

# ***Big Lake Neighbourhood One Neighbourhood Structure Plan***

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Office Consolidation June 2008

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*Prepared by:*

*Planning and Policy Services Branch  
Planning and Development Department  
City of Edmonton*

**Bylaw 14803 was adopted by Council in January 2008. In June 2008, this document was consolidated by virtue of the incorporation of the following bylaw:**

*Bylaw 14803* Approved January 14, 2008 - to adopt the Big Lake Neighbourhood One Neighbourhood Structure Plan

**Editor's Note:**

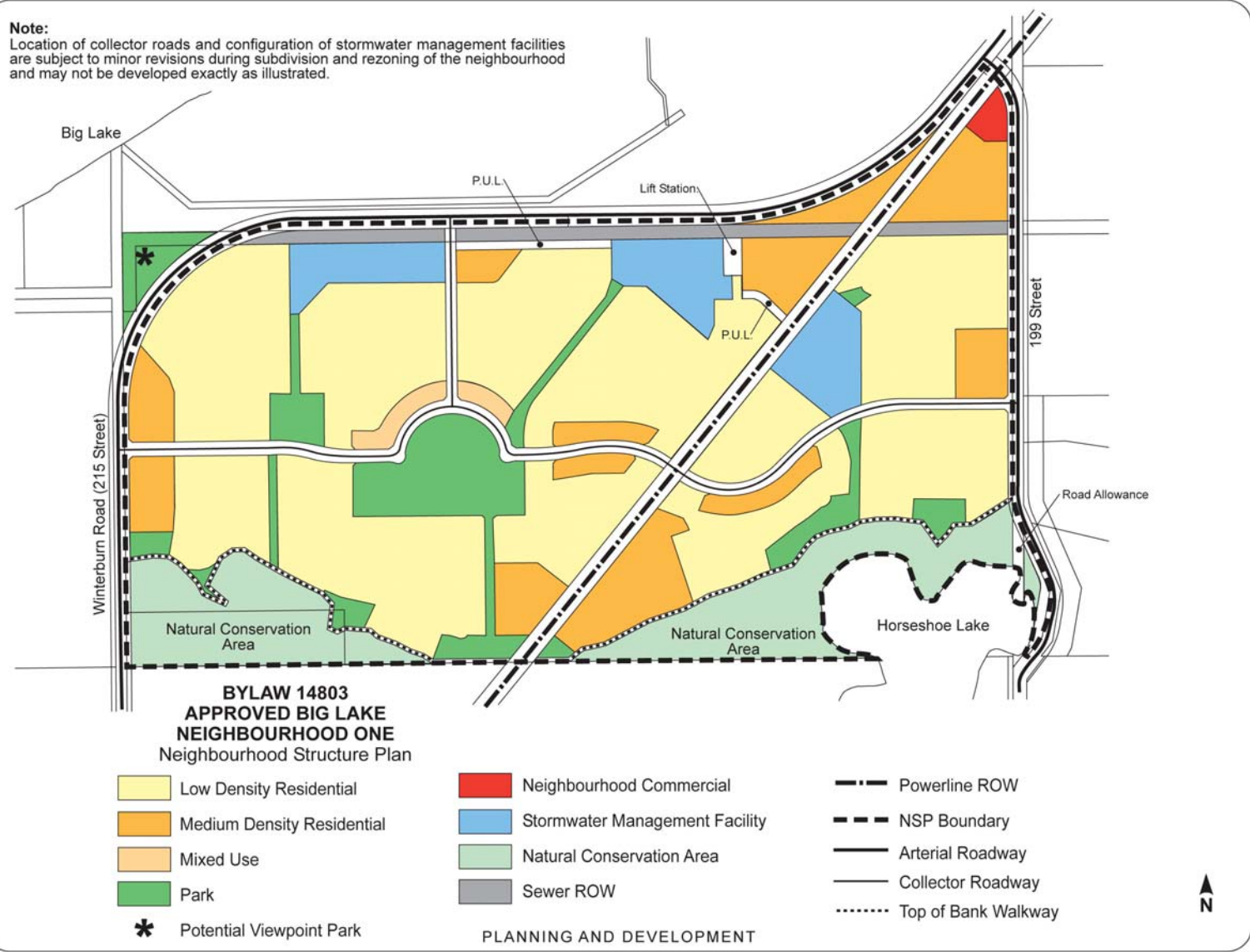
This is an office consolidation edition of the Big Lake Neighbourhood One Neighbourhood Structure Plan, Bylaw 14803, as approved by City Council on January 14, 2008.

This edition contains all amendments and additions to Bylaw 14803. For the sake of clarity, new maps and a standardized format were utilized in this Plan. All names of City departments have been standardized to reflect their present titles. Private owners' names have been removed in accordance with the Freedom of Information and Protection of Privacy Act. Furthermore, all reasonable attempts were made to accurately reflect the original Bylaw. All text changes are noted in the right margin and are italicized where applicable.

This office consolidation is intended for convenience only. In case of uncertainty, the reader is advised to consult the original Bylaws, available at the office of the City Clerk.

City of Edmonton  
Planning and Development Department

**Note:**  
Location of collector roads and configuration of stormwater management facilities are subject to minor revisions during subdivision and rezoning of the neighbourhood and may not be developed exactly as illustrated.





## Big Lake Neighbourhood One Neighbourhood Structure Plan

Prepared for  
*A private corporation*

*Amended by  
editor*

Prepared by  
Stantec Consulting Ltd.

File  
1161 80016

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# Preamble

The Big Lake area is a unique area within northwest Edmonton, extending into the adjacent communities of St. Albert, Sturgeon County and Parkland County. Big Lake is a regionally significant freshwater wetland ecosystem surrounded by small deciduous and coniferous woodlands. The lake is shallow, with an average depth in the middle of its two basins of less than 4 metres and supports considerable emergent vegetation such as cattails and bulrushes. The vegetation surrounding Big Lake is more typical to the Boreal Natural Region than Aspen Parkland on the north side. The lake is globally recognized as an Important Bird Area by BirdLife International as it supports large nesting grounds and many migrating waterfowl and shorebirds. Tundra and trumpeter swans use the lake during migration.

## **T h i s   n e i g h b o u r h o o d   i s   s p e c i a l .**

Recognizing the importance and ecological sensitivity of Big Lake, the development of Big Lake Neighbourhood One encompasses a unique minimal impact design and planning philosophy that aims to practice more sustainable choices. The unique biophysical conditions presented in this neighbourhood provide an opportunity to create a beautiful, more naturalized community where development is integrated and softened by the presence and tranquility of Big Lake and the Horseshoe Lake Ravine.



# Vision

Big Lake Neighbourhood One is envisioned as a residential community that has been designed to maintain and balance the highest possible levels of livability, ecological health and economic prosperity, supporting the choice to practice sustainable living.

## 1.0 Introduction

This section describes the purpose and context of the Big Lake Neighbourhood One Neighbourhood Structure Plan.

### 1.1 PURPOSE

The purpose of this Neighbourhood Structure Plan (NSP) is to describe the land use framework and development objectives for the Big Lake Neighbourhood One. This neighbourhood is the first of 6 neighbourhoods in the Big Lake Area Structure Plan (ASP). This plan represents a framework for future decision-making on the development of the neighbourhood. The Big Lake Neighbourhood One NSP has been prepared with particular regard for the following:

- the ecological conditions of the site and surrounding area;
- the type, size and location of various land uses, including the intensity and pattern of development;
- the transportation network as it relates to the study area, top-of-bank road / walkway and overall transportation objectives;
- an open space concept and pedestrian connectivity framework;
- conceptual servicing schemes and provision of utility services and infrastructure;
- implementation and phasing of development.

### 1.2 NEIGHBOURHOOD BOUNDARIES

The plan area is located between the *Private* Golf Course and Big Lake, west of the proposed outer ring road (Anthony Henday Drive). **Figure 1: Location Plan** shows the plan area relative to the context of northwest Edmonton.

*Ameded  
by Editor*

Specific neighbourhood boundaries are shown on **Figure 2: Context Photo**. These are:

- 199 Street on the east
- 215 Street (Winterburn Road) on the west
- a portion of the North Saskatchewan River Valley System to the south
- The northern boundary of the plan area is contiguous with the boundary of the south half of Section 19-53-25-W4.

In addition, the NSP includes a small triangular piece of land in the northeast, as it would otherwise be isolated by the power line from 199 Street.

The neighbourhood area, with its identifiable boundaries and size, is a logical, self-contained planning unit suitable for an NSP.

### 1.3 RELATED DOCUMENTS

The Big Lake Neighbourhood One NSP is supported by a related application to amend the Big Lake ASP submitted under separate cover. This ASP amendment includes the following:

- Changes to the arterial roadway network due to acceptance by the Province of removal of the 128 Avenue flyover from Anthony Henday Drive, resulting in adjustments to the boundaries of Neighbourhood One and adjacent neighbourhood to the northeast;
- Elimination of a north-south collector roadway that intersects the portion of the North Saskatchewan River Valley system in the central plan area;
- Reconfiguration of the collector roadway network and recognition of the Electrical Transmission Corridor right-of-way;
- As a result of the reconfigured neighbourhood boundary and collector roadway network, redistribution of low and medium density residential uses, commercial uses, parks and open space and stormwater management facilities within the plan area;
- Removal of:
  - One commercial site, leaving one commercial site relocated to the northeast portion of the neighbourhood;
  - A public elementary school site as a result of updated student generation methods employed by Edmonton Public Schools; and
  - Addition of a mixed-use site.
- Simplification of land use designations as per current practice in new NSPs as either Low Density or Medium Density Residential.

The Urban Parks Management Plan (UPMP), adopted by City Council in August 2006 requires the preparation of a Parkland Impact Assessment (PIA) at the neighbourhood planning stage. This assessment identifies parks, schools, and greenways within the NSP as per the Parkland Classification System, and validates their location, size and design relative to the policies in the UPMP. A PIA has been submitted to the Parkland Services Branch in conjunction with the Big Lake Neighbourhood One NSP.

In addition, development of the Big Lake Neighbourhood One is supported by the following technical studies, endorsing the suitability of this area for urban development and introducing the framework for the future infrastructure and servicing of this neighbourhood.

- Neighbourhood Design Report
- Traffic Impact Analysis
- Hydraulic Network Analysis
- Historical Resources Overview
- Environmental Site Assessments (ESA)
- Geotechnical Studies
- Big Lake Neighbourhood One Ecological Design Report

## 1.4 SITE CHARACTERISTICS AND CONTEXT

Illustrations of the Site Characteristics and Context as described below are shown on **Figure 2: Context Photo**, **Figure 3: Context of Big Lake**, **Figure 4: Site Contours/Aerial Photo** and **Figure 5: Site Analysis**.

### 1.4.1 Surrounding Land Uses

North of the plan area is a non-operational golf course and Big Lake itself. East and west of the neighbourhood are additional farmlands and associated farming structures. South of the NSP area is the *Private* Golf and Country Club, which is separated from the plan area by a portion of the North Saskatchewan River Valley and Ravine System. **Figure 3: Context of Big Lake** illustrates the plan area relative the Big Lake water body, Lois Hole Centennial Park and the counties of Parkland and Sturgeon.

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by Editor*

### 1.4.2 Existing Land Uses

The majority of the plan area has historically been used for farming, and is still under cultivation. A power line right-of-way (ROW) runs diagonally from the southern midpoint of the neighbourhood to the northeast corner. In the northeast corner of the plan area near the intersection of the power line ROW and 199 Street is a farmstead. A house is under construction in the treed area on the smaller parcel of land in the southwest area of the neighbourhood. A sewer ROW exists across the northern portion of the plan area, forming part of a Capital Region sanitary sewer line. None of these uses pose any particular impediment or constraints on future urban development. **Figure 5: Site Analysis**, shows the location of existing uses. **Appendix C** contains an ownership plan.

### 1.4.3 Topography

The topography of the lands within the plan area is gently undulating or rolling, overall sloping to a low-lying area located in the north central portion of the site (see **Figure 5: Site Analysis**). Elevations in the neighbourhood vary from approximately 687 m to 675 m. Surface drainage generally flows in a north-westerly direction towards Big Lake. An elevated area exists in the west-central portion of the plan area, near the neighbourhood boundary at 215 Street. A small area in the southeast corner of the neighbourhood drains towards Horseshoe Lake.

Geological maps of the area indicate that the lands in the neighbourhood are underlain by glaciolacustrine deposits of bedded sand, silt, and clay; and, that the overlying glacial till consists of clay, silt and sand with pebbles, coal and gravel. The till is underlain by Saskatchewan gravels and sands, further underlain by bedrock (consisting of bentonitic shales and sandstones, with numerous coal seams) of the Edmonton formation (CT& Associates Engineering Inc, 2006).

### 1.4.4 Environmental Resources

Big Lake Neighbourhood One is adjacent to a portion of the North Saskatchewan River Valley Ravine System, which borders south side of the plan area. A top-of-bank walk was conducted with the proponents of this Plan and City Administration on October 26, 2006. This portion of the ravine system contains Horseshoe Lake, a permanent body of water claimed by the Province of Alberta under the *Public Lands Act*.

Several natural areas are present within Big Lake Neighbourhood One. The City of Edmonton's Inventory of Environmentally Sensitive and Significant Natural Areas (Geowest, 1993) identifies three natural areas (NW80, NW84 and NW82) within the neighbourhood; however, these natural areas are not discussed in detail in the Geowest report.

# BIG LAKE NEIGHBOURHOOD ONE NSP



Figure 1  
Location Plan

## Big Lake NSP

*Neighbourhood One*

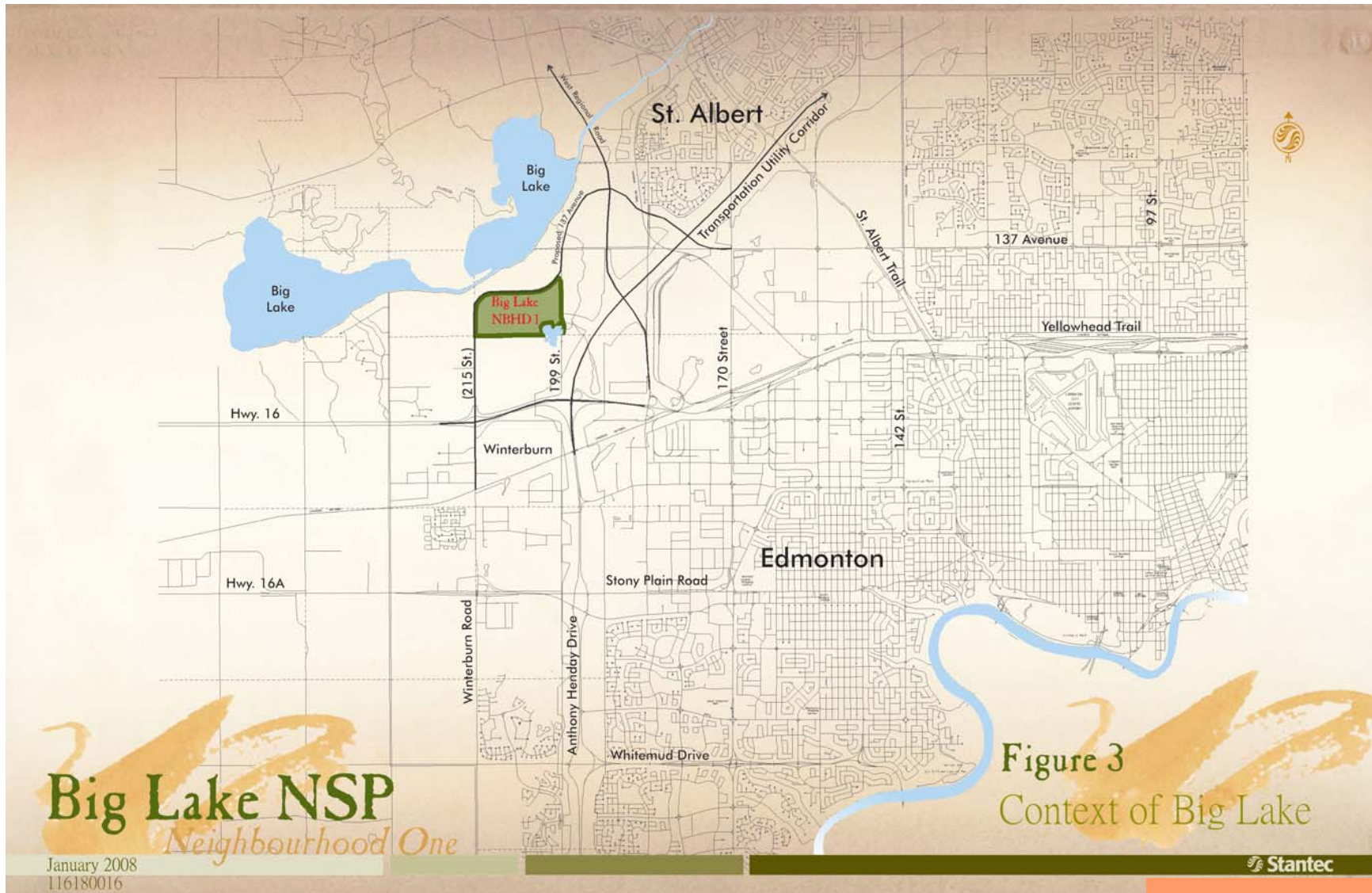
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BIG LAKE NEIGHBOURHOOD ONE NSP



# BIG LAKE NEIGHBOURHOOD ONE NSP



BIG LAKE NEIGHBOURHOOD ONE NSP



Figure 4  
Site Contours and Aerial Photo



BIG LAKE NEIGHBOURHOOD ONE NSP



Several other wetlands are visible on the aerial photo (see **Figure 4: Site Contours/Aerial Photo**), and two treed areas are visible in the northwest and northeast portions of the NSP area.

An assessment of all the environmental resources within Big Lake Neighbourhood One was conducted as part of the *Big Lake Neighbourhood One Ecological Design Report*. The assessment found that the natural areas identified in the City of Edmonton's Inventory of Environmentally Sensitive and Significant Natural Areas (Geowest, 1993) were severely degraded and provided little ecological value in their current state. Site NW80 and NW84 were still present on the landscape, but had been highly disturbed. Site NW82 had been removed from the landscape, and the majority of its area was found to be under cultivation.

The northwest tree stand was found to be small in size, but would be considered good cover for ungulate species moving through the area. The stand may also provide nesting habitat for some passerine\* bird species. A wet area was present on the north side of the tree stand, which waterfowl were using for resting and foraging. This wet area appeared to be the result of water impoundment related to the oil and gas lease located there. The canopy of the stand was dominated by willow, but also contained trembling aspen and balsam poplar. The understory consisted of species such as, but not limited to, wild raspberry, snowberry, pin cherry and red osier dogwood. Smooth brome was the predominant grass, and some of the forbs\*\* on site included species such as, but not limited to, arrow-leaved coltsfoot, wild lily of the valley and stinging nettle.

**\*Passerine**

Belonging to the avian order Passeriformes, which includes the perching birds. Passerine birds make up more than half of all living birds. They are of small to medium size, have three toes pointing forward and one pointing back, and are often brightly coloured. Larks, swallows, jays, crows, wrens, thrushes, cardinals, finches, sparrows, and blackbirds are all passerine birds.

**\*\*Forbs**

A broad-leaved herb other than a grass, especially one growing in a field, prairie, or meadow.

*The American Heritage® Science Dictionary*

The northeast tree stand appeared to provide excellent habitat for a variety of species. Large and small mammals could be expected to utilize this stand, and wood frogs were observed along its perimeter. It can be expected that a large variety of bird species would utilize this area for resting, foraging and nesting. Trembling aspen dominated the plant community, with a few balsam poplar trees interspersed throughout. The understory contained a dense shrub layer consisting of species such as red osier dogwood and prickly rose. Forb species included, but were not limited to, Canada goldenrod and northern bedstraw, the dominant grass species appeared to be smooth brome.

A comprehensive evaluation of these natural areas has been conducted and submitted under separate cover, as the *Big Lake Neighbourhood One Ecological Design Report*.

**1.4.5 Environmental Site Assessments and Historic Resources**

As part of the land development process, landowners and their representatives are required to conduct Phase 1 ESAs for their respective lands. A Phase I ESA for SE ¼ 19-53-25-W4 and SW ¼ 19-53-25-W4 has been submitted to the Planning and Development Department for review. Environmental Site Assessments will be required by the Planning and Development Department for all other properties within the plan area boundary prior to rezoning. Pursuant to Section 31 of the Historical Resources Act, development proponents and their representative(s) are required to report the discovery of any archaeological, historic period or paleontological resources, which may be encountered during construction. Accordingly, a Historic Resources Overview has been submitted in conjunction with this NSP document for review by Alberta Community Development.

### 1.4.6 Existing Roadways and Access

The site is currently accessed by 199 Street along the eastern boundary and 215 Street (Winterburn Road) on the western boundary. 215 Street connects south to the Yellowhead Trail. 199 Street swings west north of Yellowhead Trail and connects to 215 Street. Winterburn Road terminates near the northwest corner of the neighbourhood; 199 Street connects to 137 Avenue to provide access to the east. The Transportation and Utility Corridor (TUC) is located to the east of the plan area.

### 1.4.7 Pipelines & Oil Well Sites

A review of information provided by the Alberta Energy & Utilities Board (AEUB) has identified three nearby pipelines. While none run through the NSP area, they do border the area. Two of the pipelines are within with the Winterburn Road and 199 Street rights-of-way, the other is north of the northern NSP boundary, and runs parallel for part of its length.

AEUB data, confirmed by the Phase I ESA, show that there is one abandoned oil well site within the neighbourhood boundary, located within the North Saskatchewan Ravine in the southwest portion of the plan area. There are four abandoned sites near, but outside of the neighbourhood. Three sites are northeast of the NSP area, and the last site is within the roadway ROW along the eastern boundary. The locations of these abandoned well sites are shown in *Figure 5 – Site Analysis*. Future development surrounding the abandoned oil well sites will adhere to the policies and requirements established by the Alberta Energy and Utilities Board.

## 2.0 Development Philosophy

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The design of the Big Lake Neighbourhood One NSP was conducted somewhat differently than conventional suburban neighbourhood design, in light of the opportunities and constraints that this area presents. Being in such close proximity to Big Lake, the Lois Hole Centennial Provincial Park, as well as parts of the North Saskatchewan River Valley, the design process proceeded based on environmentally friendly and ecological planning and design concepts. This section attempts a brief overview of this process and of several key considerations that were addressed, namely the quality and quantity of surface water, and the protection and accommodation of biodiversity in the area.

One of the early phases of neighbourhood design involved the identification of natural drainage courses, natural features and the topography of the land. Stormwater management facilities were located at the low-lying portions of the neighbourhood and connected with a system of bioswales that would convey and treat surface water. Parks, greenways and open spaces were added with the objective of connecting the parks and SWMFs to facilitate both human and wildlife movement.

### 2.1 LOW IMPACT DEVELOPMENT

Some of the goals of this development include finding ways to improve the quality of water prior to draining into Big Lake, reducing the quantity of surface runoff produced by impervious surfaces and ensuring that water infiltrated to a greater degree through methods that also improve the quality of water. To this end, a system that includes constructed wetlands, bioswales and reverse housing was devised. This concept is elaborated on in *Section 5 – Sustainable Planning Concepts*.

## 2.2 NATURAL LINKAGES

The Big Lake area has been recognized as a key Biodiversity Core Area for the Edmonton region, and as such, should be given special consideration when planning for urban development. The City of Edmonton's Office of Natural Areas, in its Integrated Natural Areas Conservation Plan, *Natural Connections* (2007), recognizes the importance of strengthening connections between natural areas to create an integrated ecological network. This NSP attempts to link the concept of connectivity of the natural environment with that of human development. More and more, the relationship between urban development and the natural environment is being seen as one that respects ecological processes and communities, rather than as an afterthought.

## 2.3 BIODIVERSITY CORE AREA

The Big Lake core area is part of a regional ecological network and is of sufficient size and quality to support entire populations of animals, plants, and associated ecological functions (Office of Natural Areas, 2007). The Big Lake Neighbourhood One NSP area was planned with this network in mind, and attempts to avoid overlap between development and natural areas. Larger natural areas are generally outside the boundaries of this plan, while the riparian area to the south is protected from development through mechanisms such as dedication as environmental reserve to the City, and top-of-bank trails which serve to delineate the ravine area from developed areas.

## 2.4 CORRIDORS

While existing linear vegetated corridors offer the best opportunity to keep the core area connected, there are opportunities within the neighbourhood development to reduce barriers. Parks and open spaces provide connections for humans and wildlife. The NSP features a number of trail connections and greenways between park spaces, and stormwater facilities, utility rights-of-way that also act as minor corridors linking natural areas to the north and south that can be utilized by some species. The naturalization of stormwater wetlands increases the probability of them being used as stopovers or habitat for some wildlife and provides a setting for other valuable ecological functions.

## 3.0 Planning Principles

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The development concept presented in this plan was established on the basis of the opportunities and constraints present in the Plan area, in conformance with applicable statutory requirements, and the following planning principles:

### 3.1 SUSTAINABILITY

- Employ the three foundations of sustainability in decision making regarding land use and building form: economy, society and ecology.
- Balance development and environmental protection by creating a vibrant residential community that demonstrates caring stewardship of the environment.
- Preserve and enhance environmental resources including the watershed, air quality and ecological corridors.

- Minimize the impacts of development on Big Lake, Horseshoe Lake and the North Saskatchewan River Valley System.
- Maximize the benefits gained from the land by accommodating multiple functions where possible.
- Ensure sustainable and cost effective landscape development of the open space areas over the long term with the use of native plant species and the added benefit of the re-establishment of natural habitat.
- Consider ways to lower consumption and demand in the development of infrastructure for the neighbourhood.
- Provide flexibility for the introduction of new technologies, as they emerge over time, especially with respect to energy inputs and waste outputs.
- Allow for natural drainage techniques as additions or alternatives to conventional stormwater management collection.
- Where stormwater is collected and discharged, provide bio-filtration to filter stormwater prior to discharge.
- Where it is desirable to encourage groundwater recharge, provide pervious surfaces as much as possible.

### **3.2 NEIGHBOURHOOD CHARACTER AND PLACEMAKING**

- Create a neighbourhood with an identifiable focal point.
- Provide a variety of different building forms and use, focusing on compatible integration rather than separation.
- Create a pedestrian friendly environment.
- Plan an integrated community for a diversity of ages, incomes and needs with associated community services that are adaptable over time.
- Encourage the development of active community places which are alive and utilized and promote community interaction.

### **3.3 OPEN SPACE**

- Provide a simple and understandable pattern of open space nodes, greenways, park sites and walkway connections.
- Ensure that park space is accessible to all members of the community.
- Provide a variety of opportunities for passive and active recreation experiences, incorporating a variety of activities to encourage community interaction.
- Design different types of park space to meet the needs of all users within the community.
- Design safe park space, in accordance with the Design Guide for a Safer City and UPMP.
- Provide a top-of-bank walkway and public access to the ravine adjacent to Horseshoe Lake.
- Include landmarks or visual points of reference within the open space system to provide local context and assist in wayfinding.

- Design a connected and integrated open space system that encourages non-vehicular movement (e.g. pedestrians and bicycles).
- Ensure that private amenity space provides an amenity value to building occupants and integrates well with the public open space landscape.
- Encourage biological diversity and natural processes within the natural and planted landscapes in the neighbourhood.
- Ensure that the landscape design of the open space network, particularly the stormwater management facilities and the pathways by which they are connected, includes predominantly native plant material with the intent that over time, this vegetative network seamlessly connects with the existing ecology of the North Saskatchewan River Valley system and Big Lake.

### **3.4 NEIGHBOURHOOD MOVEMENT AND CIRCULATION**

- Implement the City of Edmonton road hierarchy system of an integrated arterial, collector and local roadway network.
- Establish gateways into the neighbourhood that offer a sense of arrival.
- Provide a variety of neighbourhood access points for automobiles, transit, bicycles and pedestrians.

#### **3.4.1 Safety**

- Integrate land use and circulation patterns considering the safety of drivers, pedestrians and cyclists.
- Provide traffic calming at appropriate locations to moderate vehicular speeds.

#### **3.4.2 Pedestrians, Walkability and Cyclists**

- Ensure that pedestrian/bicycle connections to Big Lake and the River Valley area are highly integrated, direct and legible as part of the open space network.
- Accommodate safe pedestrian movement on all roadways through the neighbourhood using the sidewalk network.
- Provide off-street bicycle and pedestrian facilities which complement on-street circulation patterns.
- Establish integration between the street and urban form respecting human scale to achieve a more walkable neighbourhood.
- Define the interface between public and private property lines with plantings, pavement treatments or fencing.

#### **3.4.3 Transit**

- Provide transit stops within 400m walking distance from all residences.
- Initiate transit service at the earliest possible date.

### 3.5 LAND USE

- Provide a variety of housing types in different physical forms to meet the needs of different age and income groups.
- Create a mix of densities to support the provision of hard and soft infrastructure to the neighbourhood in a timely manner.
- Provide opportunities for higher density housing at accessible locations, near community focal points, open space and transit routes.
- Site buildings to optimize views and vistas or enhance view potential of Big Lake, the ravine system and other neighbourhood amenities and features.
- Provide the opportunity for local commercial needs to be met within the neighbourhood.
- Locate and orient commercial sites along arterial or collector roadways to ensure high visibility and convenient access opportunities.
- Develop built form with a strong relationship to the street, encouraging human scale and having regard for pedestrian mobility, access and streetscaping.

### 3.6 IMPLEMENTATION

- Develop park facilities at the same time that new housing is developed.
- Provide greenways to link newly developing areas of the neighbourhood, open space, Big Lake, the ravine area and any other community facilities.
- Allow for flexibility between developers and homebuilders and the City Administration in regulating the introduction and implementation of alternative designs and technologies that support ecological sustainability, cost effectiveness and environmental stewardship in the development of the neighbourhood.

## 4.0 Development Concept

This section outlines the development concept for the Big Lake Neighbourhood One NSP and is based on the neighbourhood design principles outlined in the previous section. Analysis of these principles and an assessment of their implications shapes the type, size and location of various land uses within the NSP providing a framework to deliver a high quality, comprehensively planned community. The land use concept is shown on **Figure 6: Development Concept**. Land use and population statistics relating to the Development Concept are illustrated in Appendix A.

The focal point and social centre of the Big Lake Neighbourhood One is the urban village park. The layout of the surrounding collector roadway network and the location and orientation of this open space has specifically been designed to create an identifiable entranceway into the neighbourhood from the north and west collector roadway entrances. The urban village park is the neighbourhood's central focus of community activity and interaction.

#### **4.1 RESIDENTIAL USES**

The majority of the land within the neighbourhood is intended for residential uses. A variety of low and medium density residential dwelling types is proposed and will be implemented based on market conditions and consumer preferences at the time of development.



BIG LAKE NEIGHBOURHOOD ONE NSP



Figure 6  
Development Concept

BIG LAKE NEIGHBOURHOOD ONE NSP



The proposed residential density is approximately 69.2 people per net residential hectare. This concentration of residential density is essential to creating a compact, vibrant and walkable community and to supporting the provision of both hard and soft municipal services.

#### **4.1.1 Low Density Residential**

Low Density Residential (LDR) development is sited within the NSP to promote local neighbourhood image and identity through carefully planned clusters or cells of development that provide residential sub-areas within the NSP. Within the neighbourhood and its sub-areas, low density residential uses are well served by pedestrian linkages, access to internal multi-use trail corridors and open spaces, as shown in **Figure 7: Parks and Open Spaces**. Emphasis on the creation of safe, comfortable and attractive pedestrian connections to destination and focal points within the Big Lake Neighbourhood One NSP will enhance place-making opportunities and community sense of place. Furthermore, architectural guidelines will be employed within residential areas to ensure human scale, aesthetically pleasing entrances, improved streetscapes, pedestrian nodes, quality landscaping, and to address land use transitioning.

In order to provide housing choices for a variety of family types and income groups, a range of dwelling types are proposed under the low density residential designation to be implemented through the Edmonton Zoning Bylaw. These forms include single detached housing with and without rear lanes (e.g. use of zones such as (RSL) Residential Small Lot Zone and (RPL) Planned Lot Residential Zone) and semi-detached housing (e.g. use of (RF4) Semi Detached Residential Zone).

#### **4.1.2 Medium Density Residential**

Medium Density Residential (MDR) uses located at key points within the neighbourhood establish a critical mass, creating opportunities for the development of active community places which are alive and utilized, and promote community interaction and vibrancy. These key location points for the future development of MDR uses include sites in proximity to one or a combination of the following:

- Community activity and amenity areas such as commercial sites, open space, and stormwater management facilities;
- Greenways, pedestrian linkages and corridors linking neighbourhood park and open space areas;
- Collector and/or arterial roadways with future transit; and
- The portion of the ravine adjacent to Horseshoe Lake.

The design of the Big Lake Neighbourhood One includes MDR uses at all of the above locations in order to promote the supply of higher density housing opportunities in various locations throughout the plan area that meet different consumer needs and preferences. Inclusion of MDR uses in different configurations and locations also provides housing options for a range of income groups. It takes advantage of convenient access opportunities along collector roadways, views of the ravine and stormwater management facilities, provides density at community activity and amenity areas to improve and support more frequent use of these areas (e.g. commercial areas or open space) and promotes walkability and use of pedestrian connections. Incorporation of MDR within the plan area will also provide alternative housing options and choices for residents throughout their lifecycle within the same neighbourhood.

Opportunities exist within the Big Lake Neighbourhood One NSP for different medium density housing forms and densities including row housing, street-oriented town housing, stacked row housing and low rise apartments. The type of

MDR pursued in each particular circumstance will depend on future market demands. Special attention will be given to the development of high quality designs, massing that provides treatments to encourage human-scale on larger sites and architecture and community identity that is harmonious and attractive. Land use zones such as (RF5) Row Housing Zone, (RF6) Medium Density Multiple Family Zone or (RA7) Low Rise Apartment Zone may be applied to MDR parcels within the plan area.

### **4.1.3 Affordable Housing Initiative**

As the City of Edmonton develops policies for affordable and/or attainable housing, future development of this neighbourhood will comply with approved policies on the implementation of affordable housing.

## **4.2 COMMERCIAL USES**

A neighbourhood commercial site is located in the northeast portion of the neighbourhood. This commercial site is easily accessed by 199 Street arterial and is also located along the electrical transmission corridor (with future multi-use trail) for internal pedestrian access. This commercial site is intended to serve the day-to-day needs of residents of Big Lake Neighbourhood One.

## **4.3 MIXED-USE**

An area in the central portion of the plan area is designated mixed-use. This area will provide for residential development, with the opportunity for commercial development at street level. Site features make this area well suited for small-scale commercial operations. For example, specialty retail, video rental, restaurants or cafes, or professional services and offices. This site would also provide the opportunity for live-work spaces, potentially making use of multiple storeys for those who would combine home space and workplace. Implementation of the mixed-use site will require Direct Control zoning.

## **4.4 PARKS AND OPEN SPACE**

An integrated open space system is proposed for Big Lake Neighbourhood One as shown on **Figure 7: Parks and Open Spaces**. This system is comprised of the electrical transmission corridor and arterial roadway multi-use trail systems, internal pedestrian linkages and greenways, stormwater management facilities and parks and open space areas.

A major feature of the Big Lake Neighbourhood One NSP is encompassing the sanctity of Big Lake within the neighbourhood itself to create a comprehensive, linked and integrated open space concept. The top-of-bank walkway spans the entire southern boundary of the Plan area and connects with neighbourhood pedestrian pathways which link all open space areas, commercial uses and the multi-use trail corridor system (in the electrical transmission corridor and along arterial roadways) which extend beyond Neighbourhood One.

An urban village park and several pocket parks are planned within the neighbourhood. These parks are located to serve various residential sub-areas within the plan to provide everyday opportunities for active and passive recreation. A variety of park space configurations and uses are proposed within the neighbourhood to meet the needs of all users in this community. All parks are connected to the pedestrian network (including sidewalks) within the NSP to ensure that they are accessible and intermixed with the residential uses in the plan area. The associated Parkland Impact Assessment (PIA) for Big Lake Neighbourhood One provides additional information on the rationale for the provision of open space within the plan area.

Stormwater management facilities (SWMF) are also considered an amenity area and part of the open space system. Besides the function of these facilities as part of the storm servicing network, additional open space is planned around the facilities. These facilities provide visual amenity for local residents adding to the neighbourhood's attractiveness, character, and image as a pedestrian-oriented community. All SWMFs are linked with the neighbourhood pedestrian network (see Figure 7) and complement the open space system by providing additional areas for passive recreation. The extent of public open space (and private land) around the facilities will depend on City policies at the time of development. The planted landscape design of SWMFs and the walkway system in the NSP area is encouraged to be of native plant material in order to extend and support the ecology of the Big Lake and the North Saskatchewan Ravine System and connect biologically with this vegetative network.

Pedestrian routes on the periphery of Neighbourhood One are planned so that as adjacent neighbourhoods in the Big Lake area develop, pedestrian connections can be created to Lois Hole Provincial Park. The creation of these connections is an important asset for future residents providing the opportunity for enhanced ecological experiences, education and interpretation. Continuation of the multi-use trail corridor through the power line ROW will also facilitate access for pedestrians across the ravine area to the neighbourhood to the south.

Combined with an array of pedestrian linkages along sidewalks, walkways, greenways and multi-use trail system, the Big Lake Neighbourhood One NSP provides an internal pedestrian network that is highly connected, direct and convenient. This facilitates the development of a truly walkable community, encourages a healthy community lifestyle and better quality of life.

### 4.5 MOVEMENT AND TRANSPORTATION

The transportation network bordering and within the Big Lake Neighbourhood One consists of a system of arterial, collector and local roadways, pedestrian connections, walkways and corridors to accommodate the movement of vehicles, goods and people. These connections are shown on **Figure 8: Transportation**.

This hierarchy of roads will provide the necessary interconnections appropriate to efficiently and effectively accommodate vehicle traffic flows at the arterial, collector and local roadway levels. The transportation network has been designed to meet both the internal and external traffic flow requirements generated by the neighbourhood.

An efficient and continuous walkway network connecting key nodes within the NSP provides pedestrian-oriented circulation throughout the neighbourhood. Convenient linkages between the neighbourhood commercial site, parks and open space, and MDR areas are provided. These linkages provide direct access for pedestrians and cyclists and complement the sidewalk network.

The Transportation Impact Assessment (TIA) submitted under separate cover provides details and recommendations regarding the assessment of traffic and roadways for the Big Lake Neighbourhood One area.

#### 4.5.1 Roadway Network

Development within the Big Lake Neighbourhood One NSP will benefit from a high level of accessibility to the metropolitan Edmonton area, the Edmonton west end business employment area, the City of St. Albert and Sturgeon and Parkland Counties by virtue of its close proximity to a number of major existing and proposed roadways (see **Figure 8: Transportation**). These include:

- 199 Street

- 215 Street
- Anthony Henday Drive

Future completion of 199 Street and 215 Street will provide excellent access opportunities from the plan area to major external destinations in conjunction with the future Anthony Henday Drive. This will accommodate longer distance regional and provincial trips, in addition to providing efficient vehicular access to the development area. The 128 Avenue flyover across Anthony Henday Drive has been removed from the plans for the northwest portion of the ring road. 128 Avenue in the existing Big Lake ASP serves as an arterial roadway and separates Neighbourhoods One and Two. Due to the removal of this exit from Anthony Henday Drive, 128 Avenue is also removed from the Big Lake ASP. As a result, 199 Street is now planned to continue northerly towards the City limit. A two-lane connection recently opened between Yellowhead Trail and 137 Avenue to some of the traffic between Edmonton and St. Albert. This connection in conjunction with Yellowhead Trail and the future highway status of Anthony Henday Drive will further accommodate longer distance regional and provincial trips, in addition to providing efficient vehicular access to the development area. A hierarchy of roadways will provide the necessary inter-connections appropriate to efficiently accommodate traffic at the local, collector and arterial levels. The Big Lake Neighbourhood One NSP transportation network has therefore been developed to accommodate external / internal traffic flow demands in both a north-south (i.e. 215 Street and 199 Street) and east-west (215 Street) direction at the periphery of the neighbourhood.

#### **4.5.1.1 Possibility of Roadway Realignment**

As a result of collaboration between the Province and the City, there is a possibility that the alignment of the arterial roadway bordering the north boundary of the Plan area may change at a future date. The Big Lake ASP designates an area to the north of the NSP area as 'Natural Maintenance'. At the time that information is available on the future alignment of this arterial, an ASP and/or NSP amendment will be required to take into account this new configuration and address specific land use, technical, servicing and environmental considerations.

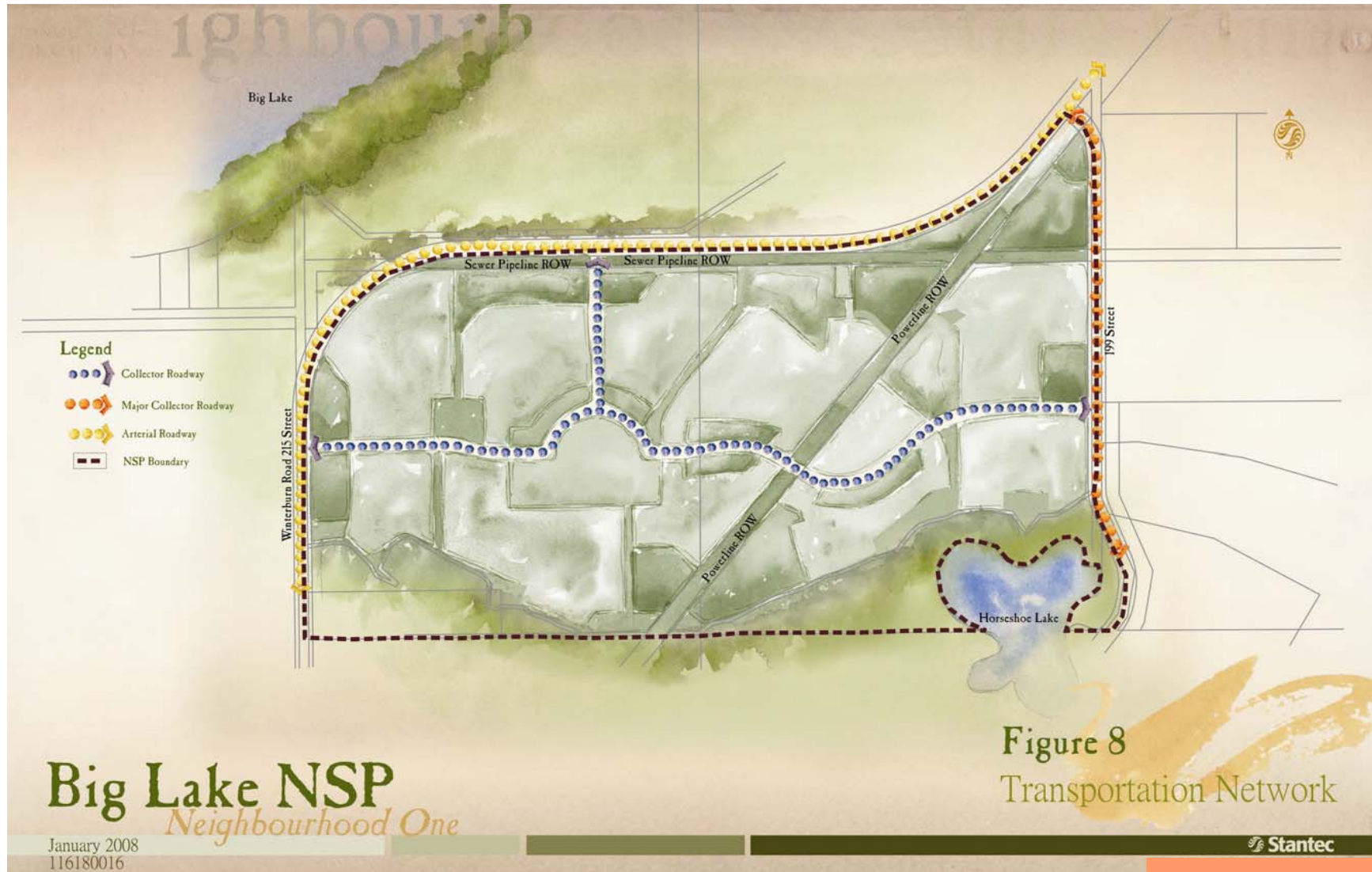
#### **4.5.1.2 Internal Roadway System**

Access to the arterial grid system will be provided by a series of collector roadways connecting into the neighbourhood, and facilitating traffic in an east-west direction. Collector roadways which provide internal / external access are spaced at appropriate intervals to facilitate traffic progression (if traffic signals are required), and to ensure that sufficient distance is available to allow for right and left turn-bay development. The collector roadway system accesses facilities that are planned for the Big Lake Neighbourhood One. The system will connect the neighbourhood sub-areas and provides residential areas with convenient access / egress within the neighbourhood as well as to the arterial roadways. These connections provide efficient and convenient access to residential areas, prevent traffic shortcutting through the neighbourhood, facilitate pedestrian movement along sidewalks to transit facilities, commercial, residential and park uses. This serves to further reinforce a local sense of place among residential sub-areas, reduce traffic volume and speeds, and establish a pedestrian-oriented streetscape (i.e. walkable environment).

The proposed lane requirements and rights-of-way for these roadway facilities as well as the arterial roadway network will be more fully addressed in the Big lake Neighbourhood One TIA submitted under separate cover. Other access and roadway requirements will be determined at the redistricting and subdivision stages to the satisfaction of the Transportation Department.

At the subdivision stage of development, the Developer and Transportation Department shall discuss potential traffic calming methods for implementation along the east-west collector roadway.

# BIG LAKE NEIGHBOURHOOD ONE NSP



Amended by editor

#### **4.5.1.3 Transit Service**

Public transit services will be extended into the NSP area in accordance with City of Edmonton Transit System Guidelines and demands, established on the basis of the proportion of trips, generated from within the neighbourhood and adjacent areas. However, ETS is uncertain when service will be available in the area due to fleet capacity issues. The Developer of this neighbourhood has agreed to pay for the operational cost of transit service for a 2 year period.

The design of the arterial and collector roadway system will provide excellent roadway infrastructure to provide effective transit service within the neighbourhood and to major external destinations. Accordingly, the neighbourhood has been designed in order to provide transit service within appropriate walking distance of planned transit routes (400 m). Convenient and accessible transit zones are reinforced through a continuous network of pedestrian walkways, and multi-use trail systems.

#### **4.5.1.4 Pedestrian and Bicycle Circulation**

A multi-use trail corridor (MUTC) through the electrical transmission corridor will provide internal northeast-southwest pedestrian and bicycle circulation. MUTCs will also be developed along the arterial roadway network (215 Street, 199 Street). Additional internal linkages and walkways integrating SWMF facilities and connections to parks and open spaces and neighbourhood focal points (e.g. commercial uses) are planned. A combination of sidewalks and pedestrian paths will be provided to complement the internal roadway network with pedestrian access to residential and commercial land uses, park sites, SWMF areas, and multi-use trail corridors. (See **Figure 7: Parks and Open Space**)

Bicycle circulation within the Big Lake Neighbourhood One NSP will be designed to follow collector and local roadways within the neighbourhood area. Bicycle routes will be integrated with pedestrian linkages / paths and multi-use trail corridors connecting internal and adjacent residential areas and amenities. Routes will be clearly marked using appropriate signage and markings in order to minimize potential conflicts between vehicles, cyclists and pedestrians in the neighbourhood.

## **5.0 Sustainable Planning Concepts**

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Due to the significance of Big Lake as an important Capital Region Natural Area, techniques to minimize impacts on the ecology of Big Lake are proposed to be incorporated with the adjacent development. The development of Big Lake Neighbourhood One itself can occur in a manner that is increasingly sustainable and sensitive to the environment through use of design techniques and alternate technologies that are more environmentally friendly.

In order to implement a development of this ecological nature, consideration of servicing techniques, roadway cross sections and infrastructure provision in general that differs from City of Edmonton standards may be necessary.

The approach to neighbourhood design in Big Lake Neighbourhood One is proposed to achieve a higher environmental standard, and, in doing so, requires cooperation and flexibility between City Departments, utility agencies and the proponents of this plan in order to achieve this unique design.



## 5.1 SUSTAINABILITY INITIATIVES

This section describes some more environmentally friendly concepts that add to the sustainability of Big Lake Neighbourhood One. More detail on these initiatives is found in the Big Lake Neighbourhood One Ecological Design Report.

### 5.1.1 Low Impact Development Initiatives

Low Impact Development (LID) is an approach that uses simple ecological principles to reflect natural ecosystem processes with respect to managing stormwater in a developed area.

Planning for alternative stormwater management systems in the initial stages of land development can yield significant cost and environmental benefits for developers, municipalities, and residents. Stormwater management systems can simultaneously satisfy regulatory requirements, act as site design elements, protect the environment by reducing runoff and improving water quality, and reduce infrastructure costs — all the attributes of minimizing the impact of development.

One concept is to implement alternate conveyance systems to slow the erosive velocity of stormwater, increase time of concentration, and use natural systems to filter pollutants such as sediment, nutrients and heavy metals. Another initiative is to reduce the quantity of stormwater runoff to improve the quality of water entering Big Lake. This can be achieved through the installation of various infiltration systems which encourage the downward movement of water into the underlying soil to reduce the total quantity of overland runoff and pollutants from impervious surfaces. The following paragraphs provide some techniques in alternate conveyance systems and infiltration systems that may be implemented in this neighbourhood design. **Figure 9: Stormwater Initiatives** provides illustrations of some of these concepts.

#### 5.1.1.1 Vegetated Channels/Bioswales

Vegetated swale systems or bioswales are alternatives for conveying water away from streets, downspouts, and structures. They are alternatives to conventional conveyance systems, such as curbs and gutter or concrete channels. These alternatives reduce storm water velocities, allow sediment and pollutants contained within stormwater to be filtered, as well as allowing water infiltration.

In residential settings, bioswales are an effective way to convey water to stormwater management facilities. When used in conjunction with stormwater management facilities areas, bioswales function as treatment mechanisms that filter stormwater. These systems consist of two general components: the buffer (filter strips) and the channel (vegetated swale).

The buffers, or filter strips, are considered pre-treatment devices, meaning that water is routed through them before entering systems such as bioswales or bioretention areas. The filter strip is a low-slope vegetated area that permits sediment deposition and associated contaminant filtration during sheetflow and that slows water before it enters the swale.

The swales collect and convey stormwater, and act as initial sites for stormwater treatment. These vegetated channels improve water quality by decreasing water velocity and thus allowing suspended solids and heavy metals to fall out of the flow. Some metals and nutrients (like nitrogen or phosphorous) will also be absorbed by the plant life in the channels.

Two types of bioswales are proposed for application within the neighbourhood. Bioswales are proposed within the greenways, and also within the centre median of the collector roadway through the neighbourhood. This bioswale system will service approximately 30% or more of the land within the neighbourhood. City Administration has been involved in

discussions regarding the bioswale concept and a preliminary cross section. Specific designs and cross sections will be developed at the time of detailed engineering.

### 5.1.1.2 Constructed Wetlands

This NSP proposes three naturalized wetland SWMFs as a key step in stormwater retention, filtration and infiltration.

Constructed wetlands systems use soils, vegetation, and hydrology to remove pollutants from storm water through increased contact time with soils and plant materials. The systems are effective in attenuating flood flows, reducing pollutant loadings, and providing wildlife habitat. As compared with conventional storm water management systems, constructed wetlands more closely mimic the natural hydrologic cycle, allowing soils and plants to filter pollutants from storm water and permitting the processes of infiltration, evaporation, and transpiration to occur. The systems create wildlife habitat, minimize erosion, and recharge local groundwater supplies. From a community design standpoint, wetlands systems can create open space, offer improved aesthetics over traditional treatment systems, and provide recreational and educational opportunities.

Similar to their natural counterparts, constructed wetlands types can vary from seasonally inundated to year-round, open-water systems. To optimize pollutant removal capacities, engineers usually aim to maximize flow paths through wetlands systems to prolong exposure to soils and vegetation, thereby facilitating nutrient and pollutant uptake, retention, and settling.

### 5.1.1.3 Outfall & Channel

The proposed outfall structure for this neighbourhood will be located along the northern edge of the NSP area, some distance from the shoreline. From the storm water management pond, water will flow overland through the existing vegetated channel into Big Lake. This outfall system will minimize disturbance at the shoreline of Big Lake. A bioengineered erosion control method is proposed for this channel to create a more attractive channel, that will support more plant life and that will provide one additional opportunity for filtration prior to discharge.

## 5.1.2 Reverse Housing

Reverse housing is a design concept that reduces the amount of roadway infrastructure required for residential development, thereby reducing the amount of impervious surfaces. In this design, homes front onto an open space area, and are accessed through a rear laneway. **Figure 10: Reverse Housing** illustrates this concept. Reverse housing creates a unique sense of community and encourages social interaction among neighbours. The design of the Big Lake Neighbourhood One NSP allows the flexibility for implementing a reverse housing design in an area in the northwest portion of the neighbourhood. The reverse housing concept will require Direct Control zoning to implement this innovative design.

## 5.1.3 Wildlife Corridors

Connections proposed between the ravine, park spaces, and SWMFs and Big Lake will act as corridors for wildlife. These generally run north-south, following the greenway/bioswale system, to connect Horseshoe Lake and the ravine to the south with the Big Lake / Lois Hole Centennial Provincial Park area. The corridors are designed to allow movement of smaller animals such as birds, porcupine, amphibians, etc. The corridors should be between 15 and 36 m in width, and will use native vegetation as much as possible.

Planning for alternative stormwater management techniques in the initial stages of land development can yield significant cost and environmental benefits for developers, municipalities, and residents. Stormwater management systems can simultaneously satisfy regulatory requirements, act as site design elements, protect the environment, and reduce infrastructure costs all the attributes of minimizing the impact of development.

**Constructed wetland:**

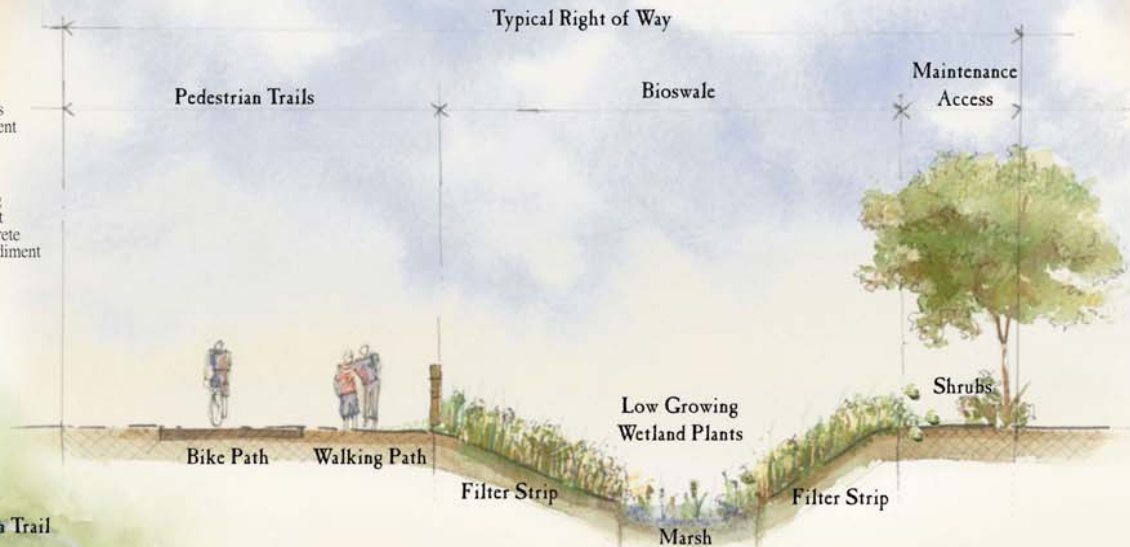
Constructed wetlands systems use soils, vegetation, and hydrology to remove pollutants from storm water. The systems are effective in attenuating flood flows, reducing pollutant loadings, and providing wildlife habitat. From a community design standpoint, wetlands systems can create open space, offer improved aesthetics over traditional treatment systems, and provide recreational and educational opportunities.

**Bioswale:**

Vegetated channel systems and bioswales are alternatives for conveying water away from streets, down spouts, and structures. They are low-cost alternatives to conventional conveyance systems, such as curbs or concrete channels. These alternatives reduce storm water velocities and allow sediment and pollutants contained within storm water to be filtered.

**Conceptual Bioswale Cross Section**

**Conceptual Constructed Wetland**

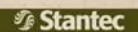


These are conceptual diagrams for illustrative purposes only. Future inclusion and implementation of this concept will depend on discussions with City of Edmonton Administration.

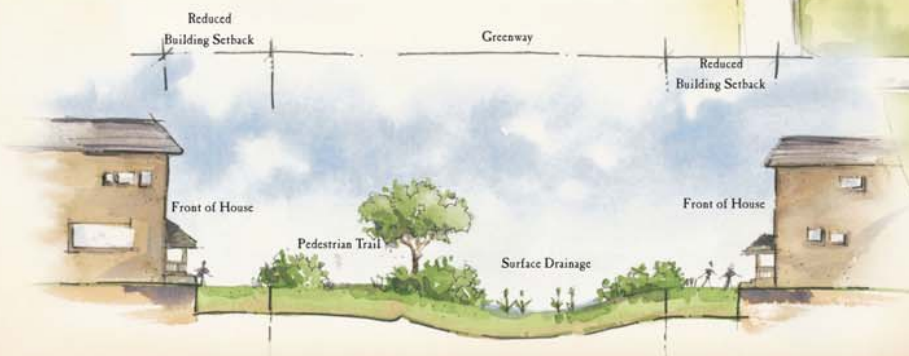
**Big Lake NSP**  
*Neighbourhood One*

January 2008  
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**Figure 9**  
Stormwater Initiatives



Reverse housing is a design concept that reduces the amount of roadway infrastructure required for residential development, and in turn, reduces the amount of impervious surfaces. In this design, homes front onto an open space area, and are accessed through a rear laneway. Reverse housing creates a unique sense of community and encourages social interaction among neighbours.



These are conceptual diagrams for illustrative purposes only. Future inclusion and implementation of this concept will depend on discussions with City of Edmonton Administration.

Figure 10  
Reverse Housing

Big Lake NSP  
*Neighbourhood One*

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### 5.1.4 Wildlife Crossings

In order to accommodate wildlife movement across arterial roads surrounding Big Lake Neighborhood One, small animal culverts may be utilized. For many of the smaller mammals, roads present a formidable barrier and this design measure reduces the occurrence of wildlife-vehicle collisions. McDonald and Cassady St. Clair (2004)<sup>1</sup> revealed small mammal movement across a high density roadway may be substantially enhanced by the placement of such passage structures. It is expected that animals will prefer to follow the natural terrain path of the culvert because it is low to the ground rather than crossing the road embankment (Parks Canada 2007)<sup>2</sup>. Culverts can also be lined with natural soils and localized plantings that will provide a natural environment, further enticing the animal to utilize the system.

Another important factor that is considered with the development of Big Lake Neighbourhood one to reduce the number of wildlife-vehicle collisions is the speed limit posted on arterial road at the north boundary of the neighbourhood. The speed limit on the arterial roads will be reduced where the wildlife crossings are identified by the upcoming Arterial Road Concept Planning Study.. Ng et al (2007)<sup>3</sup> conducted a study in the Edmonton area and revealed that the speed limit posted on major roads had a direct impact on the amount of collisions, and was also the most effective, low cost approach for reducing collision frequency. In addition to the reduced speed limit, proper wildlife signage will also be posted on the roadways within the Big Lake area. This signage will increase driver awareness to the potential presence of wildlife in the area, ultimately leading to a more cautious state of driving among local motorists.

Recognizing ecological connectivity between portions of the North Saskatchewan River Valley and Ravine System that are part of the Big Lake Area (also shown in Figure 3.4 of the Big Lake Neighbourhood One Ecological Design Report) and Big Lake, in the specific locations of where the Ravine is present on either side of the roadway, possible alternatives to the construction of 215 Street to a full arterial standard and 199 Street to a full major collector standard may also be explored to reduce the distance animals are required to travel. This opportunity may also be explored in (a) key location(s) for the arterial along the north boundary of the Plan area where wildlife corridors planned within the neighbourhood intersect the arterial to reduce barriers to wildlife movement between the plan area and Big Lake.

Speed reduction and wildlife crossings discussed in this Section are contemplated along 215 Street and 199 Street, to maintain wildlife connectivity between portions of the Saskatchewan River Valley and Ravine System that are part of the Big Lake Area as well as the arterial along the north boundary of the Plan area to maintain connectivity to Big Lake itself.

Details regarding the specific design measures and implementation of wildlife crossings will be discussed at the detailed engineering stage with affected City Administration.

Mitigation measures will be implemented during the construction of the neighbourhood to minimize potential impacts to wildlife crossings. Specific details will be determined between the developer and Transportation Department prior to construction.

### 5.1.5 Top-of-Bank

The Big Lake Neighbourhood One Ecological Design Report (EDR) contemplates a top-of-bank trail along the portion of ravine adjacent to Horseshoe Lake as opposed to a top-of-bank roadway as suggested by the City of Edmonton Top-of-

<sup>1</sup> MacDonald, W., Cassady St. Clair, C. 2004. Elements that promote highway crossing structure use by small mammals in Banff National Park. *Journal of Applied Ecology* 41, 82-93

<sup>2</sup> Banff National Parks of Canada, 2007. Trans Canada Highway Twinning Project, Phase IIIB

<sup>3</sup> Ng, J., W., Nielsen C., Cassady St. Clair, C., 2007. Landscape and traffic factors influencing deer-vehicle collisions in an urban environment. Department of Biological Sciences, University of Alberta, Edmonton, AB, Canada

Bank Roadway Policy. The choice for a top-of-bank trail is supported by both neighbourhood planning principles and environmental rationale contained within the report while still fulfilling the goal of the Policy to provide open space between ravines and urban development, and to provide public access to the ravine.

Rationale in support of a top-of-bank trail is identified in Appendix I and Section 5.0 of the Big Lake Neighbourhood One EDR. However, in summary, the top-of-bank trail is also supported by:

- Consistency with the overall Big Lake minimal impact design philosophy;
- A more tranquil nature appreciation experience;
- The fact that opportunities for parking and staging areas can still be incorporated with a top-of-bank trail;
- Efficiency in land use, consistent with the planning principles for Big Lake Neighbourhood One;
- Minimizing the pollutants entering the ravine, as automobile traffic is the largest contributor of pollutants running off from roadways;
- Minimizing conflicts between vehicles and wildlife, thereby reducing wildlife mortality;
- Minimizing wildlife barriers to movement by keeping vehicles/roadways at a greater distance from the ravine. Some species who require more vegetated areas for protection during movement may perceive vehicles/roadways as a threat;
- Reducing vehicular noise impacts to wildlife species residing or preying in the ravine.

Notwithstanding the discussion in support of the top-of-bank trail described in the Big Lake Neighbourhood One EDR, at the request of City Administration, a portion of top-of-bank roadway is proposed along the ravine adjacent to Horseshoe Lake to fulfill the Top-of-Bank (TOB) Roadway Policy.

Accordingly, the design of Neighbourhood One includes a combination of top-of-bank roadway, walkway and open space (viewpoint/pocket parks) along the ravine. The combined approach fulfills the purpose of the Policy to provide public access and protection with numerous open spaces, the top-of-bank setback, portions of top-of-bank roadway and other public access points (walkways) proposed adjacent to the ravine. The locations chosen for the top-of-bank pocket park sites were determined on site, specifically taking into consideration the characteristics of the ravine in these locations, the degree of slope adjacent to the top-of-bank line, opportunities for frequency in access to the ravine (i.e. enough frequency of access points along the length of the top-of-bank), views of Horseshoe Lake and the land use pattern proposed adjacent to the ravine.

Segments of the pocket parks adjacent to the ravine are planned to be bordered by local roadway to the north, and therefore provide top-of-bank roadway with opportunities for parking/staging areas with direct access to the ravine. Overall, top-of-bank roadway totaling approximately 26% of the ravine frontage across the neighbourhood is required to be identified and incorporated at the rezoning and subdivision stages of development; and in accordance with any geotechnical conditions/restrictions relating to the top-of-bank.

The width and material of the top-of-bank trail should also be considered from the perspective of balancing the goal to provide universal accessibility as well as the Big Lake minimal impact design approach:

- The goal of providing accessibility is to ensure that the surface of the trail allows for active modes of transportation (i.e. movement of wheelchairs, strollers, bicycles, in-line skates, etc.).
- The design of the trail fitting the Big Lake minimal-impact design approach should consider:

- the permeability of the surface material;
- the width of the trail in ensuring that active modes can be accommodated, but motorized vehicles are precluded and the probability of high-speed bicyclists is reduced;
- ensuring that runoff is directed appropriately.

Accordingly, the top-of-bank trail is proposed at width of 1.524 m (5 feet). This width would allow enough space for active modes of transportation, and is consistent with the measurement required for a universally accessible doorway as suggested by the Barrier Free Design Guide published by Alberta Municipal Affairs. A trail width of 1.5 m would also deter use of the trail by motorized vehicles (for example, snowmobiles or ATVs) as it would be too narrow.

In order to achieve more permeability and to reduce construction impacts, the preferred surface material of the proposed top-of-bank trail is a permeable surface that still allows movement for active modes of transportation. One example of this is a packed gravel and clay mixture; however, there are many different materials that can be used to achieve these goals. Following the policies of this plan to be innovative and more environmentally friendly, there should be flexibility to implement new technologies in this regard.

In the event that a permeable surface is not feasible, and an impervious hard-surface is implemented, the trail should be graded so that runoff is directed to an area with vegetation so as to maximize opportunities for infiltration and bioremediation.

Final details regarding the surface and width of the proposed top-of-bank trail as shown on **Figure 7: Parks and Open Spaces** will be determined at the zoning and subdivision stages of development in conjunction with City Administration. Further, additional walkway access points to the ravine will be established at the zoning and subdivision stages of development as necessitated to maintain pedestrian circulation and emergency access.

### **5.1.6 Wildlife Friendly Lighting**

Street lighting in this neighbourhood will use strategically placed fixtures that reduce light pollution, especially avoiding the projection of light into natural areas. Fixture design and placement shall ensure that most of the light produced will be projected downwards, rather than laterally into the surrounding environment. The use of long wavelength bulbs will be encouraged, as they are understood to have less impact on wildlife.

### **5.1.7 Working with Home Builders**

While many aspects of sustainability can be addressed within the design of the neighbourhood and are applicable to the NSP stage of development, there are several ways of implementing a more sustainable approach that occur on a site-specific basis, beyond the scope of this plan, at the building level. In this regard, homebuilders within the Big Lake Neighbourhood One NSP will be encouraged to implement and/or promote the following to future homebuyers:

- geo-thermal heating systems
- solar powered buildings
- energy efficient buildings or “Built Green” homes including aspects such as: low flow toilets, energy efficient appliances, energy efficient interior lighting and native landscaping, etc.

The above list is not exhaustive and as technology improves over the time that the neighbourhood develops, newly available sustainable measures should be considered and discussed for implementation within this area.

### 5.1.8 Public Education

Public education regarding the significance of the Big Lake ecosystem is important in ensuring residents have information on the sensitivity and uniqueness of this area and low impact design methods used in the development of the neighbourhood. Education will encourage residents to incorporate the minimal impact design philosophy in choosing Big Lake as their home. Educational signage will be erected near SWMFs, along bioswales, etc. and will address topics such as reducing fertilizer use, discouraging the use of sidewalk deicers, local wildlife, use of rain barrels, composting, and the overall benefits of environmental design. Showhome displays will be set up to portray examples of sustainable design methods, and pamphlets will be provided to new homeowners to explain the vision for the neighbourhood and how they can contribute to it, and maintain and preserve natural features and functions of the land.

## 5.2 LEED FOR NEIGHBOURHOOD DEVELOPMENT

The U.S. Green Building Council, the Congress for the New Urbanism, and the Natural Resources Defense Council are in the process of developing a set of standards for neighbourhood location and design based on the combined principles of smart growth, New Urbanism, and green building. The goal is to establish standards for assessing and rewarding environmentally superior development practices within the rating framework of the LEED® (Leadership in Energy and Environmental Design) Green Building Rating System.

While there is no intent to have Big Lake Neighbourhood One LEED-ND certified, the rating system was used as a source of inspiration and some concepts were incorporated into the design of the neighbourhood.

**Appendix B** shows how some of the LEED-ND concepts can be incorporated into the Big Lake Neighbourhood One NSP.

## 5.3 IMPLEMENTATION

Implementation of the sustainable planning concepts described in Section 5 are subject to further discussion with City of Edmonton Administration and affected Utility Agencies. These concepts may be introduced in the neighbourhood as a whole, or in specific cells or development areas within the neighbourhood.

## 6.0 Engineering and Servicing

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Details regarding servicing for the Big Lake Neighbourhood One NSP are provided in the associated Neighbourhood Design Report submitted under separate cover by Stantec Consulting Ltd. The following section provides an overview of the neighbourhood servicing schemes.

### 6.1 SANITARY SERVICING

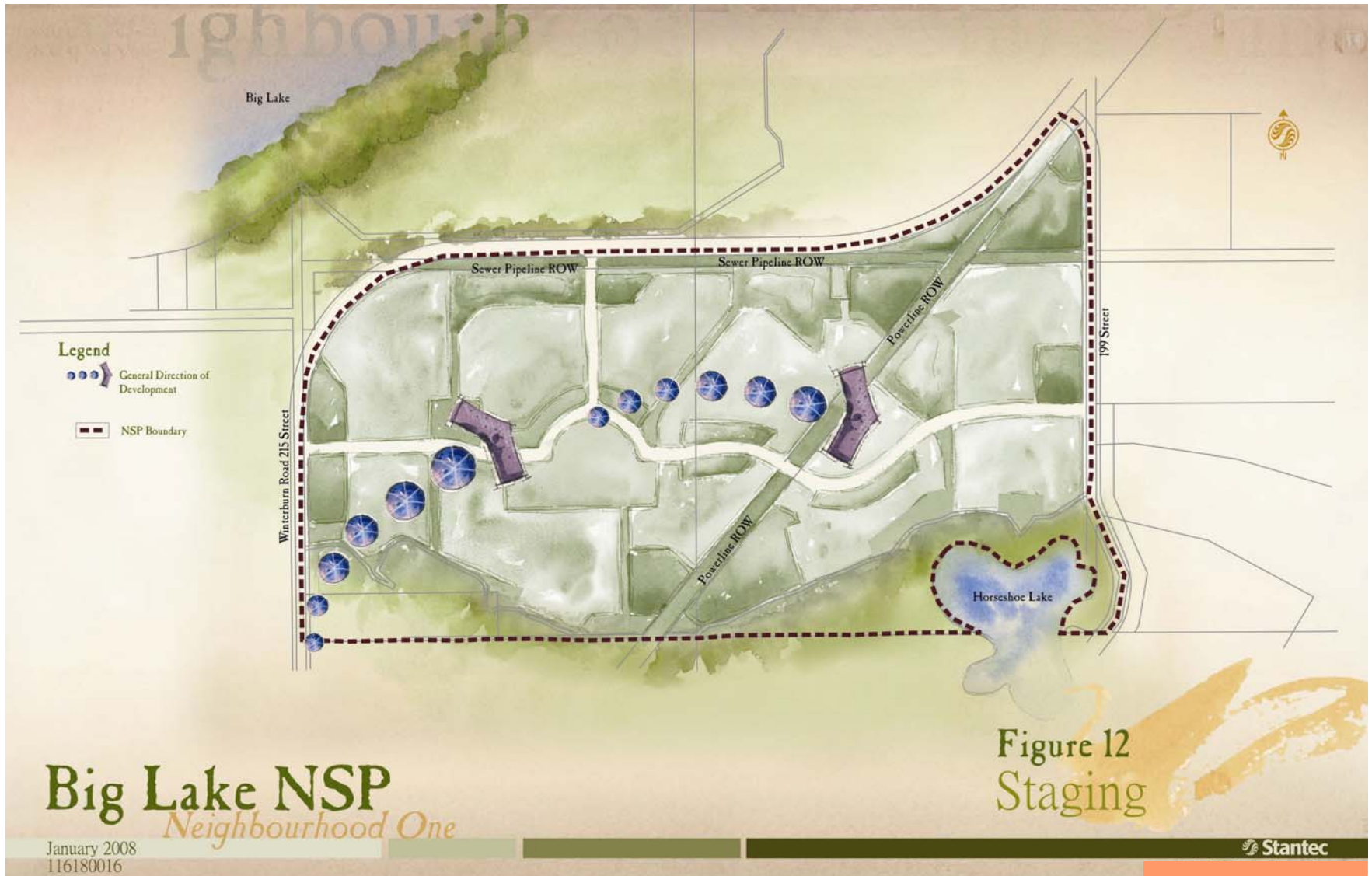
The flow of the sanitary system designed for Big Lake Neighbourhood One moves from west to east to a sanitary pump station in the northeast portion of the plan area. Sewage from this pump station is then directed south to the West Edmonton Sanitary Sewer (WESS). The sanitary servicing system is illustrated on **Figure 11: Servicing**. Further details regarding the sanitary drainage schemes for Big Lake Neighbourhood One are provided in the associated Neighbourhood Servicing Review submitted under separate cover.



BIG LAKE NEIGHBOURHOOD ONE NSP



BIG LAKE NEIGHBOURHOOD ONE NSP



## **6.2 STORM SERVICING**

As shown on **Figure 11: Servicing**, three stormwater management facilities are designated within the NSP. These have been located based on natural drainage patterns and pre-development sub-basin drainage boundaries.

Overall, stormwater drains to the north central portion of the plan area and then discharges further north into Big Lake. More details regarding the stormwater drainage schemes for Big Lake Neighbourhood One are provided in the associated Neighbourhood Design Report submitted under separate cover.

## **6.3 WATER SERVICING**

Water services for the neighbourhood will be extended from 215 Street via a 600 mm transmission main. Water servicing within the neighbourhood will be designed to provide peak hour flows and fire flows for low and medium density residential uses. As the NSP develops northwards, pressure-reducing valves may be required to service those lands within the north portion of the neighbourhood due to lower ground elevations. Water looping will be provided in accordance with the requirements of EPCOR Water along with submission of a Water Network Analysis for review and approval. See **Figure 11: Servicing**.

## **6.4 SHALLOW UTILITIES**

Shallow utilities including power, gas and telecommunication services will be extended into the plan area as required.

# **7.0 Implementation**

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## **7.1 DEVELOPMENT STAGING**

**Figure 12: Staging** shows the anticipated direction of development for Big Lake Neighbourhood One.

Infrastructure to service the initial stages of the NSP will be extended from the east at 199 Street and the west at 215 Street into the plan area. As shown on **Figure 12**, the initial stages of development are intended to begin at the outer edges of the neighbourhood, inwards.

In general, development will proceed in a manner that is contiguous, logical and economical with respect to municipal servicing. Development of individual phases may vary from the actual zoning and subdivision applications depending on contemporary market demands and aspirations of the respective landowners. Should sufficient demand warrant or engineering design be made more efficient, portions of separate phases may be developed concurrently.

## **7.2 ZONING AND SUBDIVISIONS**

Rezoning and subdivision applications will be undertaken as necessary and will conform to the land use designations as described in the NSP. Where zoning and subdivision applications shall be guided by the City of Edmonton's MDP, and intent of this NSP, they will be further required to adhere to the Edmonton Zoning Bylaw and informational requirements necessary for each application.

# **8.0 Policy Context and Rationale**

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The Big Lake Neighbourhood is supported by a number of policies and guidelines identified in the Municipal Development Plan, Smart Choices, Suburban Neighbourhood Design Principles, Crime Prevention Through Environmental Design, the Urban Parks Management Plan, the Big Lake Area Structure Plan and other relevant

policy / statutory documents. This section of the Plan describes the relevant policies from these documents and illustrates the design principles and rationale within the Big Lake Neighbourhood One NSP that implements these policies.

**Municipal Development Plan (MDP)** - The MDP is a document that provides the policies and strategies to help guide growth and development in Edmonton over a 10-year horizon. The City of Edmonton's MDP designates the land within the Big Lake ASP area as a Suburban Area, which permits the development of residential housing and ancillary uses.

**Suburban Neighbourhood Design Principles (SNDP)** - The City of Edmonton's Suburban Neighbourhood Design Principles describes a variety of design principles intended to encourage flexibility and innovation in the design and servicing of new neighbourhoods.

**Smart Choices for Developing Our Community – Council Recommendations** - The Smart Choices Recommendations were approved by City Council on March 23, 2004 to promote urban sustainability.

**Crime Prevention Through Environmental Design (CPTED)** – These guidelines are based upon the theory that the proper design and effective use of the built environment can reduce crime, the fear of crime and improve the quality of life.

**Urban Parks Management Plan (UPMP)** – These guidelines provide strategic direction for the acquisition, design, construction, maintenance, preservation and animation (or use) of parks.

**Big Lake Area Structure Plan (BL ASP)** – This document is the macro level statutory planning document governing the development of this portion of northwest Edmonton.

**Top-of-Bank Public Roadway Policy (TOB)** – This Policy outlines requirements for the provision of Top-of-Bank roadway and walkway adjacent to ravines within the City of Edmonton.

The following table summarizes key objectives from the above-noted policy documents applicable to the design of the NSP, and illustrates the rationale that has been incorporated in the NSP to achieve these objectives.

<p><b>Smart Growth</b>  <b>MDP Strategy 1.7.1</b> - Accommodate growth in an orderly, serviced and cost-effective manner  <b>MDP 1.3.4</b> - Promote intensification of development around transportation corridors and employment areas  <b>SNDP 12</b> - Locate multi-family uses toward the edge of new neighbourhoods and close to the community and neighbourhood focal points</p>	<ul style="list-style-type: none"> <li>▪ The Big Lake Neighbourhood One NSP represents a logical extension of infrastructure, services and neighbourhood development.</li> <li>▪ Development within the Big Lake Neighbourhood One NSP will utilize staged servicing in support of contiguous, orderly and economical development within northwest Edmonton. As servicing capacity continues to increase, additional infrastructure servicing can be extended into this area in a cost effective manner.</li> <li>▪ Careful attention has been given to locating higher residential densities near key transportation and pedestrian corridors within the NSP or at strategic nodes near or adjacent to open spaces and commercial uses and the ravine). This supports a balance of uses, intensification of development at key points within the neighbourhood, access to neighbourhood focal points and takes into consideration neighbourhood traffic patterns. The result is residential development easily accessed by a pedestrian, bicycle, transit and automobile traffic.</li> <li>▪ Commercial uses are located at key transportation and pedestrian corridor intersections and promote intensification in the surrounding area.</li> <li>▪ Medium density residential sites have been integrated with open space, internal pedestrian corridors, commercial facilities and neighbourhood entrances.</li> </ul>
<p><b>Urban interface and land use compatibility</b>  <b>MDP Strategy 1.1.2</b> - Address compatibility of land use in the development and review of land use plans and development proposals</p>	<ul style="list-style-type: none"> <li>▪ The Big Lake Neighbourhood One NSP proposes the development and thoughtful integration of low and medium density housing near existing urban services and developing residential communities.</li> <li>▪ Careful attention has been paid to addressing the interface and compatibility of land uses including major arterial roadways, electrical and pipeline transmission right-of-way corridors through the plan area.</li> </ul>

**Sustainable Development – Efficient and Effective land use**

**MDP Strategy 1.1.12** - Place a high priority on the effective and efficient use of land

**SNDP 3** - Design the arterial and collector roads along a grid pattern, peripheral to the neighbourhoods

**SNDP 8** - Design park and institutional sites and buildings within the neighbourhood and community focal points to be adaptable to other uses or levels of education over time

**SNDP 10** - Optimize the use of land and capital requirements for facilities such as churches, schools, community leagues and storm water management

- The Big Lake Neighbourhood One NSP contemplates an integrated mix of residential, open space and commercial land uses that contribute to an efficient land use pattern while respecting natural features and other development constraints.
- Residential areas have been designed to encourage a walkable pedestrian-oriented environment served by future transit facilities, neighbourhood commercial services, and open space opportunities.
- The Big Lake Neighbourhood One NSP supports Plan Edmonton's broader intensification strategy by integrating existing electrical transmission right-of-ways in a manner that supports the sustainable use of land, infrastructure, and services.
- The boundaries of the Big Lake Neighbourhood One NSP are defined by 199 Street, North Saskatchewan River Valley Ravine and 215 Street SW, aligned in a grid pattern, peripheral to the plan area.
- Medium density residential, open space, multi-use trail connections and local commercial uses have been located along collector and arterial roadways to ensure efficient pedestrian, vehicle and transit movement and access. Focal points within the neighbourhood are connected through a network of sidewalks, linkages, walkways and multi-use trails providing alternative transportation choices and forms of circulation (walking, cycling) within and outside the plan area.
- The proposed park sites are of sufficient size to accommodate other land uses on all or a portion of the land if development priorities change over time.
- Park sites are located as key focal points and central to the community, linked to central open space, and connected by a multi-use trail corridor network maximizing accessibility and use potential.

**Environmentally Sustainable Infrastructure**

**MDP Strategy 1.1.13** - Plan for urban development which is environmentally friendly and fiscally sustainable in the long term, based on the City's financing, infrastructure and environmental strategies

**SNDP 1** - Design neighbourhoods with the intent of sharing common infrastructure facilities among neighbourhoods

**SNDP 4** - Design neighbourhood streets (both neighbourhood design and cross section of roadway) with standards that cater to the main intended use of the road

**MDP Strategy 1.1.14** - Maintain the integrity of pipelines and utility corridors while planning for growth and development

- The Big Lake Neighbourhood One NSP will be developed in an environmentally responsible manner. Some alternative storm servicing and housing layouts are proposed, maximizing land use efficiency and shared infrastructure through compact development.
- The Big Lake Neighbourhood One NSP provides for the efficient, cost effective and coordinated delivery of engineering services.
- Stormwater management facilities (SWMFs) will incorporate design elements to enhance the quality of stormwater runoff thereby reducing potential environmental impacts and water treatment costs. Thoughtful design of SWM facilities will further contribute to available visual and passive recreational amenities for residents.
- Future costs associated with sanitary service will be recovered from new developments on a per hectare assessment basis on all benefiting areas. The developer will pay for the full construction cost of collector and local roadways within the neighbourhood.
- The Big Lake Neighbourhood One NSP provides opportunity to share both neighbourhood facilities and infrastructure in the future. Infrastructure to service the NSP is part of a larger system to service lands north of Anthony Henday Drive in northwest Edmonton.
- Roadways within the neighbourhood are intended to be developed as a mixture of arterial, collector and local roadways. Adjacent land uses will assist in the determination of appropriate road right-of-way widths and cross sections.
- Open spaces have been linked within the multi-use trail corridor network. This will enable greater accessibility and efficient use of open space over time while encouraging alternative transportation options locally. Auto dependency and demand for roadway infrastructure may be lessened through walking, cycling, or transit services as a result of pedestrian-oriented design for a walkable community.
- The NSP proposes smaller dispersed open spaces that could be created from municipal reserves at the subdivision stage. These areas are to provide local residents a range of open space opportunities and, in conjunction with the multi-use trail corridor network, additional recreational options within the greater catchment area.
- The Big Lake Neighbourhood One NSP maintains the integrity of the electrical corridor right-of-ways within the plan boundary. This has deliberately been included within the NSP as multi-use trail corridor and integrated within the local street pattern to form the basic infrastructure necessary for a walkable, pedestrian-oriented community. This design will not disrupt the functioning the corridor.

<p><b>Alternative Transportation Options</b></p> <p><b>SNDP 5</b> - Provide convenient pedestrian and bicycle access throughout the neighbourhood and especially between destination points within and outside the neighbourhood</p> <p><b>SNDP 6</b> - Provide Transit Services to the edges of new neighbourhoods using the arterial and collector roadways in conjunction with appropriately designed, strategically located and conveniently accessed transit waiting zones</p> <p><b>SNDP 11</b> - Create a linked open space system through open spaces created by stormwater management facilities, some utility rights-of-way, preservation of appropriate natural areas and drainage courses, and school and park open spaces</p>	<ul style="list-style-type: none"> <li>▪ The NSP provides greenways for pedestrian and bicycle movement throughout the plan area. Access is intended to follow the local, collector and arterial roadway network in addition to these walkways and multi-use trail corridors.</li> <li>▪ Future transit service is appropriate along the arterial and collector roadway network. Alignment of collector roadways and the strategic location of walkways are designed so that all areas of the neighbourhood are accessible to transit stops within a 400 m walking distance.</li> <li>▪ The Big Lake Neighbourhood One NSP provides excellent opportunities for linkages throughout and beyond the plan area to connect residents with amenities (Lois Hole Provincial Park) and commercial services. An integrated open space system and multi-use trail corridor network provide linkages between SWMFs, park sites as well as access to visual amenities, passive and active recreation opportunities, and alternative modes of transportation (e.g. pedestrian, in-line skating, cycling).</li> </ul>
<p><b>Environmental Protection</b></p> <p><b>SNDP 13</b> - Use stormwater management techniques which provide an alternative(s) to the man made lakes and dry ponds typical to Edmonton</p>	<ul style="list-style-type: none"> <li>▪ The plan encourages use of native plant material to complement the ecology and preserve Big Lake and the North Saskatchewan River Valley System.</li> <li>▪ Areas dedicated for Environmental Reserve adjacent to the North Saskatchewan River Valley Ravine shall be considered as required under Section 664 of the Municipal Government Act.</li> <li>▪ Areas dedicated for neighbourhood parks, greenways, open spaces, and community league facilities are considered with respect to 10% Municipal Reserves allocation set out under Section 666 of the Municipal Government Act.</li> <li>▪ Alternative stormwater management techniques may be considered, such as constructed wetlands or greenway watercourses.</li> </ul>



<p><b>Parkland Use and Design</b></p> <p><b>UPMP 2a</b> - Ensure parks serve all members of the community</p> <p><b>UPMP 2b</b> – Ensure parkland accessibility</p> <p><b>UPMP 4b</b> – Ensure parks integrate into the daily lives of Edmontonians</p> <p><b>SNDP 2</b> - Design and locate school and community facilities to provide inter-neighbourhood focal points</p> <p><b>UPMP 4c</b> – Ensure the provision of active and passive recreation experiences</p> <p><b>SNDP 9</b> - Explore opportunities to provide smaller, dispersed open space and parks in a neighbourhood to provide for localized needs while meeting the recreational needs of residents of the catchment area</p> <p><b>UPMP 5a</b> – Ensure parkland is safe for public use</p> <p><b>UPMP 7a</b> – Provide land for school facilities</p> <p><b>UPMP 8d</b> - Facilitate timely base level park development</p> <p><b>SNDP 7</b> - At the area and neighbourhood planning stage, plan the location of the school/park facilities relative to neighbourhood staging such that they can be consolidated, serviced and available early in the development of a neighbourhood or catchment area</p>	<ul style="list-style-type: none"> <li>▪ The park sites within the plan area are located to serve as open space for all residents within a 400m or less walking distance. These park sites are integrated and connected by a comprehensive neighbourhood open space and walkway system. These numerous opportunities for recreation ensure that Edmontonians can integrate park use into their daily lives.</li> <li>▪ A combination of Urban Village Parks, Pocket Parks and Greenways sized in accordance with the UPMP provide the opportunity for development of these areas for both passive and active recreation. Landscaped amenity areas surrounding stormwater management facilities also provide additional opportunities for passive recreation.</li> <li>▪ Open space (including stormwater management facilities) within the NSP is designed to have good visibility and natural surveillance. Future landscaping and design of these areas must take into consideration Crime Prevention Through Environmental Design (CPTED) principles as specified in the City of Edmonton Design Guide for a Safer City.</li> <li>▪ The Big Lake Neighbourhood One NSP designates a park site located with collector roadway access. This facility provides a focal point and recreational opportunities along with convenient access.</li> </ul>
<p><b>TOB Roadway Policy</b></p> <p>Ensure the provision of an open space between the North Saskatchewan River Valley and Ravine System and urban development.</p> <p>Provide public access to the North Saskatchewan River Valley and Ravine System.</p>	<ul style="list-style-type: none"> <li>▪ The Big Lake Neighbourhood One NSP contemplates a top-of-bank trail along the portion of ravine adjacent to Horseshoe Lake as opposed to a top-of-bank roadway</li> <li>▪ The plan includes several top-of-bank pocket parks for public access (in addition to the top-of-bank trail proposed along the entire length) to the ravine and provides separation between residential development and the ravine.</li> <li>▪ Also see Section 6.1.4 of this NSP and the Big Lake EDR</li> </ul>

**APPENDIX 1**  
**Land Use and**  
**Population Statistics**

**BIG LAKE NEIGHBOURHOOD ONE  
NEIGHBOURHOOD STRUCTURE PLAN  
PROPOSED LAND USE AND POPULATION STATISTICS - BYLAW 14803**

LAND USE	Area (ha)	% of GDA
<b>Gross Area</b>	<b>135.04</b>	
Environmental Reserves ('ER')*	16.41	
Powerline ROW	4.97	
Arterial Road Widening	4.83	
Sewer ROW	3.28	
<b>Gross Developable Area</b>	<b>105.55</b>	<b>100%</b>
Municipal Reserves**	9.40	8.9%
Parks	8.87	8.4%
Greenways	0.53	0.5%
Bioswales	0.60	0.6%
Stormwater Management/PUL	8.20	7.8%
Commercial	0.48	0.5%
Mixed-Use (Commercial)***	0.17	0.2%
Circulation @ 20%	21.11	20%
<b>Total Non-Residential Area</b>	<b>39.96</b>	<b>46.8%</b>
<b>Net Residential Area</b>	<b>65.59</b>	<b>53.2%</b>

**RESIDENTIAL LAND USE, DWELLING UNIT COUNT AND POPULATION**

Land Use	Area (ha)	Units/ha	Units	% of Total	People/Unit	Population
Low Density Residential	48.46	20	969	49.2%	3.10	3,005
Street-Oriented Residential	2.07	28	58	2.9%	2.10	122
Medium Density Residential	14.09	65	916	46.5%	1.50	1,374
Mixed Use (Residential)***	0.97	28	27	1.4%	1.50	41
<b>Total</b>	<b>65.59</b>		<b>1,970</b>	<b>100.0%</b>		<b>4,541</b>

**Gross Population Density:** 43.0 persons per gross developable hectare  
**Net Population Density:** 69.2 persons per net residential hectare  
**Unit Density:** 29.7 units per net developable hectare  
**LDR/MDR\*\*\*\* Ratio:** 49.2%/50.8%

**STUDENT GENERATION STATISTICS**

Level	Public	Separate	Total
Grades K-8	211	70	281
Grades 9-12	106	35	141
<b>Total</b>	<b>317</b>	<b>106</b>	<b>422</b>

Note: \*Areas for Environmental Reserves are based on contour and airphoto interpretation only and subject to change.  
 \*\*The area and location of the Municipal Reserve will ultimately be determined at the time of subdivision and through discussions with Community Services  
 \*\*\*Areas derived by dividing 0.95 ha Mixed Use total between residential (85%) and commercial (15%) uses.  
 \*\*\*\*Street-Oriented and Mixed Use is calculated as MDR.

**APPENDIX 2**  
**LEED ND Concepts**

## **LEED-ND Pilot Program**

A LEED-ND pilot program is being tested in the United States, and will inform the ultimate rating system when it is developed. The pilot rating system is currently divided into four categories: Smart Location and Linkage; Neighbourhood Pattern & Design; Green Construction & Technology; and Innovation & Design Process. Each category consists of several prerequisites and numerous credits. Prerequisites must be achieved, while credits are optional and more credits can lead to a higher certification level.

Due to the fact that the LEED-ND system was created in the United States, some of the categories are based on US classification systems and standards (e.g. soil classification) and complicate accurate scoring within that category. Furthermore, the certification process used is not compatible with the general timeline for neighbourhood design that is used in Edmonton. A number of credit and prerequisite items are only applicable at the site planning or building permit stage. This level of detail is not applicable at the NSP level of planning in the Edmonton context, and specific building design components have not been developed at this time (many of the concepts addressed in the Green Construction & Technology, for example). The Canadian counterpart to the Green Building Council anticipates the creation of a Canadian-based LEED-ND once the US version has been tested through the pilot phase.

As the current LEED-ND rating system is in its infancy, US-based, and not yet fully developed and tested, it is challenging to develop a LEED neighbourhood design at this time. However, some of the credit categories can be implemented in the design of the Big Lake Neighbourhood One NSP.

## LEED-ND concepts that can be incorporated into the Big Lake Neighbourhood One NSP

Smart Location and Linkage		Intent	Comments
Prereq 2	Proximity to water & wastewater infrastructure	Development occurs near existing communities; conserve natural and financial costs of infrastructure development and maintenance	Site is near existing water and wastewater infrastructure; developer funds extension of system in to neighbourhood
Prereq 3	Imperiled species and ecological communities	Protect imperiled species and ecological communities	No know endangered species present; natural area (i.e. riparian areas) dedicated to City for conservation purposes
Prereq 4	Wetland & water body conservation	Conserve water quality, natural hydrology and habitat, preserve biodiversity	Impact on three previously degraded wetland sites is compensated for by wetland restoration and naturalization
Prereq 6	Floodplain avoidance	Protect life and property, promote open space and habitat conservation, enhance water quality and hydrological systems.	
Credit 5	Bicycle network	Promote bicycling and transportation efficiency	Bicycle network will be built; access to 'diverse services' develop with time
Credit 7	School proximity	Promote physical activity, community interaction and engagement	
Credit 8	Steep slope protection	Minimize erosion and stress on natural water systems; protect habitat	
Credit 9	Site design for habitat or wetland conservation	Conserve wildlife habitat, wetlands and water bodies	Water bodies are protected by relevant statutes and bylaws; degraded wetlands are to be rebuilt and native vegetation used in landscaping and filtration
Credit 10	Restoration of habitat or wetlands	Restore wildlife habitat and wetlands	Stormwater wetlands are restored using native vegetation
Credit 11	Conservation management of habitat or wetlands	Conserve native wildlife habitat, wetlands and water bodies	See above; responsibility for water bodies lies with provincial gov't, responsibility for constructed wetlands assumed by City

## BIG LAKE NEIGHBOURHOOD ONE NSP

Neighbourhood Pattern and Design			
Prereq 1	Open community	Promote communities that are physically connected to each other; foster community connectedness beyond the development	Streets and sidewalks (as well as pathways, parks and walkways) are all publicly owned and accessible
Prereq 2	Compact development	Conserve land, promote livability, transportation efficiency and walkability	At a density of 29.98 dwelling units per net residential hectare, this project would qualify as compact development
Credit 1	Compact development	See above	Project would likely be at the low end of the points scale; compact development not necessarily a development goal due to additional impacts.
Credit 3	Diversity of housing types	Enable range of economic levels and age groups to live within a community	Diversity score using only LDR/MDR was indicators yields a non point-earning score of 0.47. Score would likely increase if housing types were used (i.e. row housing, low rise apartments, etc.), which are determined at a later stage
Credit 4	Affordable rental housing	See above	Not applicable at this stage; no policy from City
Credit 5	Affordable for-sale housing	See above	Not applicable at this stage; no policy from City
Credit 6	Reduce parking footprint	Design to increase pedestrian orientation of projects to minimize adverse environmental affects of parking facilities	Opportunities exist at the site planning stage
Credit 8	Street network	Internal connectivity and location of projects to conserve land, promote multimodal transportation, promote physical activity	Opportunities exist at the subdivision stage
Credit 9	Transit facilities	Encourage transit use and reduce driving through safe and comfortable transit facilities	Requires negotiation with Edmonton Transit at a later stage
Credit 12	Access to public spaces	Provide a variety of open spaces close to work & home; encourage walking, physical activity and time spent outdoors	Number of park spaces and distance from residents likely meets requirements
Credit 13	Access to active spaces	See above	
Credit 14	Universal accessibility	Increase proportion of areas that are useable by people of diverse abilities	Rating based on U.S. legislation (e.g. FHAA)
Credit 15	Community outreach & involvement	Encourage community participation in the project design	Planning process involves multiple public meetings, meetings with neighbours, City administration, interest groups, etc.

**BIG LAKE NEIGHBOURHOOD ONE NSP**

<b>Green Construction and Technology</b>			
Prereq 1	Construction activity pollution prevention	Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, dust generation	Environmental Design Report for this NSP includes an Erosion and Sedimentation Control Plan
Credit 1	LEED certified green buildings	Encourage the design and construction of buildings to utilize green building practices	<i>Note:</i> While builders are encouraged to use sustainable building techniques and promote resource conservation, most of this section is beyond the scope of this plan
Credit 2	Energy efficiency in buildings	Encourage the design and construction of buildings to reduce water, air, land pollution and environmental impacts from energy production and consumption	N/A at NSP stage. Opportunities exist at building stage.
Credit 3	Reduced water use	Minimize water use in buildings and for landscape irrigation	N/A at NSP stage. Opportunities exist at building stage.
Credit 6	Minimize site disturbances through site design	Preserving existing tree canopy, native vegetation and pervious surfaces while encouraging high density & smart growth	Existing tree canopy and native vegetation to be preserved
Credit 7	Minimize site disturbance through construction	Preserving existing native areas & trees to provide habitat and promote biodiversity	Existing tree canopy and native vegetation to be preserved
Credit 9	Stormwater management	Reduce pollution and hydrologic instability from stormwater, prevent flooding, and promote aquifer recharge	Engineered wetlands mimic natural ecological functions and provide controlled discharge
Credit 11	Solar orientation	Enhance energy efficiency by creating conditions for passive and active solar strategies	N/A at NSP stage. Opportunities exist at building stage.
Credit 12	On-site energy generation	Reduce air, water and land pollution from energy consumption by increasing the efficiency of the power delivery system	N/A at NSP stage. Opportunities exist at building stage.
Credit 14	District heating & cooling	Reduce air, water and land pollution from energy consumption in buildings through energy efficient district technologies	N/A at NSP stage. Opportunities exist at building stage.
Credit 15	Infrastructure energy efficiency	Reduce air, water and land pollution from energy consumption	N/A at NSP stage. Opportunities exist at building stage.
Credit 18	Construction waste management	Divert debris from landfills; redirect recyclables back to manufacturing process; redirect reusable material to appropriate sites	N/A at NSP stage. Opportunities exist at building stage.
Credit 20	Light pollution reduction		
<b>Innovation and Design Process</b>			
Credit 1	Innovation and exemplary performance	Promote exemplary performance or innovation in green building, smart growth, or new urbanist categories	First NSP to use many of the sustainability concepts
Credit 2	LEED accredited professional	Encourage and support planning and design integration required by a LEED-ND project	



**APPENDIX 3**  
**Ownership Plan**

BIG LAKE NEIGHBOURHOOD ONE NSP

APPENDIX 3

