meters. See design guidelines for more about water efficiency at a site and building scale.

**Sanitary Sewer**

The neighbourhood sanitary system will connect with a sanitary main on 86th street.

There was some discussion at the Charrette about the opportunity to develop a solar aquatic treatment system on the site as a demonstration and education project. The proposed location was in the community garden area, in the western most part of the site. This on site system would treat effluent to advanced secondary and tertiary standards through a series of aerated translucent tanks that host plant communities and aerobic microorganisms, by duplicating a natural water purification process of wetlands. Wastewater is circulated inside a greenhouse through a series of clear tanks, each with its own aquatic ecosystem, and marshes. In this treatment process, sunlight, oxygen, bacteria, algae, plants, snails and fish work together to purify the water. The super-clean effluent from these systems can be used for irrigation or groundwater recharging or disinfected and used to flush toilets.
2.4. Creating a Site Model

A computer software program for mapping and design, called Sketch-Up, was used to develop a preliminary model of the Concept Plan. The site parameters (size, topography, etc.) were input into the program. Then the Concept Plan elements and spatial information was provided (e.g. which types of housing, how many units, and where). The output is a three-dimensional accurate model, which provides a sense of the proportional scale of the proposed development and how the elements conceptually relate. Since the model is meant to be conceptual there are no indications of features and character; buildings are represented by boxes (with scaled height). Three views of the sustainable neighbourhood are shown below.

Figure 19: Neighbourhood Plan Model, Plan View
Figure 20: Neighbourhood Plan Model, View from Southwest

Figure 21: Neighbourhood Plan Model, view from the East
2.5. Analysis of Cost & Value

Defining two scenarios

The development costs and value of the Sustainable Neighbourhood was analyzed two ways for comparison. The “baseline scenario” is a typical low density neighbourhood as exists in Fort St. John. The “sustainable neighbourhood scenario” is an alternative that incorporates the principles and recommendations that arose from the Charrette process. The analysis was done with the CMHC Life Cycle Costing Tool For Community Infrastructure Planning, a calculator that allows scenarios to be run for a whole neighbourhood. The calculations are very comprehensive, including typical capital and operating costs for utilities and services including roads, water, sewer, garbage, schools, recreation facilities, public transit, private vehicle use, fire protection, policing, etc. Interest rates for lending, tax rates and service revenues etc. are also calculated. Lifecycle costs are annualized (converted into an annual cost) over a 75 year period allowing for operation, maintenance and replacement of all utilities. All costs can be allocated to a per household basis.

All cost and services demand assumptions were the same for the two calculations. The only differences were that the sustainable neighbourhood scenario has a smaller neighbourhood street width, green stormwater infrastructure and green roofs on public buildings (reducing the size of stormwater infrastructure), and higher energy efficiency standards for buildings. Of course the sustainable neighbourhood scenario also has a higher density and greater mix of housing types and land uses. Table 8 below compares the two scenarios.

a) Baseline Scenario - Low-Density, primarily Single-Family Residential and Apartment

A simple mask method was used to assess the road and lot layout and number of units that would typically be developed on this site. A scaled “mask” was created and placed over an existing neighbourhood near the site that has mostly single family homes as well as parks, etc. The approximate number of lots and length and type of streets captured inside this mask was counted, allowing for a school and community centre etc. The three elements that were then added were a small strip of commercial uses along the 112th Ave. extension north of the hospital site, some duplex lots close to the 112th extension to the east, and several small scale three-storey apartment buildings in the southeast quadrant, just east of the hospital site. These apartment buildings are meant to be seniors oriented, and were assumed to be typical of those found on relatively small RM1 lots elsewhere in Fort St John.

Public open space was limited to parks, school grounds and street rights of way.
b) Sustainable Neighbourhood Scenario - Medium Density, Varied Housing Forms and Mixed Use

The sustainable neighbourhood plan developed in the October 2008 Charrette was the basis of the second scenario. A 3D model was developed from the workshop sketches, using a variety of housing forms listed in the Residential Section above. Though the precise, detailed neighbourhood design was not established, zoning areas, building forms, street types and public buildings are scaled accurately so that the outcome is a plausible result. Generally this is a much more compact plan than the baseline scenario. Buildings are more tightly packed, with more public open space between. There are several more uses and building types than in the baseline scenario. And neighbourhood streets roads are narrower, according to Canadian Alternative Development Standards.

The sustainable neighbourhood plan includes:

- a small area of large-lot single family,
- a number of small areas of min-lot duplexes,
- a few small areas of two storey townhouses,
- several areas of three storey stacked townhouses,
- 3 or 4 storey apartment buildings along the east part of the 112th ave extension,
- A seniors oriented district of 3 or 4 storey apartment buildings to the east of the hospital site,
- A row of mixed use commercial units with apartments above, along the 112th ave extension, just north of the hospital site
- A school and a community centre,
- A public lookout at the water tower
- Energy efficient homes (built to a standard higher than R-2000)

Public open space is integrated and multi-use, including greenways, community gardens, bike path/ cross-country ski trails and a large commons around the school and community centre.
### Table 8: Comparative Statistics for the 2 Scenarios

<table>
<thead>
<tr>
<th>Factor</th>
<th>Baseline - Low Density</th>
<th>Sustainable - Medium Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Area</td>
<td>37 Ha (93 Ac)</td>
<td>37 Ha (93 Ac)</td>
</tr>
<tr>
<td>% Residential Area ¹</td>
<td>94</td>
<td>90</td>
</tr>
<tr>
<td>% Commercial and Community Service</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Area of Parks</td>
<td>App. 2.7 Ha</td>
<td>Not estimated. Multi-use open space.</td>
</tr>
<tr>
<td>Single Family Units</td>
<td>188</td>
<td>56</td>
</tr>
<tr>
<td>Duplex Units (large lot)</td>
<td>72</td>
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</tr>
<tr>
<td>Mini-lot Duplex Units</td>
<td>0</td>
<td>84</td>
</tr>
<tr>
<td>Townhouses (2 St.)</td>
<td>0</td>
<td>108</td>
</tr>
<tr>
<td>Townhouses (3 St stacked)</td>
<td>0</td>
<td>138</td>
</tr>
<tr>
<td>Apartments (3 or 4 St.)</td>
<td>144</td>
<td>516</td>
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<tr>
<td>Apartments Above Commercial (mixed-use)</td>
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<td>30</td>
</tr>
<tr>
<td>Commercial Units</td>
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<td>15</td>
</tr>
<tr>
<td><strong>Total Residential Units</strong></td>
<td>368</td>
<td>932</td>
</tr>
<tr>
<td><strong>Gross Unit Density U/HA (U/Ac)</strong></td>
<td>11 (4)</td>
<td>28 (12)</td>
</tr>
<tr>
<td>Adult Population</td>
<td>682</td>
<td>1542</td>
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<tr>
<td>Children Population</td>
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<td>380</td>
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<td><strong>Total Population</strong></td>
<td>888</td>
<td>1922</td>
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<td>Neighbourhood Roads- compact (lin M)</td>
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<td>Collector Roads (lin M) ²</td>
<td>3200</td>
<td>1930</td>
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<tr>
<td>Arterial Roads (lin M)</td>
<td>920</td>
<td>920</td>
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<tr>
<td><strong>Total Roads (M)</strong></td>
<td>4120</td>
<td>5260</td>
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</table>

1. Includes roads, parks, schools etc. associated with residential
2. Includes two types of collector roads, one 17M ROW and one 15M
Analysis of costs and value for the scenarios

Baseline Scenario - Costs and Value

**Figure 22: Baseline Scenario - Initial Capital Costs**

**Discussion:** Using typical costs for roads, sewers, water supply, schools and other services, the baseline scenario results in about $36,000 in initial capital costs for each residential unit. The estimated cost of a stormwater pond is included in “green infrastructure”. The estimated cost of a water pumping station is included in “user defined costs”. Note that roads dominate the capital costs.

**Figure 23: Baseline Scenario - Annual Operating Costs per Unit**

**Discussion:** Using the capital costs developed above, the baseline scenario results in about $6,500 in operating costs for each residential unit. The estimated operating cost of the water pumping station is included in “user defined costs”.

---

**Table:**

<table>
<thead>
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<th></th>
<th>Total Development</th>
<th>Residential Portion</th>
<th>Household Costs</th>
<th>Percent Breakdown</th>
</tr>
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<tr>
<td><strong>HARD INFRASTRUCTURE</strong></td>
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<tr>
<td>Local Roads</td>
<td>$7,900,890</td>
<td>$7,167,206</td>
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<td>Regional Roads</td>
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<td>Water Distribution and Water Treatment</td>
<td>$672,000</td>
<td>$672,000</td>
<td>100%</td>
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<tr>
<td>Sanitary Sewers and Wastewater Treatment</td>
<td>$196,000</td>
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<tr>
<td>Storm Sewers and Water Management</td>
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<td>$2,987,064</td>
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<td>School</td>
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<tr>
<td><strong>RECREATIONAL FACILITIES</strong></td>
<td>$6,771</td>
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<td><strong>MUNICIPAL SERVICES</strong></td>
<td></td>
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<td></td>
<td></td>
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<td>Transit Services</td>
<td>$123,550</td>
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<tr>
<td>Fire Services</td>
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<td>Police Services</td>
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<td>$11,460</td>
<td>$30</td>
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<td><strong>GREEN INFRASTRUCTURE</strong></td>
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<td><strong>USER DEFINED</strong></td>
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<td><strong>Total Costs</strong></td>
<td>$17,916,293</td>
<td>$13,250,132</td>
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**ANNUAL OPERATING COSTS**

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<th>Total Development</th>
<th>Residential Portion</th>
<th>Household Costs</th>
<th>Percent Breakdown</th>
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<td><strong>HARD INFRASTRUCTURE</strong></td>
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<tr>
<td>Local Roads</td>
<td>$34,000</td>
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<td>Regional Roads</td>
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<td>Water Distribution and Water Treatment</td>
<td>$103,000</td>
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<td>Sanitary Sewers and Wastewater Treatment</td>
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<td>Storm Sewers and SWM</td>
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<td><strong>Total Costs (Excluding School Costs)</strong></td>
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</tr>
<tr>
<td><strong>Total Costs (Including School Costs)</strong></td>
<td>$2,417,892</td>
<td>$2,199,345</td>
<td>$6,520</td>
<td>100%</td>
</tr>
</tbody>
</table>
Figure 24: Baseline Scenario - Graphic Representation of Initial Capital Costs and Annual Operating Costs per Unit

Discussion: This is simply a graphic representation of the results obtained above. It will be useful (below) for comparisons.

Figure 25: Baseline Scenario - Representation of True Lifecycle Costs, including replacement

Discussion: All infrastructures depreciate, so a true representation of the costs will include its replacement over time, including inflation in construction costs. This graphs illustrates what the annual operating cost is when spread over a 75 year lifetime. The true annual lifecycle cost per household ($8,432) is about 30% more than the initial operating cost ($6,520).
**Figure 26: Baseline Scenario - Graphic Representation of True Lifecycle Cost**

**Discussion:** This is simply a graphic representation of the results obtained above. It will be useful (below) for comparisons.

<table>
<thead>
<tr>
<th>ANNUAL LIFECYCLE COSTS PER HOUSEHOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Infrastructure</td>
</tr>
<tr>
<td>Municipal Services</td>
</tr>
<tr>
<td>Schools</td>
</tr>
<tr>
<td>User Defined Costs</td>
</tr>
<tr>
<td>Green Infrastructure</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
</tr>
</tbody>
</table>

**Figure 27: Baseline Scenario - Estimate of taxes, user fees, initial DCCs for Baseline Scenario**

**Discussion:** This is a rough estimate of the taxes, user charges (such as for garbage collection) and initial development cost charges for the baseline scenario. Please note that it has not been decided how the City of Fort St. John will share or recover development costs from the private sector, so these results will almost certainly change. Furthermore this does not include contributions to the municipality from other levels of government and private benefits such as Homeowner Grants.

<table>
<thead>
<tr>
<th>REVENUES</th>
<th>Total Residential ($)</th>
<th>Revenues per household or unit ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Property Taxes</td>
<td>$1,800,368</td>
<td>$4,892</td>
</tr>
<tr>
<td>Annual User Charges</td>
<td>$144,159</td>
<td>$392</td>
</tr>
<tr>
<td>Total Initial Development Charges</td>
<td>$2,736,000</td>
<td>$7,435</td>
</tr>
<tr>
<td>Annual User Defined Revenues</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Annualized Value of Revenues*</td>
<td>$2,084,943</td>
<td>$5,666</td>
</tr>
</tbody>
</table>

* Based on 75 year analysis period. Includes annual property taxes, initial development charges, user charges and user defined revenues
Figure 28: Sustainable Neighbourhood Scenario - Initial Capital Costs per Unit

Discussion: Using typical costs for roads, sewers, water supply, schools and other services, the sustainable neighbourhood scenario results in about $16,500 in initial capital costs for each residential unit, less than half the costs of the baseline scenario. The estimated cost of a green roofs for the school and community centre as well as the (smaller) stormwater pond is included in “green infrastructure”. The estimated cost of a water pumping station is included in “user defined costs”. Note that roads still dominate the capitals costs as in the Baseline Scenario.

Figure 29: Sustainable Neighbourhood Scenario - Annual Operating Costs per Unit

Discussion: Using the capital costs developed above, the sustainable neighbourhood scenario results in about $5,200 in operating costs for each residential unit, about 25% less than the baseline scenario. The estimated operating cost of the water pumping station is included in “user defined costs”.
Figure 30: Sustainable Neighbourhood Scenario - Graphic Representation of Initial Capital Costs and Annual Operating Costs per Unit

Discussion: This is simply a graphic representation of the results obtained above. It will be useful (below) for comparisons.

Figure 31: Sustainable Neighbourhood Scenario - Representation of True Lifecycle Costs, including replacement

Discussion: All infrastructure depreciates, so a true representation of the costs will include its replacement over time, including inflation in construction costs. This graph illustrates what the annual operating cost is for the sustainable neighbourhood when spread over a 75 year lifetime. The true lifecycle cost per household ($6,053) is about 17% more than the initial operating cost ($5,185). This difference is about half of the difference for the baseline scenario, mainly because of the number of households sharing the infrastructure more efficiently.
Figure 32: Sustainable Neighbourhood - Graphic Representation of True Lifecycle Cost

Discussion: This is simply a graphic representation of the results obtained above. It will be useful (below) for comparisons. (note: there is a small calculation error in the “green infrastructure” line)

<table>
<thead>
<tr>
<th>REVENUES</th>
<th>Total Residential ($)</th>
<th>Revenues per household or unit ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Property Taxes</td>
<td>$3,951,140</td>
<td>$4,239</td>
</tr>
<tr>
<td>Annual User Charges</td>
<td>$355,929</td>
<td>$382</td>
</tr>
<tr>
<td>Total Initial Development Charges</td>
<td>$5,712,000</td>
<td>$6,129</td>
</tr>
<tr>
<td>Annual User Defined Revenues</td>
<td>$182,196</td>
<td>$195</td>
</tr>
<tr>
<td>Annualized Value of Revenues*</td>
<td>$4,782,414</td>
<td>$5,131</td>
</tr>
</tbody>
</table>

* Based on 75 year analysis period. Includes annual property taxes, initial development charges, user charges and user defined revenues

Figure 33: Sustainable Neighbourhood Scenario - Estimate of taxes, user fees, initial DCCs for Baseline Scenario

Discussion: This is a rough estimate of the taxes, user charges (such as for garbage collection) and initial development cost charges for the sustainable neighbourhood scenario. Please note that it has not been decided how the City of Fort St. John will share or recover development costs from the private sector, so these results will change. Furthermore this does not include contributions to the municipality from other levels of government and private benefits such as Homeowner Grants. However these initial results indicate that taxes could be slightly lower (mainly due to smaller homes) and initial development charges lower than the baseline scenario,
Comparative analysis of costs and value

Figure 34: Comparison between Baseline and Sustainable Neighbourhood Scenarios - Initial Capital Costs

Discussion: This graph illustrates dramatically the reduced capital costs per household of the sustainable neighbourhood scenario, mainly due to more households sharing the infrastructure.

Figure 35: Comparison between Baseline and Sustainable Neighbourhood Scenario: Annual Operating Costs

Discussion: This graph illustrates the modest reductions in operating costs per household for the sustainable neighbourhood scenario, mainly due to more households sharing the infrastructure. Also the schools cost is distributed among more homes with fewer children in this scenario.
Discussion: This graph illustrates the significant reductions in estimated annual municipal costs and necessary revenues for the sustainable neighbourhood over a 75 year period.

Discussion: This graph simply summarizes the estimated annual lifecycle costs per household for the two neighbourhoods over a 75 year period.
Limitations of the Model

Specific Development Cost Inputs

There are many hard and soft cost assumptions built into the model that are fairly reliable, because they are taken from national databases and approximately localized to the City of Fort St. John. However the specifics of the development are not certain enough at this conceptual level to obtain highly accurate results. Furthermore, the way in which the City of Fort St. John, as the land owner, will handle development costs and municipal services costs by recovery through sales and development cost charges has not been determined. For the moment, it has been assumed that the city will carry approximately 20% of services costs and pass 80% on to the developer. So the municipal costs and revenues figures are very preliminary.

The model has been set up and can readily be updated to test more detailed scenarios before decisions are made.

Home Cost and Value

The effects on home price and operating costs are not explored in detail in the model for the sustainable neighbourhood scenario. Clearly the compact development form results in savings for municipal servicing per household that can be passed on to the resident through lower purchase price or rents. Also the sustainable neighbourhood scenario assumes smaller home sizes that reduce capital cost per household. For example, a typical mini-lot duplex may be around 120 to 200 sq m (1300 to 2200 sq ft), compared to 220-300 sq m (2400 to 3200 sq ft) for a typical detached single family home (median 60% less floor area). Furthermore green, energy efficient building standards are proposed for the sustainable neighbourhood that will result in lower operating costs and lower repair and replacement costs (because these are more durable homes).

It is estimated that the median price of a mini-lot duplex can be lower than a standard single family lot, in the following order of magnitude:

- **Land Price:** approximately 25% below single family lot due to smaller land area and lower servicing costs.
- **Home Price:** Approximately 35% below single family due to smaller home size and economies of duplex construction. This also accounts for the slightly higher cost of better quality, energy efficient construction.
- **Operating cost of a mini-lot duplex home can be about 50% less than single family due to energy efficiency, water savings, more durable construction and a reduced yard area to maintain.**

In today’s world of economic uncertainties and unstable costs for energy and services, it can confidently be said that the more compact, energy efficient and durable home is very likely to retain its value much better than the large, inefficient homes of the past.
Municipal Future Costs

Every established city in Canada today is facing trouble managing replacement costs for declining infrastructure. Some are in a more serious situation than others, due to low revenues in a declining economy and deferred replacements that are long overdue. At the same time, there have been major increases in capital costs over the past few years due to global construction materials demand, energy prices and other factors. In short, it is a difficult time for cities, and also an opportune time for innovative solutions.

As cities look into the future, it will be increasingly important to adopt development solutions that reduce future municipal costs and increase resiliency. The sustainable neighbourhood option offers much lower capital costs per unit, reduced municipal costs over time, and lower costs to residents and better value in the long term. It is also a more adaptable model, offering more options for a wider demographic with very high environmental quality and social amenity.
PART 3: DESIGN GUIDELINES

The City of Fort St. John applies design guidelines to new developments, through city-wide development permit area guidelines and winter design guidelines.

When taking the next steps during a master planning / sub area planning process for the Sustainable Neighbourhood, these conceptual design guidelines could be considered and fine-tuned to apply to new Development Permit Areas and zoning regulations.

The design principles address some key elements of creating a sustainable neighbourhood, and in the future they could be applied and adapted in other areas of the City as well. The City has aspired to create a Concept Plan for a sustainable neighbourhood, which means that it should model a progressive place that is socially, environmentally, and ecologically sustainable. The Design Brief (in the appendix) includes sustainable design elements that are addressed in these guidelines.

The design principles include the following topics:

1. green design - general
2. energy
3. municipal systems: water and sewer
4. transportation: multi-modal principles, street design, supporting multi-modal transportation
5. safety: design principles for safe buildings and streets
6. accessibility: principles for universal accessibility
7. sense of place and vibrancy
8. interface and relationship with the new hospital site
3.1. Green Design

The cost of implementing green design for new buildings and infrastructure is much less than the cost of retrofit later on. The up-front cost of green design can be greater than a standard design, but is easily justified with the returns through the lifecycle a shown in the cost analysis (see Cost and Value section).

Guideline 1.1 Build on Provincial Legislative Support for green buildings and policies

The Sustainable Neighbourhood should be used as a pilot for the application of green building policies and incentives that are being supported and encouraged by the Province:

“Greening” the BC Building Code

Effective September 2008, new Building Code requirements to increase energy and water efficiency come into effect. Bill 10 provides local governments with the authority to apply the “green” Building Code provisions including:

- Single Family Houses and Smaller Multi-Family Residential, Commercial and Industrial Buildings have increased insulation standards. For housing, builders can choose to achieve an EnerGuide rating of 77 (a performance measurement) as an alternative to meeting the insulation requirements (a prescriptive requirement). This is the code standard that would apply to the neighbourhood and it is a very low one. Energuide 83 is recommended as a much more rigorous standard to strive for.
- High-Rise Multi-Family Residential Buildings and Larger Industrial, Commercial and Institutional Buildings must meet the ASHRAE 90.1(2004) standard. ASHRAE is the American Society of Heating, Refrigeration and Air-Conditioning Engineers. They develop standards and codes for building performance. ASHRAE 90.1 is an internationally recognized standard for energy consumption based on the design of the building.
- Water Efficiency Requirements: Ultra low-flow toilets and other water-saving plumbing fixtures and fittings are mandatory in new construction and renovations.

Bill 27 - 2008: Local Government (Green Communities) Act

Bill 27 (proclaimed May 29, 2008) includes a requirement for local governments to include GHG emission targets, policies, and actions in their OCPs. It is currently understood that these OCP requirements would have a transitional period and not be fully required until May of 2010. This implementation schedule cannot be defined with certainty until the Bill is enacted. To achieve this objective, the legislation provides a range of potential new powers for municipal governments. These include:

- Using development permits to promote energy and water conservation;
- Allowing parking variances to encourage alternative transportation;
- Providing exemptions from development cost charges for small units, and local government powers to waive or reduce these charges for green developments; and
- Allowing municipalities to develop property tax exemption programs based on energy or water efficiency. Each of these possible powers still requires that the local government develop an enacting bylaw and to define the conditions and process for it to apply.
Guideline 1.2 Use Existing Rating Systems and Evaluations for Green Development Achievement

The Built Green (http://www.builtgreencanada.ca/), R-2000 (http://r2000.chba.ca/), LEED (http://www.cagbc.org/) including the municipal green building toolkit, which was released March 2009, and EnerGuide (http://oee.nrcan.gc.ca/EnerGuide/home.cfm) are rating systems and evaluation tools for buildings. These are maintained and studied by experts in these areas, and should be used to evaluate performance criteria (e.g. energy) for green buildings. For example, Northern Health has announced that the new hospital adjacent to the Sustainable Neighbourhood will be constructed to a LEED Gold standard, which is an excellent catalyst for the development of the neighbourhood.

3.2. Energy Efficient Design

Guideline 2.1 Design for Solar Access at the Neighbourhood Level

Design for maximum passive solar access with thoughtful lot layout, orientation of buildings on the site, and layout of interior building space (as also discussed in the Fort St. John Winter City Design Guidelines). Refer to illustrations of design intent below.

**Image 27:** Orient lots and buildings to maximize solar exposure, fall and spring.

**Image 28:** Design buildings so that the main living areas get the most solar exposure, especially winter sun angle.
Guideline 2.2 In buildings, energy sources for heating/cooling space and water are separated from energy sources for electricity, appliances etc.

A significant proportion of energy used in buildings is for space heating and water heating. Other energy requirements include lighting, appliances, etc. A key principle is to design buildings to draw on separate energy sources for electricity uses and thermal uses. Using baseboard heaters and conventional electric water tanks is a very low-value use of electricity and should be discouraged. These are low-capital cost solutions that have created large demand management problems for BC Hydro. “Power Smart” uses of electricity for thermal demands include heat pumps, heat recovery systems and heat storage and circulation systems, Solar space and water heating is also capable of offsetting a good deal of demand on utilities.

Image 29: The biggest difference between a ‘typical home’ and a more efficiently designed home to Energuide 83 standard, is the amount of energy consumed for space and water heating.
Guideline 2.3 Reduce demand for energy at a building level

- Design homes and other buildings with an efficient layout that enables a compact size. Share walls: attached homes (e.g. duplexes, townhouses, apartments) use far less energy than detached homes.
- An Energuide rating of 83 (or more) would ensure that a home is set up for low energy demand. For commercial and institutional uses, 40% better than MNECB / ASHRAE 90.1 is recommended.
- Specific design features in a home that reduce energy demand are:
  - Very high envelope insulation levels and high performance windows
  - Passive design to capture sun from fall to spring
  - Good quality, draft-free construction
  - Efficient appliances and equipment
  - Recovery of waste energy from ventilation and water heating
  - Good energy use controls and monitoring

Image 30: Insulation – effective energy demand reduction
Image 31: High Performance Windows – energy demand reduction

Image 32: Appliances and equipment – energy demand reduction
Guideline 2.4 Reclaim and recover energy within buildings

Enable passive airflow cooling & day lighting for commercial / institutional buildings.

Image 33: Passive solar commercial / institutional building design

Image 34: Ventilation heat recovery for homes & commercial / institutional
Guideline 2.5 Renewable Energy Equipment and Readiness

- Use or pre-install renewable energy equipment when constructing buildings. Pre-planning for future installation requires little upfront cost that will pay large dividends. For example solar domestic hot water can readily supply 40% of hot water needs.
Guideline 2.6 District Energy Systems and Readiness

- Use of a district energy system can meet needs for space heating and hot water. In advanced cases it can also generate electricity (Co-Generation). Or planning for accessible utility corridors to retrofit system. See the Systems section for more on a district energy system.
3.3. Municipal Systems: Stormwater, Water, Sanitary

Guideline 3.1 Work with the site topography and natural ecosystem when designing a stormwater system:

- Protect unique or special natural features such as land forms, rock outcroppings, mature trees and vegetation, drainage courses, wetlands, hilltops and ridge lines. This helps to preserve the hydrology of the site.
- Develop on slopes with less than 30% grade. And on slopes, retain natural vegetation in order to control potential erosion, land slip and rock falls. (The Fish Creek ravine immediately north and east of the south sewage lagoons; and land within 15 m of the top of steep slopes has grades in excess of 30% as identified in the OCP.)
- Minimize impervious paving surfaces on lots and in open spaces to reduce storm runoff. Manage on-site stormwater that is generated on site, without discharging it into the municipal system.
- Stormwater will be managed predominantly with surface swales that are incorporated into the design of streets (see Design Guidelines, Transportation) and ponding areas. Given the clay conditions on the site, water retention is the focus with infiltration where possible or slow release.

Figure 38: Grassed Swale
Figure 39: Swale design, to enable driveway crossings

Guideline 3.2 Design Sites and Buildings to Conserve Water Resources

Low-flow or drip irrigation systems minimize the use of water.

Incorporate existing vegetation into site design. Where land and/or natural vegetation is disturbed or damaged that the area be restored and/or replanted with plant material indigenous to the area.

Xeriscape – indigenous vegetation that requires little water. The City of Fort St. John is recognized for its endorsement of xeriscaping in Winter City Design Guidelines, OCP.

Harvest rainwater on site. For example, require rain barrels for each new residence (communal rainbarrels for multi-family developments and commercial units).
Guideline 3.3  Install greywater systems in mixed use commercial and institutional developments.

Greywater systems can reuse wastewater from sinks, bathtubs and washing machines to decrease consumption of potable water. A dual piping system needs to be installed, with filtration and treatment. Greywater systems are less feasible for residential developments (unless a high rise) because of the cost to implement and relatively small reduction in water use.

Guideline 3.4  Disconnect roof leaders and foundation drains from sanitary infrastructure.

Avoid inflow of water into the sanitary system from roof leaders, foundation drains, lawn drains etc. These flows unnecessarily consume capacity in the sewerage infrastructure for conveyance and treatment. These sources can instead be kept on site, and overflow into surface stormwater systems during peak events.

3.4. Transportation

The design of the streets is critical not only to the function of the neighbourhood (as outlined in the Systems section) but also to the character of the neighbourhood and the sense of uniqueness. A conceptual design guideline for each street type is described below. Also see Guidelines for Sense of Place and Vibrancy, which also directly apply to street design.
Guideline 4.1 Boulevard street

Image 40:

**Type 1 Boulevard Street Type:** The Boulevard will require a shared development agreement with the hospital, or a cash-in-lieu agreement, as the setback requirements from the road edge will exceed the city average to ensure anaesthetic, green, human scale boulevard in front of the mixed-use development along 86th and the new 112th extension. The cross section for the area, from the building envelope, to the road edge, requires adequate width to include:

- a swale
- tree edge, with adequate root space for large shade trees
- a minimum of a 3m pedestrian area, that can allow for neighbourhood commercial to spill into.

It is recommended that the guidelines for the treatment of the boulevard include paver, boulevard, awning, and street furniture design guidelines,

Image 41: image of boulevard design possibility
To maintain a constant aesthetic along this corridor on both the hospital and private development sides of the connector.

**Type 2 Boulevard Street Type:** The difference from the Type 1 boulevard street, is that there is no on-street parking lane, and the swale abuts residential development. This type is implemented on the boulevard in a residential area.
Guideline 4.2 Local Green Streets

The City requires sidewalks on only one side only of residential streets, with no requirements for tree planting or green edge requirements. Due to the harsh winter winds on site and excessive summer sun, it is strongly recommended that the City adopt a new green standard for the local neighbourhood streets that ensure tree planning and adequate root space for large shade trees that will create a natural wind break and shade for pedestrians.

Participants agreed that due to the need for winter melt-run off and maintaining maintenance cost, the local roads would continue to have only one green sidewalk, on the upper or eastern side of the local street.

Two local street type concepts have been designed in concept:

**Local Street Type 1**

A two-lane road for vehicles (6-7 m width), sidewalks on both sides (1.5m on one side, 2m on the other side), and a boulevard on both sides (5m on one side to include utility services and a stormwater swale) and 2m on the other side. It is intended that cyclists and vehicles share the paved surface of the road.

Local Street Type 2:

This type of local street includes the same road surface as Type 1, sidewalks on both sides of the street, and street trees. Type 2 Local Street does not include swales, because it is designed for parts of the site that run against the grade and swales would not function. In this condition the stormwater is piped.
Figure 41: Local Road Type 1

Figure 42: Local Street Type 2
Guideline 4.3 Neighbourhood Path Connectors Design Guidelines:

To follow general Crime Prevention through Environmental Design (CPTED) guidelines, the path connectors throughout the neighbourhood should be cleared to a minimum of 10m wide, with a 1-2m asphalt or permeable paver path. Bike baffles are recommended to ensure safety for young children. Where the neighbourhood path intersects with the local street, both path users and street users need to be warned about each other (with signage, landscape and design cues) in order to be safe.

Guideline 4.4 Trails Design Guidelines should be sensitive to natural environment

In the western part of the site, in the area around the old dugouts a trail is proposed to follow the edge of the open space corridor. The corridor should be at least 15m wide for preservation purposes, and possibly wider if recommended by ecology survey and study. And site disturbance must be set back from the edge of the ponds to ensure no disturbance to the nesting site, and no root damage is caused to pond trees.

A natural path system is to be constructed adjacent to the natural area corridor traversing the site. The path should be constructed with a natural treatment, with 1-2 mm crushed gravel.

Guideline 4.5 Promote Multi-Modal Transportation in New Developments

Design and include support facilities for alternative transportation in new developments, for example:

- a commercial development could include secure bike storage, showers and change rooms to support cyclists, provision of exterior space on their lot for bus shelters (if it is the right spot for a transit stop, or may be in the future), bike racks for visitors outside.
- an institutional development could be granted a parking reduction in exchange for a transit pass for staff, students, users as applicable.
- a multi-unit residential development could include car-sharing opportunities, preferred parking spaces for vehicles that are electric, carpool vehicles, or car coop vehicles.

Guideline 4.6 Parking

Access to residential parking could be from rear lanes in some places, instead of from the fronting street. This keeps a more pedestrian-friendly streetscape, where buildings can be set close to the street, and there are less driveway interruptions that make it safer for non-vehicular transportation modes. However, as noted in the Transportation System section, rear lanes would present snow removal challenges and should be evaluated further before considering implementation of this design.

In mixed-use areas, minimize (or eliminate if possible) visible surface parking. Instead, tuck parking behind and underneath buildings to allow a more compact and vibrant neighbourhood. If a proposed use for the mixed-use area requires a significant amount of parking that cannot be unintrusive, then it could be that the proposed use is not a good fit for a compact mixed-use area.
Integrate soft landscaping into parking areas to soften the appearance, and minimize the runoff area.

3.5. Safety

Safety is the highest ranked value by Fort St. John residents in the MetroQuest “Our Bright Future” project. Neighbourhood design should take on a multiple hazard approach that accounts for a range of potential threats and vulnerabilities including natural hazards, personal and property crimes, fires, medical emergencies, etc.

Guideline 5.1 Design Buildings and streets for watching people.

A person is less likely to commit a crime if they think someone will see them do it. With a more vibrant neighbourhood, and buildings oriented to the street, there are more eyes watching the street and the neighbourhood. Orient residential windows and balconies (especially active rooms like kitchens) to the street and courtyards, and keep buildings close to the street rather than set back. In residential and commercial mixed use areas, it is important to zone the area for uses that are active for many hours of the day. Ground level shopkeepers and patrons keep an eye and take on a figurative ownership of the nearby streets and areas (by active watching, and placement of tables, signs, etc.) that keeps these areas more welcoming and safe.

Image 42: Balconies and a lively streetscape means more watching eyes on the street

Guideline 5.2 Designs that purposely lessen the opportunity for crime should balance with other objectives for good design and a positive built environment.

The design of buildings, streets and public places should be welcoming and inviting. Design measures to lessen the opportunity of crime should be integrated into the design but not be explicit and dominant he design.
Image 43: Example of designing for safety: restricted access to a park space may be required but should be designed attractively.

Guideline 5.3 Intentionally plan the location, layout and design of public places like parks so that they are safe and feel safe.

Ensure that public places and parks do not ‘turn their backs’ to the street. Park entrances should be visible. Position the park so that there are lots of people watching from apartments, stores etc. and engaged in multiple activities within the park space. Position park washrooms in high activity areas. Design the layout of the park so that it is legible, with park pathways and destinations so that they are that are clearly visible. For more, see the listed Project for Public spaces resource at the end of the Design Guidelines section.

Guideline 5.4 Design transportation systems with multiple users in mind.

- Avoid sharp corners, unmarked intersections, and intersections in hazardous areas.
- Ensure visibility through good design and appropriate lighting of streets and paths.
- Design roads so that vehicle traffic safely shares the space with other modes of transportation, especially in residential and mixed use areas.
- Define access to well-maintained emergency access and routes.

3.6. Accessibility

The planned neighbourhood in this Concept Plan is progressive and inclusive. The intent is to provide housing that meets various needs throughout the lifecycle, neighbourhoods that are adaptable by design, and meets the needs of the community.

Universal design means that all members of the community can access and be part of the neighbourhood. This is a key element of an inclusive, equitable, and flexible place. Fort St. John’s participation and leadership in the Measuring up the North program is recognized and
celebrated. Among the many design objectives in the Design Brief for the Charrette, universal
design and accessibility were prevalent.

Many types of residents with varying needs will live in the neighbourhood. The southern and
western area along the new 112th corridor is the most accessible location for living, meeting
daily needs, and being part of the neighbourhood. This ensures easy access to local amenities,
services, health care and transit.

![Figure 71](image)

**Image 44:** Illustration of design detail on floor surfaces that make the neighbourhood
accessible.

**Guideline 6.1** The built environment for the Neighbourhood achieves the
highest community achievement level set out in the Measuring up the North
framework, including:

a) Universal design principles are included in the detailed design of the Sustainable
Neighbourhood’s building and public realm, ensured by input and review of the plans by
qualified people.

The involvement of the community stakeholders who are already involved in the Measuring Up
the North process is an important way to continue collaboration on the detailed design of the
Concept Plan, to ensure that the intent is carried forward.

b) Transportation systems are designed to enable people with disabilities to get where they
would like to go in the neighbourhood.

Access to transportation access is a key of universal design and inclusion for people of different
mobility and physical ability. The sustainable neighbourhood design ensures that destinations
and needs are within a convenient distance from homes and each other. The proximity and
intensity of use makes transit service possible and feasible.
c) All residential units and buildings are reviewed for universal design principles, and a range of adaptable housing options are available in the neighbourhood.

The Neighbourhood Concept Plan includes a variety of housing forms. Those that are particularly suited to an adaptable design are ground-level units in stacked townhouses (no stairs), and apartment units that are serviced with elevators. The implementation of this guideline may take the form of development agreements that require proportion of adaptable units in each housing development to deliver a choice of housing.

d) People with disabilities can easily find their way in any public space or major business, with universal signage and way-finding.

A legible urban form and spatial layout benefits all residents and visitors in the neighbourhood, because people feel more comfortable and want to spend time there. Integrating universal signage and way finding into the key mixed-use area of the neighbourhood, the civic spaces, and the institutional and community places like the gardens, and educational facilities.

3.7. Neighbourhood Vibrancy and Sense of Place

Design guidelines and ideas may seem superfluous given the many tasks facing the development of the Neighbourhood. However, collectively, these guidelines add up to developing a sense of what the neighbourhood is all about. A good place creates a fit between the built environment and the natural environment, and is filled with a diversity of experience and opportunity. People are attracted and then become attached to good places. Residents who live there are less likely to move elsewhere, people like to visit, the local businesses thrive, and everyday life is enjoyable. It is also important to understand the role or ‘place’ of this neighbourhood within Fort St. John. The City has aspired to create a Concept Plan for a sustainable neighbourhood, which means that it should model a progressive place that is socially, environmentally, and ecologically sustainable. The most successful results are those that can be leveraged across all neighbourhoods as the City grows and renews itself.

Guideline 7.1 Preserve the uniqueness of the landscape and connection with the natural environment.

The distant views from the site are protected and evident: the streets run with the contours and topography of the land and the reservoir site is celebrated at the highest point. The layout of the neighbourhood respects the natural areas and systems: solar access, protected areas.

The built environment is visibly connected with the ecosystem that supports it. The stormwater swales and detention ponds are tangibly at the surface. Building systems and materials are green and recognized as such. Natural paths and experiences are woven through the neighbourhood.
The corridor in the western part of the site (near dugouts) should be at least 15m wide, and possibly wider if recommended by ecology survey and study. And site disturbance must be set back from the edge of the ponds to ensure no disturbance to the nesting site, and no root damage is caused to pond trees.

A natural path system is to be constructed adjacent to the natural area corridor traversing the site. The path should be constructed with a natural treatment, with 1-2 mm crushed gravel. For more pathway design information see Transportation System.

Image 45: The natural context and landscape should be preserved in the development of the Sustainable Neighbourhood.

Guideline 7.2 Pour energy and quality design into the mixed use area, to ensure that this is truly a people place and heart of the neighbourhood.

The location of the mixed use area is close to the new Hospital Site, which is a main feature and activity hub for this area. The right mix of commercial and residential uses ensures that the businesses and the place are successful. The community institutions are close and linked to one other, and they can be easily accessed by the residents of the neighbourhood. The buildings and the street interact well, and create a lively place. This is a location that essentially defines the neighbourhood. It can help to catalyze investments and good will in the surrounding areas.
Special attention should be given to ensuring high quality design of the key buildings and of the public open space.

Image 46: Commercial businesses that spill onto the sidewalk can create a vibrant street

Guideline 7.3 Foster and include diversity in the neighbourhood.

Different forms, tenures, and densities of housing are incorporated into the neighbourhood. Different types of people are attracted and able to live there, and can stay in the neighbourhood when their housing needs change over their lifecycle. Diverse and unique sensory experiences are integrated into the neighbourhood design: artistic expression and interest in architecture and the landscape, and creativity that builds on the genuine Fort St. John character.

Guideline 7.4 Design housing so that it intentionally creates a sense of community.

Northern Health is constructing a new hospital on a 40 acre site adjacent to the Sustainable Neighbourhood. The property for the hospital was provided by the City of Fort St. John. A partner has been selected for the public private partnership and the opening of the facility is planned for 2011. The size of the facility will be 15,000 sq m (11,464 sq ft) and it will include a 55 bed acute care hospital, a 123 bed residential care facility for seniors, and an integrated services building that will provide regional laundry, material and food services. The building will be constructed to a LEED Gold standard.

Image 47: Cluster housing layout can help to foster a sense of vibrancy and connectedness between neighbours.
3.8. Interface and Connection with Hospital

Northern Health is constructing a new hospital on a 40 acre site adjacent to the Sustainable Neighbourhood site. The property for the hospital was provided by the City of Fort St. John. A partner has been selected for the public private partnership and the opening of the facility is planned for 2011. The size of the facility will be 15,000 sq m (11,464 sq ft) and it will include a 55 bed acute care hospital, a 123 bed residential care facility for seniors, and an integrated services building that will provide regional laundry, material and food services. The building will be constructed to a LEED Gold standard.

The relationship and interaction with this new facility is a key opportunity for the new neighbourhood. The hospital facility will contribute to the Neighbourhood in many ways. It can be anticipated that medical related businesses, offices and facilities will choose to locate in close proximity to the hospital. These will make a significant contribution to the neighbourhood’s local economy and vitality. Also hospital staff and visitors will become patrons of neighbourhood shops, restaurants, facilities. The hospital’s provision of residential care units contributes to the continuum of housing in the community, by offering a supportive housing choice for seniors. Also the benefit of hospital care within the neighbourhood will benefit residents. Environmentally, the hospital will be a significant ‘demand generator’ for transit services to and from the area. The hospital’s operations also provide an opportunity for an energy source from waste heat. The development of a LEED Gold facility is an excellent catalyst and complement to the Sustainable Neighbourhood design.
Image 48: Location of New Hospital Site in context with the site

Image 49: Prototype Site Plan for New Hospital – used for sizing of services. Actual site plan may be very different from what is shown.
It is understood that the Northern Health, in partnership with ISL Health, will build the site according to specific guidelines and LEED development standards. The design recommendations from the Charrette are provided for information and consideration:

**Guideline 8.1 Housing**

Community participants in the Charrette process supported the proposed recreational vehicle (RV) parking for visiting families to the hospital, and encouraged that in addition a temporary accommodation facility for families be incorporated into the design of the residential care building(s) – or other.

**Guideline 8.2 Streetscape**

The design of the hospital facility and grounds should be at a human pedestrian scale that connects well with the street level. There is a design imperative for the hospital facility to integrate and blend well with the mixed use streetscape (residential local commercial, and services) along the 112th and 86th corridor. A wide and safe pedestrian crossing of 112th Ave is encouraged, as well as traffic calming measures.

Hard edges should be avoided along the 112th Ave corridor. Particularly avoid surface parking and helicopter pads. In contrast, buildings along the edge of the 112th Ave corridor should step back on the upper storeys, and soften the edges with landscaping. This is important because 112th Ave will not only be a main local hub but also a prominent viewscape for the neighbouring residential areas.
Guideline 8.3  Green Infrastructure and Systems

The commitment to pursue a LEED Gold building design for the hospital is commendable and supported. There is a considerable opportunity for shared energy and utilities systems with the neighbourhood, such as hot water/heat exchange systems, district energy, and biomass. Ecologically sensitive onsite waste management, ultra low flow water conservation, and an active recycling are anticipated as part of the hospital’s operation.

The greenway along the southern border of the site is noted, and connection of the stormwater management feature to the city’s property’s 10m wide nature corridor feature and forested island clusters is suggested. In particular the eastern boundary should maintain a natural aesthetic appeal, along the greenway boundary.

To enhance the onsite storm water pond, to a natural open space feature which includes interpretation education outreach boards for the midden.

The wetland and midden site on the hospital development site has been identified as a significant site feature. This area is an opportunity for conservation as well as public use and appreciation. The wetland area could be enhanced as a wellbeing space for hospital guests, patients, and local area residents. In addition to preserving wetland function, it was suggested that the edges could be landscaped to develop a universally accessible path system to allow for pedestrian circulation through the area and hospital site. It was suggested that the midden site be preserved and incorporated into an historic, educational interpretative area. Perhaps community partners could be identified for this area’s enhancement and stewardship.

An ecologically sensitive parking design should maximize the permeability of the site (e.g. permeable parking surface materials, green medians and walkways). Green medians and trees will also serve as wind breaks for guests parking in the winter and shade for parking in the summer.

Guideline 8.4  Offsite Impacts

Location of the helicopter pad on the south-east side of the property would be preferable because it would minimize noise, safety and aesthetic conflicts with neighbouring residential areas and greenways.

More Resources for Design Guidelines

Green Design Standards and Rating Systems

- Built Green (http://www.builtgreen.canada.ca/)
- R-2000 (http://r2000.chba.ca/)
- LEED (http://www.cagbc.org/) including the municipal green building toolkit, which was released March 2009

Energy

- BC Climate Action Toolkit http://toolkit.bc.ca/solution/community-buildings

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<th>Energy Efficiency in Buildings</th>
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- Safety

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<tr>
<td>- Design Centre for CPTED <a href="http://www.designcentreforcpted.org/Pages/Principles.html#4">http://www.designcentreforcpted.org/Pages/Principles.html#4</a></td>
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- Accessibility

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<th>Accessibility</th>
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<tr>
<td>Additional resources, suggested by Measuring up the North <a href="http://www.abilities.ca">http://www.abilities.ca</a> -</td>
</tr>
<tr>
<td>- The American Disabilities Act (ADA) — Under titles II and III of the ADA, the Access Board develops and maintains accessibility guidelines for buildings, facilities and transit vehicles and provides technical assistance and training on these guidelines. <a href="http://www.adaptenv.org">http://www.adaptenv.org</a></td>
</tr>
<tr>
<td>- Adaptive Environments is a 25 year old educational non-profit organization committed to advancing the role of design in expanding opportunity and enhancing experience for people of all ages and abilities. <a href="http://www.city.vancouver.bc.ca/ctyclerk/cclerk/20030729/I.htm">http://www.city.vancouver.bc.ca/ctyclerk/cclerk/20030729/I.htm</a></td>
</tr>
<tr>
<td>- Background to Vancouver’s enhanced building by-law. <a href="http://www.mcaws.gov.bc.ca/building/handbook/index.htm">http://www.mcaws.gov.bc.ca/building/handbook/index.htm</a></td>
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PART 4: NEXT STEPS IN THE JOURNEY

The City of Fort St. John’s initiative to pursue collaborative and progressive approach to the Site as a sustainable neighbourhood demonstrates strong leadership, and is to be commended. Adoption of the Concept Plan by City of Fort St. John Council is recommended, as a means of validating the community’s commitment and progress.

The next steps in the process are proposed for the City’s consideration.

4.1. Next Steps

Next steps that are outlined below for the City’s consideration include: further discussion with North Health regarding the opportunities of the adjacent hospital development, some items for more detailed research and study regarding the implications of the Concept Plan, and exploration of City’s options for how to approach the development of the Site.

Initiate further discussion with Northern Health regarding the hospital site

The charrette process and Concept Plan recognizes the hospital as a key element for a vibrant and successful mixed use residential and commercial component of the neighbourhood. The hospital’s design (particularly on the street frontage) will significantly impact the streetscape of the heart of the new neighbourhood. With a similar focus on timeline, it would be prudent to share the key elements of the Concept Plan with Northern Health and find ways to maximize the potential for the synergy between the new facility design and the future neighbourhood.

Through the Charrette process, the types of opportunities that the hospital site brings to this neighbourhood were explored and highlighted. It was clear that the hospital could be a key element for making a district heating system feasible. Northern Health’s plans to develop a hospital facility of LEED standard is well complemented by the City’s commitment to create a sustainable neighbourhood.

Since the design-build contractor (ISL) has recently been named, it seems that it would be prudent to put the district energy system idea on the table in the near future, so that it can be factored into their development plans and strategy for how they plan to achieve the LEED requirements. Additional innovative ideas and opportunities for neighbourhood integration and planning that arose in the charrette, e.g. including on site composting and compost gardens, should also be contributed and explored.

(See discussion about the hospital site and integration with the Sustainable Neighbourhood plan in the following sections: Systems (regarding energy opportunities), design guidelines (regarding design, streetscape, site planning recommendations))
Plan a follow-up mini-charrette regarding Urban Containment

Organize a mini-charrette to explore creative design solutions for using the sustainable neighbourhood plan to demonstrate effective urban boundary setting. (See discussion about the importance of urban containment to this plan and the City, in Part 2, under the section “Creating an effective and permanent urban containment boundary”.

Develop an approach for master planning process and development

The City may wish to consider the pros and cons of alternative approaches to develop the Sustainable Neighbourhood ranging from: a hands-off approach (RFP for purchase of the property, new owner responsible for development of a master plan in the form of a sub-area plan and development process), to a partnership approach with a developer, to a city-led process for detailed development and design that results in individual parcels being sold to developers to build projects. The City may wish to consult with communities that have had similar deliberations and experiences with developing city-owned land.

Market and financial review

As the property owner, the City may wish to engage the services of a consultant(s) with ability to assess the financial feasibility of the proposed development that in the Concept Plan, if this has not already been completed. The scope of work could include analysis of the following:

- Assess the market demand and opportunities for the proposed concept plan (including the quantity, intensity and distribution of land uses), in the context of the local and regional economic market as it exists currently and in the anticipated future. This analysis should include consideration of phasing. Purchase of the property and development of the Sustainable Neighbourhood will of course only occur if it is financially viable for developer(s) to proceed.
- Assess the relative amount and type of commercial development in relation to the commercial development. Is the quantity and type of commercial development in the Plan likely to be pursued by a market developer?
- Assess the anticipated monetary ‘lift’ in value for the Sustainable Neighbourhood: difference in value between the current undeveloped state and land use designation as undeveloped property, to an area with regulatory approvals and development. The purpose of this information to the City is to determine the proportion of monetary ‘lift’ value that the City will negotiate with a developer (and other third parties) to allocate to various community investments and amenities identified in the Concept Plan. In addition to the various community facilities that are part of the Concept Plan, the City should also develop and cost an affordable housing strategy for the neighbourhood that people with a diversity of incomes are living in the neighbourhood, rather than creating a sustainable neighbourhood that is an enclave for those with higher incomes.

Cost and prioritization of community investments and amenities

As mentioned above, in order to achieve the Concept Plan the City would need to allocate a proportion of the lift value from the property to a package of community investments and amenities. The Concept Plan should be reviewed to review, prioritize, and cost the required community investments, including:
• Dedication, design and construction of parks and community spaces: how much will it cost and how will these be funded
• Up-front infrastructure costs: how much will it cost and how will these be funded
• Community facilities (likely involving partnerships): how much will it cost and how will these be funded

Technical review and study

The Charrette recommended further ecological study of the green corridor between former dugouts, particularly with respect to the setbacks of development and the setback from known magpie nest and ecologically sensitive area.

Undertake a technical review and working design of the Concept Plan elements, particularly the transportation plan (road types etc.), stormwater management plan, etc.

4.2. Keeping the plan and process alive

The City could consider further involvement of the Charrette Team, or an advisory group comprised of some of its members, to be part of future phases of the planning process for this site as it continues to ensure that the spirit and intent of the Concept Plan is kept alive as plans become more detailed.

Catalyst projects for the neighbourhood could be further developed, with assistance from local partnerships, and possibly external funding. Some of these projects may involve building-specific charrettes to develop creative and energy efficient designs. Demonstration projects could be developed for educational purposes. For example, a home with energy efficient standards. Perhaps the City may want to prepare some of the lower-cost public access facilities to the site, to draw interest to the site and its unique sustainable neighbourhood characteristics. For example, the grasslands interpretive centre at the reservoir, and/or part of the community garden educational centre.
Appendix 1. Supplementary Land Use information and zoning recommendations

Appendix 2. Design Brief for Sustainable Neighbourhood Design Charrette, October 2008

Not included with the draft version; the Design Brief has been previously distributed.
Appendix 1. Land Use Information, and Zoning Amendment Recommendations

Other Residential Land Use Types
During the Charrette a number of residential housing types were discussed. All of the housing forms have not been specifically included in the Concept Plan. However, the residential land use forms that are not represented are included here in the Appendix, for future reference and application. The Concept Plan is a work in progress, and these housing forms may be useful for future iterations of the Plan, or on other sites.

Large Lot Single Family Residential
As the development trend in Fort St. John has moved quickly towards small lot, single-family detached and townhouses, community members requested a zoning amendment to ensure the continued option of large lot, single family development. As a rural / urban center in the Peace Valley, there was concern that families can increasingly only choose between large ALR tracts, or dense small lot single-family dwellings.

While the participants supported a move towards small block, higher density and increased multi-family options to increase housing diversity in Fort St. John and prevent sprawl, they also emphasized the need to protect some of the area’s historic pattern of very large lot, 1/2 acre (0.4 ha) parcels. They also emphasized the need for strict maximum lot coverage restrictions to avoid “monster homes” in these areas. It was recognized that the large lot home allows for multi-generational households and families, important to the multi-cultural mix living in the Fort St. John area.

Ensuring a very limited number of large lots at 1-2 units/acre, with strict open space requirements, will help to maintain a link to history, provide for housing choice, and provide a clear boundary for the city’s residential areas.

This use, which is the least intensive land use type in the Sustainable Neighbourhood, is located in an area with significant servicing restraints that would not be easily met by higher residential uses.

Table 9: Profile of Large Lot Single Family Residential

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
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<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>n/a</td>
</tr>
<tr>
<td>Gross density</td>
<td>2.5 to 5 units per ha (1 to 2 units per ac)</td>
</tr>
<tr>
<td>Lot size</td>
<td>half-acre to one-acre lots</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Uses</td>
<td>residential, live-work, culture and tourism based uses</td>
</tr>
<tr>
<td>Building and lot size</td>
<td>Limit the height and bulk of buildings through zoning</td>
</tr>
<tr>
<td></td>
<td>Limit the allowable lot coverage</td>
</tr>
<tr>
<td>Open space</td>
<td>Develop stringent open space requirements through zoning</td>
</tr>
<tr>
<td>Servicing</td>
<td>To be determined, depending on site and context</td>
</tr>
</tbody>
</table>

**Zero lot line compact single family homes**

This compact lot type is smaller than the RS1A, and smaller still than the mini-lot above. The result is much lower development and servicing costs / unit than larger lot single family. A design challenge, however, is that the bare wall of one home faces sideward of next home. Building code (Limiting Distance) does not allow any conventional widows in the wall on the lot-line. See Zero lot line compact duplex home below for a variation on this.

**Table 10: Profile of Zero lot line compact single family homes**

<table>
<thead>
<tr>
<th>Qty in Sustainable Neighbourhood</th>
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<tbody>
<tr>
<td>Location in Sustainable Neighbourhood</td>
<td>n/a</td>
</tr>
<tr>
<td>Gross density</td>
<td>23 units per ha (9 units per ac)</td>
</tr>
<tr>
<td>Lot Dimensions</td>
<td>9m (30 ft) width x 30m (100 ft) depth</td>
</tr>
<tr>
<td>Lot size</td>
<td>270 sq m (2,906 sq ft)</td>
</tr>
<tr>
<td>Building size</td>
<td>120m (1300 sq ft) to 200 sq m (2200 sq ft)</td>
</tr>
<tr>
<td>Uses</td>
<td>single family residential, home office</td>
</tr>
<tr>
<td>Orientation</td>
<td>2m side yard setback on one side only. Wall built to property line of the other side yard.</td>
</tr>
<tr>
<td>Access and Parking</td>
<td>Option to use green utility corridor at back, no utilities buried under street (except stormwater as necessary). See Zero Lot Line Duplex below. Single vehicle garage and one off street parking space on street side (in forecourt).</td>
</tr>
</tbody>
</table>
Open space | greenways connect the neighbourhood and provide environmental services (e.g. stormwater)
Servicing | Municipal

Summary Zoning Amendment Recommendations

The current Fort St. John City Zoning Bylaw does not currently address some types and forms of land use that were discussed in the Charrette as examples and possibilities for comprehensive, complete mixed-use and diverse development patterns. Among the next steps, the City will need to amend the current zoning bylaw to ensure the feasibility of meeting this site’s sustainable development goals and to ensure that it is complete prior to parcels sales for the site, to ensure developers ability to comply with the intent of the community based neighbourhood plan.

Zoning Amendment Recommendations

a. **Cluster Development Zoning** needs to be carefully crafted, with the intent to create an integrated community with diversity of built form, design and socio-economic levels. There needs to be a strong ecological intent in the cluster zone to ensure quality, shared open space. Otherwise, the intent of the cluster can be easily downgraded to a just another large multi-use complex, with some green space.

The benefits of encouraging cluster housing is that its easily supports shared infrastructure, natural wind breaks through orientation of the buildings and landscape and can be designed to maximize the benefits of shared passive solar and ground reflection. The zone can also require or build in, a DCC incentive for onsite, shared micro energy systems and grey-water, or sustainable storm systems. The shared green feature in the cluster development can double as a grey water filtration systems, or storm pond. Cluster housing also has obvious social benefits.

Cluster zones need to be a strata zone to ensure adequate maintenance and upkeep of the shared open space, so it does not fall back upon the City to maintain.

b. **A wider variety of Small Lot Zones** are needed for more compact residential development and more variety of unit types. Small lots can maintain the desirable qualities of single family homes while increasing social contact and reducing home and servicing costs.

c. **General Recommendations**

Encourage comprehensive planning instead of prescribed zoning through the definition of “permitted uses”. Replace many of the “permitted uses” section of the zoning bylaw with clear explanations of the intent of the zone, and guidelines and examples of achieving it. By emphasizing comprehensive planning and not limiting uses, density and height etc. to a prescribed list more creative options will emerge. These can have a more distinct neighbourhood character.

Add a required permeability ratio for each lot; thus discouraging paving and allowing for better on site storm water absorption. Encourage green roofs, permeable pavers and living walls.
Add onsite energy conservation requirements in zoning for all new development (means to be explored).

Enhance multi-family options and zoning that ranges from medium low, to medium high, encouraging more diversity than the townhouses and apartments currently dominating the city’s multi-family housing stock.

Build cash-in-lieu options into zoning amenity requirements for multi-family housing and mixed use, to help meet neighbourhood and area amenity requirements and public demands.

Include a density transfer option to encourage and allow for heritage and environmental site preservation, while ensuring equivalent density overall. This greatly minimizes the conflict between development and natural area, or heritage preservation.

Start a mixed use residential / commercial, to avoid the strip mall phenomenon and remove the car wash, as well as the service station option in the C1, neighbourhood commercial zone.

Define maximum parcel development size for key zones to encourage diversity and small block developments. Discourage large, single use developments through more detailed zoning requirements.

Developing a progressive CPTED (Crime Prevention Design) policy to be applied to all zones to ensure an “all eyes on the parks, streets and shared spaces” emphasis for safe, well lit public and semi-private areas.

Where viewscapes and shadow effects are a concern, use height and shape guidelines connected to protecting view corridors instead of standard max height requirement. Due to the Peace River Valley view corridor and City views available from the proposed site, it will be important to ensure a mechanism to minimize conflict between successive developments.

Ensure connectivity requirements in multi-use sites, with specified width and treatment for path connectors. Encourage strata maintained connectors and path systems, with a public right of way.