

Appendix A

Opportunities and Constraints Analysis

1.0. INTRODUCTION

In 2005, The City of Edmonton began a study entitled “Vision for Terwillegar Park” which was approved by City Council later that year. In 2007, the City of Edmonton initiated a study focused on taking the vision plan to the next level – preparation of a concept plan to guide the future development and management of the Park. This **Opportunities and Constraints Analysis** is one of the first products of this study, and provides a summary of the background research and assessment work completed in the initial phase of the study, and outlines the identified opportunities and constraints which will be used as a framework for conceptual design.

The information provided in this report is based on information already compiled within the Vision Plan, a review of previous reports and plans for the Park, as well as field inventories and analysis completed by various members of the Design Team¹. The opportunities and constraints analysis has also been supplemented by input from City Project Team², other City staff from various departments, Advisory Committee³ members, and stakeholders who have offered their own individual knowledge, experience and expertise⁴. This analysis is program-based, and not site-specific – meaning that rather than depicting exactly *where* opportunities can be accommodated, it generalizes opportunities and constraints at a program or activity level with less specific reference to specific locations on the site.

Working with stakeholders in a workshop setting, this analysis will be used to develop a program (list of suitable features and activities) for the development and management of Terwillegar Park within the context of the vision of a “unique natural park”. Once the program is approved, the Design Team, again with input from the Advisory Committee, stakeholders and the public, will consider where on the site the program elements would be best located through the design of several alternative concept plans.

Throughout this document are excerpts within text boxes that summarize “Opportunities” or “Constraints” as they are introduced within the text. These boxes provide a quick summary of the various study area conditions that will be used to influence the next steps of this study. The document will also make numerous references to the “Vision for Terwillegar Park (2005)” report prepared by Randall Conrad & Associates Ltd., which will be referred to as the “Vision Plan” with no footnote.

Throughout the Concept Plan Study, the Terwillegar Park Advisory Committee (TPAC) will meet to review information and provide direct input into assessment, planning and concept plan development. The opportunities and constraints analysis involved the TPAC at four occasions, including: a preliminary meeting to review the complete study process wherein the opportunities and constraints model was outlined; two on-site tours to review field conditions; and a fourth meeting where the Design Team presented and discussed the findings contained in this report.

Opportunity – members of the Terwillegar Park Advisory Committee have intimate knowledge of the Park and will be asked throughout the study to provide input and test ideas on the uses, impacts, design, development and management of Terwillegar Park

¹ The Design Team is made up of the various consultants retained by the City and led by ISL Engineering and Land Services.

² The City Project Team is made up of senior City staff representing several departments

³ The Terwillegar Park Advisory Committee is made up of representatives of some of the key stakeholder groups for the Park as well as interested ‘public at large’ members

⁴ Note: the input of City staff, Advisory Committee and stakeholders into the opportunities and constraints analysis will be ongoing through the assessment and preliminary concept design stages of the study.

2.0. BACKGROUND REVIEW

2.1. Site Context

Site Area

Terwillegar Park is a 174 hectare (430 acre) parcel of land located near the southerly portion of the North Saskatchewan River Valley within the City of Edmonton. The Park is surrounded by the North Saskatchewan River on three sides and is accessible by vehicle from the west end of Rabbit Hill Road in the Riverbend community. There are approximately five informal (unimproved) trail connections into the park. Existing development within the park is limited to the access road, a 60-stall gravel parking lot, extensive informal trails and a few amenities such as benches, signs and trash receptacles.

Adjacent Lands

Adjacent lands to the north / northwest across the river include the Edmonton Golf and Country Club and Centennial Valley Lands. The EL Smith Water Treatment Facility lies to the southwest across the river from Terwillegar Park. Existing residential communities line the road leading into the park; while “newly established, growing and emerging residential communities surround this portion of Edmonton’s southwest river valley.” (Vision Plan)

Within the context of the ‘Capital Region River Valley Park’ prepared by the River Valley Alliance (RVA) in 2007, Terwillegar Park lies within the “Valley Attractions” zone that contains a number of Edmonton’s most well known parks. In this context, Terwillegar Park is seen as a nature-based park serving the surrounding neighborhoods while providing connections through the overall river valley network for all citizens of Edmonton.

Opportunity – Terwillegar Park is well positioned to service the needs of a growing number of residents in Edmonton’s south west and west end neighborhoods as well as to provide a unique destination within the ‘Capital Region River Valley Park’ for all citizens of Edmonton

Vision Plan

“A Vision for Terwillegar Park,” (referred to in this document as the Vision Plan), provides a vision for Terwillegar Park as “A Unique Natural Park within the City of Edmonton’s River Valley Park System”. The Vision Plan reflects a public desire to design and manage the Park as a natural park which retains and enhances natural, but accessible, landscapes while meeting of the needs of current and future users from across the City. The preparation of the **Terwillegar Park Concept Plan Study** as the next step in the planning and design of the Park was a recommendation of the Vision Plan. This study will build upon the input, work and recommendations approved in the Vision Plan.

Approximately 1200 citizens participated in the visioning process. Community input was obtained through series of public focus group meetings, direct e-mail and telephone contact, public open houses, a stakeholder group questionnaire, and a City-wide telephone survey. Additionally, an academic forum was also held. During the process, focus groups identified value statements, program and activity preferences, and infrastructure required to support desired programs.

The most commonly identified key values included keeping the park as:

- a “natural” park;
- a shared resource;
- an outdoor classroom; and
- a connected resource.

The most commonly preferred activities identified were:

- all current activities (mountain biking, off-leash dog activities, canoe/kayak launching, walking, jogging);
- future activities that can be enjoyed by City-wide residents – not just current users (without compromising identified “values”); and
- opportunities to view wildlife and natural landscapes, and to learn about the natural attributes of the park’s environment.

Identified infrastructure requirements included:

- washrooms, improved access and improved parking that will not negatively affect the natural setting of the park; and
- linkages connecting the park to the rest of the river valley trail system while minimizing environmental impact.

Some of the key user concerns or issues that were identified in the Vision Plan include:

- Many current users feel that the park should be left as-is while other interest groups would like to see additional development (at least minimal infrastructure improvements) that better meet their needs;
- Current user groups have used this site for many years and some users are concerned that changes to the Park will impact their use and enjoyment of the Park;
- This park already has an estimated 200,000 visitors per year and with population growth in Edmonton's southwest and west, improved access (vehicle and trail), proposed enhancements and increased programming, an increase in the number of annual users can be expected. There is a fear among some that the park cannot accommodate increased use or events, while others feel the size is more than adequate to accommodate more visitors.

Opportunity – the Concept Plan Study will build upon the input, work and recommendations approved in the Vision Plan, providing a strong foundation of values, activities, needs and issues related to the development and management of Terwillegar Park

2.2. Biophysical Review of Sensitivities and Opportunities

Spencer Environmental Management Services Ltd. was retained as part of the Design Team to provide background research and field investigations of the environment within Terwillegar Park. The complete process and findings of their work can be reviewed under separate cover in the: *“Terwillegar Park Concept Plan Study: Biophysical Review of Sensitivities and Opportunities” (September, 2007)*. The field surveys specific to this project were conducted by Spencer Environmental to determine the presence of any special status plant and wildlife species and, more generally, to refine the characterization of environmental features present within the study area beyond the detail of existing information. The following is a summary of the key findings of the report as they relate to opportunities and constraints for Park development and management.

Importance of Environmental Values

The City of Edmonton website notes that “Environmental concerns are important considerations for citizens and for the City of Edmonton regarding the river valley park system. Existing biophysical inventory information has been reviewed to identify the environmental opportunities and constraints of Terwillegar Park. The Vision Plan clearly indicates that the natural environment of Terwillegar Park is an attribute that is valued by a clear majority of park users, whether that be casual dog-walkers enjoying the natural surroundings or avid naturalists admiring the diversity of birds and plants inhabiting the park. Maintaining this natural character is an important part of the development strategy and requires an in-depth understanding of the landscape and the effects of development on its natural systems.

Existing Conditions

The geomorphology of the North Saskatchewan River Valley is one of the most prominent land forms found within the City of Edmonton. The bedrock formation of Terwillegar Park is comprised of sandstone, mudstone, shale, ironstone and coal deposits. The movement of water over time by this river has resulted in cutting through these various layers, exposing them in stratified horizons of differing materials. Above the bedrock layers are deposits of variable silty clay. Because both the silty clay and bedrock layers are composed of very soft materials, the North Saskatchewan River cuts relatively deep into these soils. As a result, the banks of the river surrounding Terwillegar Park are considerably steep and significantly high. Steep slopes of relatively loose soil and subsoil results in general bank instability and difficult conditions for top of bank trail development. The uniqueness of the North Saskatchewan River valley banks that surround Terwillegar Park are interesting natural features and provide an interpretive opportunity.

Opportunity – the uniqueness of the North Saskatchewan River valley banks that surround Terwillegar Park are interesting natural features and provide an interpretive opportunity

Constraint – steep slopes of relatively loose soil and subsoil results in general bank instability and difficult conditions for top of bank trail development

The North Saskatchewan River is the most prominent hydrological feature of Terwillegar Park. The confines of the park are very much defined by its existence within an inside bend of a large meander in the river, and as a result the park is bordered on three sides by the river. In a 100-year flood event, approximately 38 percent of Terwillegar Park would be covered by water, with this flooded area limited to the westerly region. As a result, approximately 885m onto the terrace from the west end of the park would fall within this flood limit. Development of permanent structures must be limited to areas outside the 100-year flood area, and consequently further surveys would be required in order to more precisely identify this limit. Other hydrological features include sixteen permanent open water ponds, three shallow marshes and a narrow ephemeral stream running along the southeastern slope of the park. The open water ponds and shallow marshes are a direct result of previous gravel extraction operations leaving behind low areas on this traditionally flat terrace that filled to the area's water table elevation. Flooding of the Park into the pond areas also occurs during the 1:25 year storm events.

Constraint – flooding of the Park will impact the potential location of structures, the integrity of the pond areas and the long term maintenance of trails and other amenities

Due to the fact that landscapes naturally change over time, it is not surprising that this Central Parkland Sub-region (of the parkland natural region) has evolved over the century. Much of this change in the Terwillegar Park area has been due to strip mining, gravel extraction and agriculture. Only 5% of the Central Parkland Natural Sub-region remains in native vegetation. The vegetation that remains varies from aspen groves to fescues including wheat grass, oat grass and a variety of perennial herbs on the uplands. In the wetlands (which account for about 2% of the area) cattail, sedge, bulrush and willow shrub lands are common but not extensive.

Terwillegar Park consists of 13 different plant community types ranging from open weedy fields to rich, mature deciduous forest. The entire site was once densely vegetated by trees and shrubs, and as a result of previous agricultural use and gravel extraction operations, much of the vegetation throughout the study area was removed. Due to poor reclamation practices, much of the site is now dominated by weedy species. Some of the weeds present in various areas of the park are considered noxious and nuisance as per the Alberta Weed Act. Undisturbed areas of the park, predominantly hilly and steep slopes areas that were not suitable for agricultural use, host a range of mature aspen-balsam poplar forest patches that support a variety of native plants. Other areas of sparse vegetation are dominated by various non-native species of trees and shrubs. The non-mowed open fields of Terwillegar Park are highly dominated by weeds, with over half of the area covered in noxious weeds. Shallow marsh areas which only contain surface water in springtime were also dominated by weeds. Three rare plant species were identified within the study area in 2007, with one additional species recorded in 1998.

This segment of the North Saskatchewan River Valley hosts a great range of migratory wildlife species, including a total of 226 vertebrate species reported.⁵ The park also hosts high species richness (high number of species) of songbirds, with the largest abundance of them in areas surrounding the various ponds near the west end of the site. This is a result of the range of ecosystem types in a relatively small area, including open water ponds, grasslands, mature forests, and the riverbank. Urban parks are usually dominated by those species that can easily adapt to the pressures of a developed landscape. Since Terwillegar Park is disconnected from urban development by topographical features and is part of a regional ecosystem presented by the river valley as a landform, species are less pressured by urbanism and therefore the park

⁵ Geowest Environmental Consultants Ltd. 1999. Natural Areas in the City of Edmonton: Assessment of conservation value and potential. Edmonton, Alberta.

can host a greater diversity of wildlife. Five species recorded during the 2007 site assessments are listed as Sensitive in the General Status of Wild Species.

Opportunity – although much of the study area was highly disturbed in previous years by agricultural practices and gravel extraction operations, high species richness demonstrates the significant ecological values of Terwillegar Park

Fish sampling was conducted within all of the open water ponds within this study area. Fish presence was verified through various methods of capture techniques. Two species of smaller fish (Brook stickleback and Fathead minnow) were found within the large pond system. White suckers were also found, although not as prevalent as the stickleback and minnow. The presence of white suckers is the result of flooding by the North Saskatchewan River when it overtopped the banks in 2004. Because the banks have not overtopped for at least two seasons, this indicates water in the ponds is of sufficient depth to allow overwintering. The population of white suckers would presumably be a non-breeding population given this species tends to favor moving water and the sample size of all fish was identical. Because of the presence of fish, any development with these ponds may require further fish studies.

Amphibian surveys were also conducted in various locations throughout the site, and species such as frogs and salamander were identified in areas near the existing pond systems. Reptile surveys found two species, both of which are found to be common within this type of habitat.

Neither past record nor current wildlife surveys found any special status wildlife species within the study area. Past records from the 1960's and 1970's note sightings of peregrine falcon along the north bank of the North Saskatchewan River opposite the north end of Terwillegar Park, however these were recorded prior to urban development of this area.

Terwillegar Park comprises many different plant communities and supports a great diversity of native wildlife. For these reasons, the park is ecologically unique within the City of Edmonton and is highly valued as a natural park by many residents of the City. Terwillegar Park does not, however, support any environmental features or species that are sensitive to the point that all development in the Park should be avoided. The location of sensitive species must be considered during concept planning and the protection of these species may limit the type and location of development that is proposed. Overall, the many features of the park combine to create an environment that is biologically diverse, while being able to accommodate a certain amount of recreational activity and development that is in balance with the ecology of the park.

Constraint – the location and protection of sensitive species must be considered during concept planning of the park

Opportunity – despite the presence of many species and significant ecological features, the park does not support any environmental features or species that are sensitive to the point that all development in the Park should be avoided

Environmental Sensitivities and Opportunities

The environmental review provides a summary of the environmental sensitivities and opportunities within the study area. A complete description and background information is included in the complete report provided by Spencer Environmental. Making program and design decisions with a focus on preservation and enhancement of the natural environment will result in a sustainable balance between recreational activities and natural values of the Park. Specifically, a number of environmental protection and restoration guidelines should be followed which will protect the natural values of the park.

- avoid the loss of large areas of habitat from any of the areas of existing mature forest
- limit the extent of development in key wildlife movement areas and in the locations of rare plant occurrences
- further investigate the potential impacts of weed control measures and incorporate the non-mowed fields in their current state within future concept plans

- maintain the existing diversity of habitat types in the west end of the park
- limit the extent of new trail development within areas of mature forest by locating formal trails on existing alignments. If additional trails are developed, consider decommissioning or restoring existing informal trails.
- avoid significant development in the area at the west end of the park dominated by ponds, shrubby slopes and young balsam poplar forest to maintain the great diversity of songbird species in that area

Constraint – environmental protection and restoration guidelines should be followed when developing conceptual plans for the park

Regulatory Considerations

In any development it is important to understand the regulatory implications and rules set forth that can strongly influence development and the process in which development is permitted. Regulatory considerations exist at three levels of government, including municipal (City of Edmonton), provincial (Province of Alberta) and federal (Government of Canada). The following is a summary of the legislation at the provincial and federal levels of government that will apply to this development.

Provincial Regulatory and Permitting Processes

- Alberta Water Act (Alberta Environment) – any surface water that is permanent is claimed by the Crown, and therefore any activity that involves any proposed use or alteration of this system requires permitting. In the case of alteration or loss of such areas, compensation may be required.
- Alberta Public Lands Act (Alberta Sustainable Resource Development) – applies to naturally occurring waterways of its bed and shore, in this case would only apply to the North Saskatchewan River given the upland ponds are not naturally occurring.
- Alberta Draft Wetland Policy (Alberta Sustainable Resource Development) – applies to naturally occurring wetland habitat, and would likely not be applicable to this area however should be confirmed with Alberta Environment
- Alberta Wildlife Act (Alberta Environment) – prohibits any disturbance to a nest or den of prescribed wildlife, including the alteration or removal of existing vegetation
- Alberta Weed Control Act (Alberta Environment) – specifies noxious and nuisance weeds which must be controlled within both publicly and privately owned lands
- Alberta Historical Resources Act (Alberta Community Development) – any fossil or other historical resource located prior to or during site development, as well as during ongoing operations, must be properly protected and reported to proper authorities
- Alberta Environmental Protection and Enhancement Act (Alberta Environment) - establishes a legislated process for environmental assessments, and ensures potential environmental impacts are identified early in the planning stages

Federal Regulatory and Permitting Processes

- Canadian Fisheries Act (Fisheries and Oceans Canada) – authorizations are required for any habitat that is or has the potential to be fish habitat; triggered when development leads to the harmful alteration, disruption or destruction of this habitat
- Navigable Waters Protection Act (Canadian Coast Guard) – in this case would only apply to any alteration to the waters or shoreline of the North Saskatchewan River, such as boat launches, bridges, etc.
- Canadian Environmental Assessment Act (Environment Canada) – would only apply to this development should any federal funding be obtained for development
- Migratory Birds Convention Act (Environment Canada) – prohibits any disturbance to bird species covered under the act, such as removal of vegetation or water from nesting areas
- Species At Risk Act (Environment Canada) – prohibits the disturbance to any species listed in the act that are deemed species-at-risk; and given species-at-risk have been identified in Terwillegar Park, this act would apply to any development
- Policy on Wetland Conservation (Environment Canada) – would only apply to this development should any federal funding be obtained for development

Constraint – Federal, Provincial and Municipal Regulations will define requirements for ensuring that development meets specific standards but may also pose restrictions on certain types of development in the Park

2.3. Historical Resources Assessment

As part of this study, The Archaeology Group conducted a Historical Resources Impact Assessment (HRIA) of Terwillegar Park. A historical air photo analysis was completed for the study area, with photos originating from the 1930's and leading to very recent years. This analysis found no buildings or other structures to indicate settlement or historic use of the site. As part of field investigations for the HRIA, this area was visually examined and a total of 30 shovel tests and eight backhoe tests were executed during the survey. During this new excavation, no diagnostic artifacts were found at the site. The presence of buried soils would have shown that longer term settlement or occupation took place on the site, however the excavations done as part of this study did not find any evidence of settlement in this area.

Constraint – artifacts and other historical occurrences found during a HRIA study can be used as inspiration for interpretive and education opportunities, and with a lack of historical resources, such opportunities are not present

In approximately 1978, buffalo bones were found approximately 3m below the ground's surface during gravel extraction operations. This site was revisited but since the site area is heavily overgrown, evidence of these bones was not reconfirmed. During the 2007 site investigation, a series of stone flakes were recovered which are believed to be remnants of a hand tool. This find, however, did not yield any diagnostic archaeological materials and is not considered a significant find. The lack of cultural or palaeontological materials, stratified layers, or significant buried soils in these study areas suggest the proposed development land does not require any further exploration. Within the excavation sites, the land did not contain any archeological, palaeontological or historic period sites that are of historical importance.

The supporting report authored by The Archaeology Group suggests that further historical resource investigations are not warranted and the proposed Terwillegar Park project should proceed as planned. However, should any fossils be discovered during the development, staff of the Royal Tyrrell Museum should be contacted immediately.

Opportunity – the recent HRIA study was unable to identify any historical resource that would hinder site development

2.4. Phase One Environmental Site Assessment

The purpose of the Phase 1 Environmental Site Assessment in Terwillegar Park was to identify potential and actual contamination of the area. Thurber Engineering was retained as part of the Design Team to provide their expertise related to this work, including both desktop research and field investigations. A supplementary report entitled '*Terwillegar Park: Phase 1 Environmental Site Assessment*' supports the summary provided in this document.

Historically, the Park site was undeveloped agricultural land for the first 50 years of the 20th century. In two specific areas of the park, gravel extraction was dominant from 1949 until 1986; while surrounding land remained virtually unchanged. Air photos show that gravel operations appear to have concluded after 1986, with vegetation beginning to encroach on the original pit site, but not yet present on the newer pit site. By the 1990's, significant development in surrounding areas was present, and the site continued to thrive as an ecosystem in succession. By 2001, land appears unchanged other than the addition of a gravel parking lot.

Since there has been practically no development in Terwillegar Park, studies conclude that there has been little to no contamination of the site. Reports filed by the City of Edmonton reveal no contamination or remediation of the site as there is no knowledge or observation of any landfills, waste sites or contamination. It is possible that some fuel storage may have taken place on site and observations indicate some non-native fill on site, however no hazardous materials were found. Soil tests proved negative for PCB's, (Polychlorinated Biphenyls) asbestos, lead paint, and CFC's (Chlorinated fluorocarbons). Due to previous agricultural practices, pesticides and herbicides may have been used on the site. In general, no historical or visual evidence of contamination was found on the site.

Opportunity – the recent Phase 1 Site Assessment findings did not result in any evidence of contamination that would require further remediation or hinder site development

3.0. SITE ANALYSIS

The analysis of the existing site features has been completed by the Design Team through a review of previous reports and plans for the Park, as well as field inventories and discussions with City staff, Advisory Committee members, and stakeholders.

3.1. Existing Use & Infrastructure

Park Uses

As identified in the Vision Plan, walking, dog walking, mountain biking/cycling and jogging are the top four activities occurring in the Park. Other current uses include canoe/kayak launching, picnicking, attending programmed events, and casual summer activities. Many of these uses are also combined with nature viewing and appreciation lending to the natural attributes of the Park and the River Valley.

Opportunity – to provide for improved nature appreciation and interpretation opportunities to benefit all park users

The input during the Vision Plan indicated that in the future, all current activities would continue but be designed and managed to ensure that all city-wide residents could access Terwillegar Park. Additional activities that were identified as potentially suitable for the Park included playgrounds with an emphasis on natural design, natural picnic areas, boat launch, interpretive areas and kiosks, and city-wide events and festivals (See Section 3.3). (Note: See Section 3.2 for a discussion on trails). Some of the proposed activities that were not well supported included a whitewater facility, groomed sports fields, water spray park, art displays and food services.

Based on the size of the Park, the mix of large open space and natural areas, reasonable vehicle access and trail linkages Terwillegar Park is physically well suited to support a wide range of parks activities and uses. As clearly defined in the Vision Plan, proposed uses must fit within the context of the vision of a "unique natural park", and be guided by the four key values that were used to shape the Vision Plan.

Opportunity – based on the size of the Park, the mix of large open space and natural areas, reasonable vehicle access and trail linkages Terwillegar Park is physically well suited to support a wide range of parks activities and uses

Winter Use

Off-leash dog walking and pedestrian trail use occurs year round. Although snow on trails is rarely cleared, several prominent paths of packed snow develop through the winter as a result of extensive use. Cross country skiing is another wintertime use of Terwillegar Park, with primary trails maintained by the City. When trails are groomed, they tend to become trampled down by walkers. Since Terwillegar Park is lower priority

for ski trail maintenance, programmed cross country skiing is not prevalent. Given its size, extensive trail system and the relatively shallow slopes in much of this park, Terwillegar Park's landscape is well-suited for cross country skiing.

Conflicts and Site Impacts

Despite the size of the Park there are a number of minor conflicts and impacts on the site that can be attributed to the mix of uses, trail width, poor sightlines in some locations, irresponsible use and the lack of definition between various zones of use. In addition, the lack of a formal management program and the limited extent of controls and signage can contribute to conflicts in use and impacts to the site and environment. Conflicting uses and impacts observed within the park include:

- Off-leash dogs which are not under direct control of their owners can approach either humans or other pets, even in a non-threatening manner, and create uncomfortable encounters;
- The open-water pond area showed a surprisingly low population of nesting waterfowl birds – which has been attributed to disturbance by humans and off-leash dogs, and to pond characteristics such as steeper slopes and lack of shoreline vegetation;
- Some dog walkers neglect to clean up after their pets, which results in a significant amount of waste left on site;
- Use of narrow trails is often shared between pedestrians and bicyclists, creating possible interface conflicts – especially where sight lines are limited in more densely treed or hilly areas;
- Use of shoreline areas for accessing the water's edge is not controlled, leading to disturbance of shoreline vegetation and soil conditions that lead to erosion and the destruction of prime habitat.

Constraints – a number of user conflicts and site impacts can be attributed to the mix of uses, layout of the Park and lack of a formal management program

Motorized Use

Motorized vehicle use within the park is limited to maintenance equipment such as lawn mowers and light weight vehicles, quads used for Ranger patrolling, authorized vehicles used to deliver large boats, and also authorized access for specific events for which vehicles are required. Vehicular access into the park is currently controlled by a series of moveable concrete mini-barriers surrounding the parking lot, with a lockable gate at one location. Unregulated use of motorized vehicles in the Park is not as prevalent as in the past due to better controls on the site and the high level of everyday use.

Water-Based Uses

The fact that Terwillegar Park is bound by the North Saskatchewan River provides a unique opportunity for water-based uses that is currently not developed. The Park is used by the City for launching of Voyageur Canoes for scheduled group outings and by other individuals for launching of canoes and kayaks. It is within the Grade Four school curriculum to take a day trip by canoe from Terwillegar Park to Fort Edmonton Park, which is a short paddle downstream of this study area. Although Terwillegar Park provides good access to the river, there are currently no docking facilities to park boats and securely fasten them on a temporary basis. There is also no formal road or parking provisions or other amenities to facilitate water access. Throughout the RVA study there was considerable discussion about improving water-based access to various open spaces and key nodes along the North Saskatchewan River.

Opportunity - the North Saskatchewan River surrounding Terwillegar Park provides excellent opportunities for a range of water-based activities during summer and winter

In the winter of 2006 / 2007, Terwillegar Park was home to the River Queen for maintenance. The area of the river bank known to users as 'the beach', was cut back in order to house the ship for maintenance. In the spring of 2007, the area was reclaimed with an improved slope condition more compatible with water access for canoe/kayak launching. One of the constraints related to using this location for launching boats is that 'the beach' is the most popular location in the park for water access for dog walkers and for parents with kids for a place to see the river and throw stones. This high level of activity can make launching more difficult.

Opportunity – the restoration work following maintenance to the River Queen has improved the access to the river for all users in the Park

Constraint – the River Queen currently has no other location for maintenance and dry docking. This will need to be considered in concept and management planning for the Park

Constraint – access to the river for canoe/kayak launching and for docking of boats visiting the park is constrained by a lack of permanent dock facilities and infrastructure such as access road and parking and support amenities such as washrooms and shelters

Besides the 'Beach' area of the Park, there are only a limited number of locations for easy access to the river's edge in the park. It is important from an environmental standpoint to minimize intrusion of the shoreline and removal of existing vegetation. Riparian areas provide vegetative filters that help improve the condition of water prior to release into the river while protecting the shorelines and bank surfaces from problems such as loss of habitat, introduction of noxious weed, and erosion. In proposing any additional access to the river's edge for recreational or even nature appreciation purposes it will be important to consider the impacts and design with the highest sensitivity. During concept design it will be important to find a balance between restoration of some existing river edge areas that have previously been disturbed with the sensitive development of new access locations (eg. Viewpoints).

Opportunity – it will be important to find a balance between restoration of some existing river edge areas that have previously been disturbed with the sensitive development of new access locations (i.e. Viewpoints)

Although water quality of the North Saskatchewan River system adjacent to Terwillegar Park is considered "Excellent to Good" according to the Alberta Environment Index, there are still concerns related to the long term impacts of using the river for direct contact activities. As part of communicating useful information to users of Terwillegar Park, signage providing information related to water quality and cautioning against the consumption of fish should be made available. Testing of the water quality should occur regularly with results posted along the river to advise park users of possible dangers and precautions. All water-based activities are associated with risks of accidents such as drowning or falling through thin ice. The Park should be well-signed with appropriate notifications during winter conditions to promote unsafe ice surfaces, especially near structures and those other features which create thin ice conditions.

Constraint – river use activities can be associated with health and safety risks related to water quality and accidents resulting in drowning

The existing series of ponds in Terwillegar Park are a result of gravel operations over past years. During approximately each 25-year flood condition, the North Saskatchewan River breaches the banks of Terwillegar Park and will flood the west portion of the study area wherein these ponds exist. As a result, the ponds are recharged to their top of banks, providing not only the addition of water but also the potential for fish migration. Given such a flood event has not occurred for at least two spring floods and white sucker fish had been identified in the ponds during the 2007 survey, it is assumed that the pond depths are sufficient enough (greater than approximately 3m) as to allow over-wintering of large fish. Most large fish species, including white sucker, require flowing water in order to spawn. As a result, the population of white suckers found in these ponds is assumed to be a non-breeding population.

Currently the ponds are enjoyed as a natural feature of the park and are used as part of the off leash activities of dogs. As indicated previously, the fact that the ponds are not used extensively by waterfowl can

be attributed to the use be dogs as well as the relatively poor edge condition (steeper slopes, limited wetland vegetation). Both of these conditions could be altered through design and management changes if improvements to the ponds as waterfowl habitat are important to users.

Opportunity – the value of the ponds as waterfowl habitat could be improved though design and management changes

Opportunity – there is an opportunity for recreational fishing and paddling in the ponds. These activities should be explored during concept planning

Infrastructure

Existing infrastructure in the park is limited to a graveled parking lot, a portable washroom facility, a few benches, trash receptacles and a public notification board. The parking lot accommodates approximately 60 vehicles, with some overflow parking occasionally occurring on the access road. Typical peak use times for the parking lot are evenings and weekend afternoons. During programmed special events, parking for up to 500 cars can be accommodated by setting up temporary overflow parking area in the open park space immediately adjacent to the parking lot.

Constraint – the current parking lot size is limited and often fills to capacity even on days with no programmed event

The parking lot limits vehicle access to the site through the use of concrete barricades. A locked gate allows controlled access to the rest of the Park for City operations and program staff as well as for event use. Typical peak use times for the A detailed evaluation of parking requirements will be required as the program and design concepts are developed. At the parking lot, a receptacle containing plastic grocery bags provides a supply of bags to collect solid pet waste. Trash receptacles are located throughout the site. (Note: see section 3.2 for information on Trail and Road infrastructure).

Terwillegar Park currently has a single portable toilet on site, located immediately adjacent to the parking lot. As indicated in the Vision Plan the construction of an indoor washroom was expressed as the highest need in the public survey. The washroom should be designed to accommodate the needs of everyday users, and be safe, accessible and vandal resistant. For larger programmed events, event coordinators would still be required to bring in additional washroom facilities. If a permanent washroom facility is developed water and sanitary infrastructure will be required (Note: ISL is currently evaluating the provision of services into the park).

Constraint – overall there is a lack of infrastructure to adequately support the level of use and to meet the needs of current and future users. During the Vision Plan process citizens identified a range of infrastructure needs to improve use and enjoyment of the Park

3.2. Site Access and Trails

Access Road

Vehicle access to Terwillegar Park is limited to the single access road leading from the west end of Rabbit Hill Road. Based on a transportation study performed as part of this analysis, upgrading the access road to asphalt is feasible.

Opportunity – based on a transportation study performed as part of this analysis, upgrading the access road to asphalt is feasible

Aside from asphalt paving, a recent geotechnical assessment completed by ISL recommends that the following be incorporated into the upgrading of the access road:

- The posted speed (30km/hr) is adequate for the radii of the road, with the exception of one curve. A review of this curve and the retaining wall beside it should be performed if the posted speed is to remain the same.
- The grade of the road is acceptable, but superelevation should be added to ensure it is drivable in all weather conditions.
- Sightline requirements for stopping sight distances seem adequate, but a detailed analysis is recommended and lighting near the end of the roadway should be considered.
- Either modest widening of the road or the development of a new typical cross section is required to accommodate minimum City of Edmonton standards.
- Side slopes should be reviewed for safety and erosion. Existing barriers should be replaced with a higher standard for increased safety.
- The road's turning radii are adequate for buses, but the current parking lot plan does not properly accommodate bus and truck turning movements.

Traffic congestion, specifically movement into and out of the Park, is generally not a problem on typical days at full parking lot capacity and, according to the City of Edmonton's Transportation Department, the access road into the park should comfortably handle a traffic volume of 500 cars during special events, with an estimated exit time of 30 minutes or less.

Opportunity – traffic congestion is generally not a problem on typical days at full parking lot capacity. During the occasional special event, the access road should comfortably handle traffic volumes of 500 cars, with an estimated exit time of 30 minutes or less

Currently there is no designated pedestrian zone adjacent to the road which leads to an uncomfortable interface between pedestrians and vehicles. The design of the road upgrading should evaluate the feasibility of providing an adjacent sidewalk or trail.

Constraint – the existing access road does not include a designated pedestrian walk which causes an uncomfortable interface with pedestrians and vehicles

Public Transit

Public transit does not lead directly into Terwillegar Park, however busing to the park should be considered. In particular, higher-use special events should encourage the use of off-site parking in combination with busing. The nearest transit stop is currently located at the top of the hill at the west extent of Rabbit Hill Road, uphill from the park's parking lot. The current parking lot does not have adequate size or configuration to allow for a typical bus turnaround. The implementation of an on-site public transit stop would require either smaller busses to be able to directly access to the existing parking lot, or a reconfiguration which incorporates a full-sized bus turnaround without obstruction of parked cars. Consideration should also be given to providing proper turnaround and parking for event related vehicles (trucks, delivery vans) and recreational vehicles.

Constraint – access for public transit directly into Terwillegar Park is limited given the inability for typical buses to turn around at the parking lot; either smaller buses or a reconfiguration of the parking lot would be required to promote accessibility of buses

Wildlife Access

As part of the environmental analysis for this study area, it was found that wildlife movement into, through and out of Terwillegar Park was well-defined. There is a strong wildlife corridor leading from the south west corner of the study area, allowing terrestrial wildlife to enter into the park. Due to the river and steep slopes at the far north east corner, there is not easy passage of wildlife beyond Terwillegar Park toward Fort

Edmonton Park. As a result, Terwillegar Park is an “end destination” for wildlife in south Edmonton. Consequently, the south west end of the site, being a prime entrance point for wildlife, must take into consideration species needs should any proposed development (including trails) be designated for this area.

Trails

Terwillegar Park currently hosts an extensive system of formal and informal trails made up of a hierarchy of trail types throughout the entire park area (Figure 9). These trails can be classified as follows:

- Informal “Goat Paths” – well used areas of packed ground with little to no vegetation growing, ranging from 350-500mm wide, which are created by repetitive off-trail use of the park along desire lines and on generally flat ground; non-maintained
- Single track terrain trails – narrow trails, approximately 350-500mm wide, with some native grass cover material leading up, down and perpendicular to slopes, most commonly used by mountain bikes and less often used by walkers; non-maintained
- Double track terrain trails –approximately 1.5m wide with only native surface material, leading in various directions parallel to a slope with slight undulations up and down in elevation; non-maintained
- Double track surface trails – approximately 3.0m wide with modified ground surface material which follow generally flat ground; maintained by parks staff
- Multi-use major trails – greater than 3.0m wide with modified ground surface material providing a maintained route for multi-use; maintained by parks staff

While all of the trails in the Park are extensively used there are a number of constraints to trail use related to accessibility, management and signage. Consideration must also be given to the impacts of informal trail use and the development of more informal trails on the environment of the Park.

There are no trails in Terwillegar Park that are universally accessible which limits access to the park for the elderly, people with disabilities, and people pushing strollers while trying to enjoy these areas. During the Vision Plan the importance of providing accessible, all-weather trails (not always paved) was identified as a priority.

One of the other trail use constraints is the lack of trail signage to provide users with information related to trail route, surface, length and level of difficulty (ie. steepness of slope, surfacing, etc.) Proper signage would help promote a safer and more comfortable trail experience. This information could be available along the trail at access points, nearby parks, and the City of Edmonton website. Communicating the variety of trails would not only promote the range of trails in Terwillegar Park, but also provide comfort to users that their trail walking abilities meet the difficulty of a specific trail.

Management issues related to trails include poor drainage, erosion, vegetation clearing (sightlines), and steep slopes. If trails are developed/improved to meet City standards then there will also be corresponding improvements in maintenance standards.

Opportunity – the current configuration and range of trail types provides a high potential for a managed trail system in Terwillegar Park

Constraints – trail use by a broader range of users is impacted by issues related to accessibility, signage and management

Regional Trails

As part of the Ribbon of Green Master Plan and more recent work conducted by the RVA, two bridges have been proposed to lead from Terwillegar Park to adjacent areas of the city and to provide continuity within the ‘Capital Region River Valley Park’. This trail would provide a regional linkage from outside communities and provide good access to the Park for more City residents without corresponding increases in vehicle access. As indicated in the Vision Plan, 85% of survey respondents regarded development of a continuous paved multi-use trail and river footbridges as important to the river valley park system. However, the Vision Plan also identified the importance of investigating alternate trail alignments within Terwillegar Park. The concept

plan process will include discussions with stakeholders and the public on proposed alignments and the potential benefits and impacts on current and future use.

Opportunity – a regional trail through Terwillegar Park provides an important link within the context of the ‘Capital Region River Valley Park’

3.3. Events

The Edmonton Sourdough Raft Race is the most prominent large scale event which takes place in Terwillegar Park. This event, which is annually scheduled for the end of July, brings hundreds of people to Terwillegar Park. In 2007, this event was cancelled only the day before the scheduled event date as a result of poor bank stability resulting from wet conditions. While this event has been held in the Park for many years, the number of rafters in this year's race has dwindled to around 25 boats, about 10 per cent of the total boats participating in the festival during its heydays in the late 1960s and 1970s.⁶

Another large event that has been held in Terwillegar Park the Edmonton Corporate Challenge, which has been known to bring between 200-500 participants and about 300 vehicles⁷ into the park. Specifically, orienteering and mountain biking are the events held at this location. Terwillegar Park is well suited for these events.

In 2007, the Edmonton Overlanders Orienteering club hosted two of its events in Terwillegar Park, having taken place in late May and mid-September. Mountain biking continues to be a prominent activity in Terwillegar Park, given the available terrain and trail types which are well-suited for naturally occurring and variable topography. The City of Edmonton Grade 4 curriculum also takes advantage of this park, by involving students in traveling from Terwillegar Park by voyageur canoe downstream to Fort Edmonton Park.

Although the size of the park, the large amount of open space and the extensive trail network make the Park suitable to host a number of additional events held annually within the City of Edmonton, event organizers tend to discount Terwillegar Park as a viable event site due to a combination of its lack of available amenities (i.e. inadequate parking, lack of washroom facilities, absence of water and power hook-ups) and its non-central location.

Constraint – although its size is appealing, event organizers tend to discount Terwillegar Park as a viable event site due to a combination of its lack of amenities and its non-central location

3.4. Signage

Wayfinding

The Park currently does not provide on-site wayfinding signage to locate and explain the various features within the Park. Wayfinding signage would be advantageous in providing such information as trail distances, linkages to external locations, mountain bike trails, Blufone locations, etc. Signs could be placed at the various park entrances, and potentially provide paper maps for visitors to take with them. In the future, wayfinding signs could provide digital connections for downloading GPS coordinates or interpretive information. Wayfinding signage helps to improve the perceived safety of a site, allows users to more comfortably explore all mapped areas of the site without concern of getting lost, and allows people in distress to more easily identify their exact location to emergency responders.

Safety Signage

Throughout the North Saskatchewan River valley, there are numerous signs posted along the shoreline which help indicate boater safety hazards such as outfall locations and areas to generally avoid. These signs are highly visible and are a great asset to promote boating safety. Based on a river tour in 2006, the

⁶ <http://www.connect2edmonton.ca/forum/viewtopic.php?p=56114>

⁷ Meeting with City Program Staff, Sept. 10, 2007

shoreline of Terwillegar Park does not host any such information signage for boaters. Also absent from the river valley and unavailable to boaters are regular landmark posts or wayfinding devices indicating exact locations. For example, if boaters were to launch a boat in Devon and move downstream toward Terwillegar Park, they would likely pass by the park given the absence of any location or wayfinding signage. Furthermore, without location markers clearly visible to boaters in distress, conveying information on exact location to emergency services responders is extremely difficult. Water depth can be a concern on the North Saskatchewan River, and with extremely variable water depths throughout the year and also year to year, conditions are known to be very unpredictable. Charts which indicate water depths and the various waterway hazards along the river are not readily available to boaters. In combination with a lack of literature, devices used to indicate overall water levels (high vs. low conditions) have not been implemented.

Public Notification

Prior to any scheduled event in Terwillegar Park, public notifications are placed at all trail and roadway entrances into the park. These notifications provide information on the date and time of the event, type of use, as well as a contact for further information. This practice helps to minimize conflict between regular park users and event participants.⁸

Interpretation and Education

The site does not contain interpretive signage, which would provide an added element of education and site exploration for users. Terwillegar Park, as a unique natural feature in the City of Edmonton, presents many interpretive opportunities that are currently not available:

- Succession – much of the park is becoming naturalized after the surface disturbance caused by gravel extraction activities in the 1970's
- Wildlife movement – Terwillegar Park, being an “end destination” for large wildlife in south Edmonton, provides a venue for many visible species, particularly in the south end of the park
- White spruce-dominated forest – the stand of spruce in the north east corner of the site is the only example of this type of habitat in all Terwillegar Park
- Old gravel pits – explaining how gravel extraction and its subsequent reclamation and regrading of the land has resulted in the series of open water ponds prevalent today
- Grasslands – the uniqueness of the grasslands, its origin and range of species present
- Valley overlook – the North Saskatchewan River valley is a cherished landmark for Edmontonians, and demonstrates a unique landform that relates to the geology of the region

Opportunity – implementation of City of Edmonton signage standards within the Park will improve user enjoyment of the park by providing critical wayfinding, safety, and management information as well as educational and site exploration experiences

3.5 Public Safety

In October 2004, the City of Edmonton Community Services Department retained Criterion Research Corp. to coordinate a public survey on river valley trails and parks satisfaction. This report entitled “City of Edmonton Community Services Department River Valley Trails and Parks Satisfaction Survey” states that approximately 74% of respondents agree or strongly agree that the river valley and its amenities provide a safe and secure place to recreate.⁹ The river valley is indeed a safe place to recreate, as a result of strategic planning and the implementation of key safety features and best management practices. During preparation of the program and the design concepts for Terwillegar Park, consideration will be given to user safety and security.

In consideration of hazards and/or safety concerns in river valley parks, the City of Edmonton has developed general guidelines that seek to assess hazards and manage them in an appropriate manner. The City has also amended the current Parks and Recreation bylaw to actively “protect City property, address health and safety issues, and allow for the enjoyment and preservation of natural areas”¹⁰ The City of Edmonton Parkland Bylaw will apply to all users of the parks including members of the public, anyone owning, controlling, renting or maintaining public park space and recreational facilities.

⁸ Meeting with City Program Staff, Sept. 10, 2007

⁹ City of Edmonton Community Services Department River Valley Trails and Parks Satisfaction Survey – Criterion, 2004

¹⁰ City of Edmonton Parkland Bylaw 2202

The Parkland Bylaw 2202 provides the majority of safety recommendations for the City of Edmonton. The following list identifies the related section wherein areas of interest are found within the Parkland Bylaw:

- Structures – Section 6 of Bylaw 2202
- Trails – Section 12 of Bylaw 2202
- Dumping of Waste – Section 9 of Bylaw 2202
- Hunting / Angling – Section 13 of Bylaw 2202
- Fire Safety – Section 7 of Bylaw 2202
- Water Safety – Section 14 of Bylaw 2202
- Motor Vehicles – Section 18 of Bylaw 2202
- Restricted Areas – Section 10 of Bylaw 2202
- Water Quality – addressed in drainage bylaw

The City of Edmonton has several other municipal policies related to management and safety that set controls on activities in Terwillegar Park and other river valley areas, including:

Document	Description
River Valley Redevelopment Plan Bylaw No. 7188	Provides direction on permitted uses, delineation of river valley boundary, and development requirements
Noise Bylaw No. 7255	Limits the amount of noise permitted, and allowable operating hours.
Animal Control Bylaw No. 13145	Regulates off-leash areas, stray animals etc.
Fire and Ambulance Bylaw No. 10801	Outlines the roles and responsibilities (including coverage area) for fire and emergency services
Public Places Bylaw No. 7608	Regulates public places including fines for littering, access, golf courses etc.
Unauthorized Use Bylaw NO. 12308	Regulates unauthorized uses (such as driveways, patios etc.), and provide a means to remove unauthorized uses
Erosion and Sedimentation Control Guidelines	Provides best management practices for erosion and sediment control in a variety of applications

Enforcement

Park Rangers monitor the river valley for safety and can enforce the fines if bylaws are not followed. The enforcement of provincial and federal regulations would require monitoring by an elected body such as the Wildlife Officers, or the Edmonton Police Service. Park Rangers work between the hours of 0700h-0100h everyday of the year, with additional resources applied to specific areas during special events. The primary vehicle used for patrolling is a quad and snowmobile, both of which have unlimited access throughout Terwillegar Park on a year-round basis. The application of bylaws for inappropriate and unsafe uses is limited to the resources of the Parks department and other agencies to patrol and monitor activities in the Park. An increase in the level of staffing related to operations in the Park in the future will also assist with providing a presence in the Park that may help to reduce the incidence of unlawful behavior.

Alberta Environment and Alberta Sustainable Resource Development (ASRD) are the primary provincial bodies that monitor, regulate and enforce both provincial and federal legislation with respect to the recreational use of water. For example, a provincial officer enforces fishing and hunting regulations, and is also empowered to monitor and enforce legislation under the Navigable Waters Act for boating regulations. Throughout the greater Edmonton area, ARSD has a strong presence and actively patrols the waters of the North Saskatchewan River. These officers are currently the only regulatory body that actively patrols this river segment within the study area. Although Fisheries and Oceans Canada has a district office in Edmonton, they do not have the equipment (ie. boats, all-terrain vehicles) readily available to access the water within the greater Edmonton area.

Constraint - the application of bylaws for inappropriate and unsafe uses is limited to the resources of the Parks department and other agencies to patrol and monitor activities in the Park

Emergency Response

Terwillegar Park falls within the response jurisdiction of The City of Edmonton Emergency Medical Services (EMS). Although the parking lot is accessible by vehicle, much of the study area is not and as a result can pose a problem for ambulance access to the various potential distress locations. A 3m wide cleared path is the minimum width for ambulance access. On occasion, helicopters have been used to rescue people in distress due to limited site access.¹¹ In winter months, vehicular access is even more limited in areas that are not plowed. Direct access for ambulances is always best, given the limited terrain that a stretcher can travel over and the need to have access to large equipment carried by an ambulance. Typical EMS responses within Terwillegar Park include heart problems, heat stroke and allergic reactions - with no prominent type of occurrence. Few to no sporting injuries are responded to by EMS in Terwillegar Park as most people seem to be able to transport themselves to medical help without an ambulance.¹² There may be a requirement for a secondary access/egress route into the Park for extreme circumstances for emergency response.

The City of Edmonton Fire Department has equipment for water-based rescue, as well as equipment required for high angle rescue. High angle rescue would be more common of a potential response given the location of some informal trails adjacent to the steep slopes in some areas of Terwillegar Park interfacing with the North Saskatchewan River. The Fire Department does not have a significant role in the Park at present but would have in the future if there are buildings, other structures or fire pit areas developed. Any future building would have to meet all Building Code requirements related to materials and internal fire suppression systems.

Alberta Sustainable Resource Development (ASRD) also provides assistance with respect to water-based rescue given their familiarity with the water, active patrolling and availability of equipment. Due to limited availability of manpower and equipment, ASRD is available – just not as readily available as other emergency services teams.¹³ ASRD works closely with local municipal emergency services and the RCMP, and also has the ability to consult with the Canadian Military to provide emergency response as required in the North Saskatchewan River Valley.

Blufones

As a means of improving public safety of trail users within city limits, the City of Edmonton offers “Blufones” at approximately 19 locations throughout the river valley along trails and in parks. These facilities are equipped with an overhead light and a pedestal-mounted electronic calling system that links callers directly with City of Edmonton 911 service operators. These phones are based on a live-voice exchange system that allows users to speak directly with 911 operators by simply pushing a button and speaking in the general area of the pedestal. Each phone indicates an individualized number which helps identify the exact location of the person in distress. The City of Edmonton has a mandate to add additional Blufone facilities throughout the river and ravine parkland system as development continues.

Providing added communication between recreational users and emergency services, such as an extension of the Blufone network, will greatly improve safety in more remote areas, and further imply that these areas are in fact under the care and watch of City emergency and bylaw services. Additional call stations covering the more remote areas of Terwillegar Park would result in improved safety throughout. Future installations of Blufones in Terwillegar Park would also be desirable at water access locations, trail intersections, and pedestrian bridges.¹⁴

Recently there has been discussion related to the usefulness of the Bluphones given the assumption of a widespread and common availability of cell phones carried by trail and park users. However, increased use does not necessarily equate to increase public safety especially in parks and recreation areas as many people do not carry cell phones while recreating. The other benefit of Bluphones over cell phones is that the Bluphone locations are automatically known by emergency personnel whereas an individual with a cell phone may not be capable of identifying their location within the Park. This issue also speaks to the need to have a good system of signs so that trail users have a better sense of their location.

¹¹ Meeting with City Operations Staff, Sept. 10, 2007

¹² Meeting with City Operations Staff, Sept. 10, 2007

¹³ Interview with Mr. Steve Carlson, Alberta Sustainable Resource Development, Sept. 22/06

¹⁴ Meeting with City Operations Staff, Sept. 10, 2007

Opportunity - providing added communication between recreational users and emergency services, such as an extension of the Blufone network, will greatly boost the perceived safety of more remote areas, and further imply that these areas are in fact under the care and watch of municipal emergency services

Representatives from the City of Edmonton have noted problems with Blufone facilities, including high incidences of false alarms, vandalism and a lack of understanding that they are meant specifically for “emergency use only” (some callers press the button to ask for directions). Every call is considered a 911, high priority call. In the event that a person presses the button and walks away, police are still dispatched to respond to the area. Since these phones can be at a considerable distance from areas with vehicular access, such high incidences of prank calls and misuse results in a waste of valuable security resources. Although the infrastructure is paid for by the City of Edmonton, Telus is currently responsible to ensure service is provided. In the past, there have also been criticisms that many of these phones are found to be “out of service” and the delays in rectifying this problem are often extensive, although the City has recently begun employing a new model of phone that seems to have significantly less down-time than the previous model.

CPTED Principles

CPTED (Crime Prevention Through Environmental Design) is an important initiative to recognize while studying safety concerns within Terwillegar Park and along the North Saskatchewan River. In order to create a design that is functional, safe and beautiful CPTED has outlined some basic principles to reduce the opportunities of crime. Maintenance, surveillance and access control are just a few of the main principles that may require focus as concept plan for the Park are prepared. A CPTED audit has never been done for Terwillegar Park or any part of the study area.¹⁵ During detailed design of future development in this park, a thorough CPTED evaluation will help address principles of site safety.

Opportunity - CPTED evaluations and development principles should continue to be an integral part of future development projects and should be implemented as part of the ongoing maintenance and operations of Terwillegar Park

Maintenance will address issues related to trail surfaces, sightlines, and removal of hazards which will make the trails safer for use. Trail use (ie. level of activity) is also a key factor in creating a safer trail network. Surveillance related to views from adjacent areas and sightlines within the Park can also play a large role in minimizing crime. In Terwillegar Park there is only minimal natural surveillance from adjacent residents (Donsdale) due to the considerable distance from the park, existing forest and topography. Access control is the third important principle in crime prevention through environmental design. Making main access points predominant and limiting the number of smaller, unmarked access areas will help control crime and give Park users the perception of improved safety by notifying them of exit and entrance points. (Note: City policy on lighting in parks to be discussed.)

3.6. Environmental Restoration

Topsoil and Growing Conditions

As noted in the historical and environmental summaries, much of the site was once used as a gravel pit that was reclaimed to the existing state. Although best management practices were used and the site was restored to an acceptable condition at the time of decommissioning gravel extraction, the resulting environment does not provide current values of restoration. For example, some pond slopes are excessively steep and ponds lack aquatic vegetation which can help provide improved water quality and enhanced wildlife habitat. There is also very little topsoil in some areas of the site with a large proportion of the natural area having exposed subsoil without proper growing medium to native grasses and encourage succession.

¹⁵ Meeting with City Operations Staff, Sept. 10, 2007

There are a number of restoration and management techniques that could be implemented to assist in enhancing the extent of grasslands and successional aspen forest throughout the Park. These measures may include importing of topsoil, weed control/removal, seeding and planting. Restoring exposed clay soils will aid in reducing the amount of natural erosion prevalent in many areas. Reclamation and management of some of the most highly disturbed areas of the Park system could be one of the key program features in support of the vision of a “unique natural park”.

Opportunity – reclamation and management of some of the most highly disturbed areas of the Park system could be one of the key program features in support of the vision of a “unique natural park”

Weeds

There are significantly large patches of noxious weeds throughout the site. These weeds present through various areas of the park are considered noxious and nuisance as per the Alberta Weed Act. The City of Edmonton currently does not endorse the use of chemical means of weed eradication.¹⁶ Mechanical measures are taken to remove weeds in limited areas, including annual mowing and hand pulling of weeds immediately adjacent to maintained trails only. Because these weeds are well established, eradicating them completely would be extremely difficult. One technique to eradicate weeds that are this established would be to strip the active rooting layer of topsoil and all surface vegetation, then importing clean topsoil free of weeds or weed seed and applying an aggressive naturalization seed mix. Because weed growth is extremely extensive and covers the majority of the site, this practice would not be feasible due to the large site area as well as the potential for drift of seeds from weedy areas outside the re-seeded area. The need to eliminate these weeds is based on a few factors:

- aesthetics – many noxious weeds are easily recognized and become an unattractive feature of the park
- function – some noxious weeds, such as thistle, are difficult to walk through for humans and pets thereby reducing the functionality of many open areas
- habitat – although the site currently has a high species diversity of wildlife in and amongst weedy areas, a more natural regime of species may thrive if the vegetative regime was composed of only native plants

Constraint – much of this site is overwhelmed with noxious and nuisance weeds that are well established; removing these weeds completely would be extremely difficult

3.7. Operations and Management

Current Operations

The access road leading into Terwillegar Park from the west end of Terwillegar Drive is maintained and under the jurisdiction of the City of Edmonton Parkland Services, not Transportation. During winter months, the road and parking lot are cleared of snow only after large snow events. During summer months, the gravel surface is graded as to reduce potholes and irregular surfacing, and also to minimize surface erosion caused by water flowing down this relatively steep grade. Because the road bed is composed of a gravel aggregate, dust is inevitable during dry conditions when passed over by vehicles. As a result, maintenance crews have applied dust abatement agents to the gravel as a direct response to regular complaints from adjacent homeowners nearby to the roadway.

Terwillegar Park has trash receptacles located at the parking lot. Trash is collected each week on Wednesdays, year-round. The current maintenance schedule and trash receptacles seems adequate for the current use of the park, and additional waste receptacles are brought to the site for special events on an as-needed basis by the event coordinators.¹⁷

¹⁶ Meeting with City Operations Staff, Sept. 10, 2007

¹⁷ Meeting with City Operations Staff, Sept. 10, 2007

Consistent with the Vision Plan statement of keeping the natural characteristics of Terwillegar Park, grass is not mowed regularly. According to maintenance staff, only a small area of grass is mowed twice per year¹⁸ Tree and shrub pruning is limited to the removal of hazard branches that overgrow the edges of the maintained trails. These hazards are assessed on an annual basis by the trail maintenance team and cared for approximately once each spring. The City of Edmonton maintains a public telephone line which allows the public to report fallen or damaged trees (780.496.TREE), and several calls are received each year for trees that lie within the Terwillegar Park study area.¹⁹

Since most of the trails in Terwillegar Park are informal/unimproved trails, there is limited trail maintenance. Current maintenance activities are focused on safety issues resulting from slope failures and erosion. In the winter City staff set ski tracks but do not clear any of the trails.

Maintenance equipment for Terwillegar Park is currently mobilized from Hermitage Park, with a one-way period of loading and driving of approximately 1.5 hours.²⁰ As various proposed enhancements to Terwillegar Park are implemented, additional maintenance objectives and practices will be required. These measures will be dependent upon the type and use-specific requirements.

Constraint – current maintenance operations in the Park are limited and challenging due to a lack of on site maintenance storage and mobilization issues

¹⁸ Meeting with City Operations Staff, Sept. 10, 2007

¹⁹ Meeting with City Operations Staff, Sept. 10, 2007

²⁰ Meeting with City Operations Staff, Sept. 10, 2007

4.0. SUMMARY OF OPPORTUNITIES & CONSTRAINTS

As noted in the introduction, the discussion throughout this document is program based, and not site specific, as to not prescribe exact locations for the various opportunities and constraints. The **opportunities and constraints analysis** has been based on the recommendations and descriptions provided in the Vision Plan, input from City staff and a the background and field reviews completed by ISL Engineering and Land Services design team. This report will not be completed until input is gathered from the Project Team, the Advisory Committee and stakeholders through a workshop process. Following input from these groups a program statement will be prepared and the Design Team will begin working on alternative concept plans for consideration and input from the public. This report and the subsequent program statement will serve as the foundation for conceptual design.

Throughout the document, several opportunities and constraints were summarized in excerpt boxes. The following provides a recapture of these excerpts as a summary to this document:

Opportunities

- Members of the Terwillegar Park Advisory Committee have intimate knowledge of the Park and will be asked throughout the study to provide input and test ideas on the uses, impacts, design, development and management of Terwillegar Park.
- Terwillegar Park is well positioned to service the needs of a growing number of residents in Edmonton's south west and west end neighborhoods as well as to provide a unique destination within the 'Capital Region River Valley Park' for all citizens of Edmonton.
- The Concept Plan Study will build upon the input, work and recommendations approved in the Vision Plan, providing a strong foundation of values, activities, needs and issues related to the development and management of Terwillegar Park.
- The uniqueness of the North Saskatchewan River valley banks that surround Terwillegar Park are interesting natural features and provide an interpretive opportunity.
- Although much of the study area was highly disturbed in previous years by agricultural practices and gravel extraction operations, high species richness demonstrates the significant ecological values of Terwillegar Park.
- Despite the presence of many species and significant ecological features, the park does not support any environmental features or species that are sensitive to the point that all development in the park should be avoided.
- The recent HRIA study was unable to identify any historical resource that would hinder site development.
- The recent Phase 1 Site Assessment findings did not result in any evidence of contamination that would require further remediation or hinder site development.
- To provide for improved nature appreciation and interpretation opportunities to benefit all park users.
- Based on the size of the Park, the mix of large open space and natural areas, reasonable vehicle access and trail linkages Terwillegar Park is physically well suited to support a wide range of parks activities and uses.
- The North Saskatchewan River surrounding Terwillegar Park provides excellent opportunities for a range of water-based activities during summer and winter.
- The restoration work following maintenance to the River Queen has improved the access to the river for all users.
- It will be important to find a balance between restoration of some existing river edge areas that have previously disturbed with the sensitive development of new access locations (eg. Viewpoints).
- The value of the ponds as waterfowl habitat could be improved though design and management changes.

- There is an opportunity for recreational fishing and paddling in the ponds. These activities should be explored during concept planning.
- Based on a transportation study performed as part of this analysis, upgrading the access road to asphalt is feasible.
- Traffic congestion is generally not a problem on typical days at full parking lot capacity. During the occasional special event, the access road should comfortably handle traffic volumes of 500 cars, with an estimated exit time of 30 minutes or less.
- The current configuration and range of trail types provides a high potential for a managed trail system in Terwillegar Park.
- A regional trail through Terwillegar Park provides an important link within the context of the 'Capital Region River Valley Park'.
- Implementation of City of Edmonton signage standards within the Park will improve user enjoyment of the park by providing critical wayfinding, safety, and management information as well as educational and site exploration experiences.
- Providing added communication between recreational users and emergency services, such as an extension of the Blufone network, will greatly boost the perceived safety of more remote areas, and further imply that these areas are in fact under the care and watch of municipal emergency services.
- CPTED evaluations and development principles should continue to be an integral part of future development projects and should be implemented as part of the ongoing maintenance and operations of Terwillegar Park.
- Reclamation and management of some of the most highly disturbed areas of the Park system could be one of the key program features in support of the vision of a "unique natural park".

Constraints

- Steep slopes of relatively loose soil and subsoil results in general bank instability and difficult conditions for top of bank trail development.
- Flooding of the Park will impact the potential location of structures, the integrity of the pond areas and the long term maintenance of trails and other amenities.
- The location and protection of sensitive species must be considered during concept planning of the Park.
- Environmental protection and restoration guidelines should be followed when developing conceptual plans for the Park.
- Federal, Provincial and Municipal Regulations will define requirements for ensuring that development meets specific standards but may also pose restrictions on certain types of development in the Park.
- Artifacts and other historical occurrences found during a HRIA study can be used as inspiration for interpretive and education opportunities, and with a lack of historical resources, such opportunities are not present.
- A number of user conflicts and site impacts can be attributed to the mix of uses, the layout of the Park and the lack of a formal management program.
- The River Queen currently has no other location for maintenance and dry docking. This will need to be considered in concept and management planning for the Park.
- Access to the river for canoe/kayak launching and for docking of boats visiting the park is constrained by a lack of permanent dock facilities and launch infrastructure such as access road and parking and support amenities such as washrooms and shelters.
- River use activities can be associated with health and safety risks related to water quality and accidents resulting in drowning.

- The current parking lot size is limited and often fills to capacity even on days with no programmed event.
- Overall there is a lack of infrastructure to adequately support the level of use and to meet the needs of users. During the Vision Plan process users identified a range of infrastructure needs to improve use and enjoyment of the Park.
- The existing roadway into the park does not provide a designated pedestrian walking surface which causes an uncomfortable interface with pedestrians and vehicles.
- Access for public transit directly into Terwillegar Park is limited given the inability for typical busses to turn around at the parking lot; either smaller busses or a reconfiguration of the parking lot would be required to promote accessibility of busses.
- Trail use by a broader range of users is impacted by issues related to accessibility, signage and management.
- Although its size is appealing, event organizers tend to discount Terwillegar Park as a viable event site due to a combination of its lack of amenities and its non-central location.
- The application of bylaws for inappropriate and unsafe uses is limited to the resources of the Parks department and other agencies to patrol and monitor activities in the Park
- Much of this site is overwhelmed with noxious and nuisance weeds that are well established; removing these weeds completely would be extremely difficult.
- Current maintenance operations in the Park are limited and challenging due to a lack of on site maintenance storage and mobilization issues.