North Telford Recreational Lands Development

Concept Design Report

Prepared for: The City of Leduc

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RC strategies

O2 PLANNING + DESIGN

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1.0 Introduction

Building on a parks and open space framework for the North Telford area established by the 2010 Telford Lake Master Plan and the 2012 Parks, Open Space and Trails Master Plan, in 2013 the City of Leduc purchased the 26.8-hectare (ha) Sawridge Lands for the development of a new park, the North Telford Recreational Lands.

Located in the City of Leduc, on the north shore of Telford Lake, the land includes high quality forest, wetland and riparian habitats, and one of the largest tree stands in Leduc. The total park area is approximately 31.1 ha, including 26.8 ha of municipally-owned land to the south of the Sawridge Business Park development, plus an additional 4.3 ha of Municipal Reserve and Environmental Reserve lands to the south of the Harvest Industrial Park development. These lands have historically been used as a gravel pit, and an informal area for biking and off-road vehicle use.

The 2010 Telford Lake Master Plan identified a concept plan for the North Telford Recreational Lands (referred to as Sawridge Lands in the Master Plan), including the following proposed activities:

- Telford Lake Trail. A 3.0m wide asphalt multi-use trail that connects to the City's multi-way network that will eventually form a circuit around Telford Lake.
- Mountain Bike and Cross Country Ski Trails. Granular or natural surface trails throughout the park using existing informal trail alignments.
- Mountain Bike Terrain Park. The terrain park capitalizes on the existing open space and variations in terrain on the former gravel pit to develop a mountain biking skills area. Mountain biking already occurs informally in the park.
- Walking / Interpretive Trails. Granular, natural tread or bark mulch trails separate from the bike trail network, with access to nature viewing and interpretive opportunities.
- Access Road and Parking. Gravel road and parking are proposed in the northwest corner of the park, with capacity for approximately 30 vehicles.

- Washroom and Warm-Up Shelter. To be located adjacent to the parking area.
- Entry Node. At the intersection of the Telford Lake Trail and the parking lot, an entry node will provide a staging area and wayfinding information.
- Day-Use Amenities. Picnic facilities, benches and interpretive features will be placed throughout the park to provide day-use opportunities.
- Community / Neighborhood Park Space. This area will include a more manicured park space with picnic facilities, a picnic shelter and a nature-themed playground for local residents.

Planning and Design Process

Before developing a finalized concept plan for the North Telford Recreational Lands, a thorough site analysis, needs assessment, and public engagement process were undertaken to verify that the proposed amenities and park developments are appropriate to the physical setting and market context of the area. The site analysis work was conducted by O2 Planning + Design on September 26 and October 17, 2013. A context and market assessment was prepared by RC Strategies on Nov. 15, 2013. Public engagement activities included a series of focus groups with stakeholders indentified by the City of Leduc, a public open house, and an online questionnaire to gather feedback about the proposed uses and amenities for the park. These activities were facilitated by RC Strategies and are described in detail in Section 5.0 of this report. Site analysis maps showing existing conditions, opportunities and constraints were presented as background information for the engagement activities.

2.0 Existing Conditions

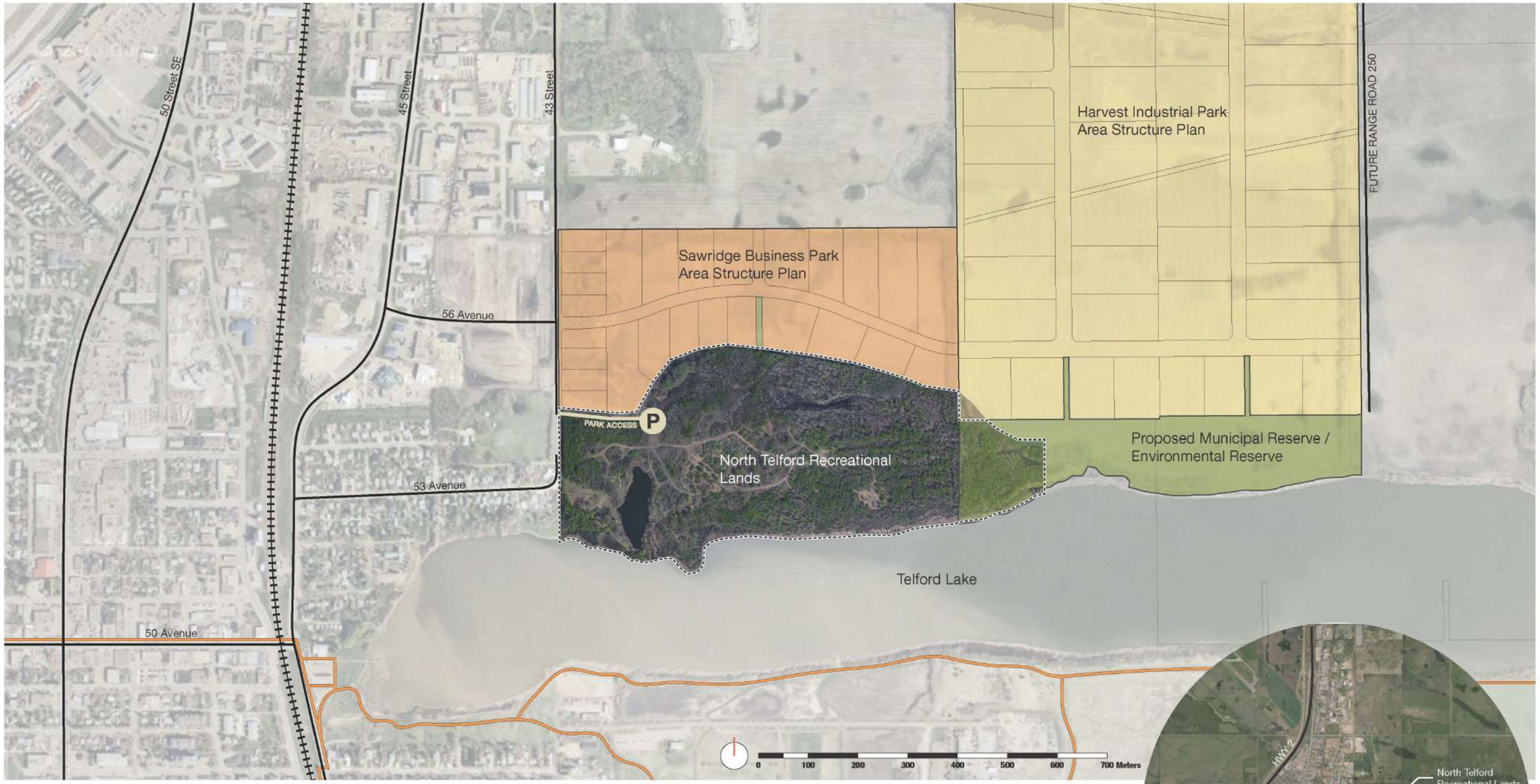
2.1 Site Context

Telford Lake is an important environmental and recreational amenity in the east part of the city of Leduc. It is used for rowing, kayaking and other paddle sports in the summer, and has historically been used for snowmobiling, skating and hockey games in the winter. The forested areas around the lake provide important habitat for bird species, including the provincially listed Sensitive species, least flycatcher and northern oriole (Telford Lake Master Plan, 2010). The marshy areas along the lakeshore provide habitat for waterfowl and amphibians, and birds and mammals use the forested areas and hedgerows around the lake to move between habitat sites (Telford Lake Master Plan, 2010).

Lands around the lake are characterized by residential, agricultural, industrial and recreational land uses. Existing agricultural areas to the north and east of the North Telford Recreational Lands are currently being redeveloped as industrial and business parks (the Sawridge Business Park and the Harvest Industrial Park), which will directly impact the park site by introducing medium-density development along the north park boundary. Future development of the industrial and business lands will include perimeter fences, and stormwater runoff to be directed to the pond within the park limits.

The City of Leduc has plans to complete the Telford Lake Trail loop around Telford Lake. This multi-way trail has been constructed along the south shore of the lake and connections are being designed at the west end near Telford House. In the future, the City is also considering the development of a groomed cross-country ski trail, to be located parallel to the multi-way around Telford Lake. Much of the property on the north shore of the lake is privately owned, except for a 6m wide (minimum) buffer of Environmental Reserve at the shoreline. As these private parcels are developed, the City will request that the required Municipal Reserve dedications are made along the lakeshore, expanding the available parkland at the edge of the lake to about 30m in total width. Once the dedication of the Municipal Reserve lands has been finalized, the City will be able to complete the construction of the Telford Lake Trail on the north side of Telford Lake, in a manner consistent with the existing network. The North Telford Recreational Lands will provide a significant natural park amenity within the Telford Lake Trail system.

It is important to note that Telford Lake and surrounding lands (including the North Telford Recreation Lands) are located within the Noise Exposure Forecast (NEF) contours and Bird Hazard Zone for the Edmonton International Airport (EIA), which restrict the development of residential areas and the creation of Canada goose habitat in the area. The North Telford Recreational Lands are within 3km of the EIA Runway Route 12/30, and aircraft are commonly observed en route to EIA, flying low directly over the park.



North Telford Recreational Lands Development

EXISTING CONDITIONS
Context

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Legend

- Sawridge Business Park Boundary
- Harvest Industrial Park Boundary
- Proposed Municipal Reserve Boundary
- Existing Primary Multiway
- Roadway
- Train Tracks
- P Proposed Parking Lot
- Project Boundary

NOTE: SUBDIVISION LOT LAYOUTS ARE CONCEPTUAL AND SHOWN FOR INFORMATION ONLY

Map 1. Site Context

Debris remaining at plane crash site

2.2 Site History

The North Telford Recreational Lands were used as a gravel pit operation for several decades in the mid-to-late 20th century (Telford Lake Master Plan, 2010). Historic aerial photos show that the main disturbance of the site was concentrated at the west end of the property. Clearings and access roads made throughout the property are visible in the patterns of vegetation growth today. One of the most visible changes made to the site during the gravel operation was the excavation of the permanent wetland at the west end of the park. Originally a gravel borrow pit, the excavation has since filled with water and become a permanent Class V wetland, and site of the only provincially listed rare plant species in the park (Telford Lake Master Plan, 2010). Remnant spoil piles from the gravel operation have created highly variable topography within the park. These areas have been used informally for mountain biking, cross country running, hiking, and off-road vehicles such as all terrain vehicles and snow mobiles.

On January 2, 1973, an aircraft loaded with cattle crashed in the gravel pit. A description of the crash states that: “On the ground at Toronto cattle pens were installed and a cargo of 86 cattle was loaded. The Boeing 707 took off at 04:47 GMT [11:47pm EST] for a flight to Edmonton. The en route part of the flight was uneventful. At 08:29 [1:29am MST] the flight was cleared for a straight in back-course ILS approach to runway 29. The first officer, who had just been promoted to Boeing 707 operations, was to perform the approach in blowing snow conditions. This approach was the first one after a 6-week holiday, so he lacked recent Boeing 707-experience. With the added factors of fatigue, turbulent air, and a heavily loaded aircraft the situation would have become extremely difficult. At some point late in the approach the captain took over control of the aircraft and tried to arrest the sink rate. The plane contacted poplar trees, 3137m short of the runway. It struck the ground a glancing blow, and the tail fin struck powerlines. The aircraft finally struck a large ridge in the middle of a gravel pit. The cockpit section and a forward portion of the fuselage broke away and 86 cattle, the cargo on board, shot forward through the open front section of the fuselage and were thrown a distance of up to 100m. A fire erupted.” All five crew members were killed in the crash (Aviation Safety Network, 2013).

A geocache location has been established near the former plane crash site, and the story provides interesting content for an interpretive feature. Although much of the crash debris has been removed, some pieces remain in the general area of the crash.

Figure 1. 1974 Aerial Photo

Severe ruts caused by recreational vehicles

Example of large debris accumulated in park

2.3 Current Use

The park site has been accessed extensively by unauthorized users, including mountain biking and off-road vehicle recreation, before being purchased by the City of Leduc in 2013. The evidence of recreational vehicle use in the park is visible on many of the trails, where driving in areas of sensitive soils and poor drainage has resulted in severe rutting, up to 1m deep in some locations.

Trail degradation caused by mountain biking is much less severe, with minor rutting and trail braiding in some locations. In areas with the greatest variation in terrain, a large number of biking trails have been worn into the vegetation from repeated use. The forest in these areas is highly fragmented and the trails include jumps and other user-built trail modifications.

Large debris has accumulated throughout the site over time. A number of burned and rusted vehicles, appliances and smaller debris, such as bicycles and lawn mowers, are scattered along the trails, and should be removed prior to park development.

The site has a reputation as a party spot among the younger residents of Leduc, and is known to many by the nickname “Whiskey Hill”. Late night gatherings, drinking, and fires have occasionally become a nuisance for nearby North Telford residents or required the involvement of City of Leduc emergency services.

Many Leduc residents use the site for more passive forms of recreation, such as walking, dog walking, and cross country running.

2.4 Trails

The history of use in the park has resulted in a well-developed network of informal trails that provide access to the key areas of the park, utilizing many of the clearings and roads that were created when the gravel pit operation was active. The main routes through the site have been reinforced by off-road vehicle use over time, and vary in width from 2.5 to 3m. A secondary network of trails used by pedestrians and cyclists exists in the more heavily forested areas and along the steeper gradients around the Class V wetland and along the lakeshore. These trails range in width from 0.5 to 2m. The surface of all trails is natural, consisting of packed earth and grass, and mud in the more poorly drained areas of the site.

A goal of the park development project is to use existing informal trail alignments for formal trail development. The primary benefits of this approach are to save on construction costs associated with clearing additional forest for trails, and to maintain the integrity of the existing forest habitat. In order to determine which routes are best suited for development as permanent trails, the condition of the existing trails in the park has been assessed as poor, moderate or good.

Trails in poor condition have the most severe rutting, are located in areas of saturated soils or extreme slopes (over 15%), and require extensive repair or reclamation work. The poor condition of these trails may indicate that there are environmental factors such as slope, soil type and drainage that make the trails' current alignment unsustainable. Where these trails are running through existing wet areas or drainage catchments, the trail should be closed or relocated to avoid long-term maintenance issues associated with maintaining trails in wet areas. If it is necessary to cross a wet area, trails may be reinforced with gravel and/or geotextile grid to stabilize the base of the trail and allow water to pass under the trail surface. Other trails that are in poor condition mainly due to off-road vehicle use may be restored and maintained in their existing alignments.

Trails in moderate condition have minor rutting, minimal soil saturation, and gradual slopes. Some reclamation and repair work may be required to address trail braiding or remove overgrown vegetation, but in general these trails can be maintained in their existing alignments with relatively little additional construction work.

Trails in good condition have no rutting, gradual slopes, and are clear of vegetation. They are primarily pedestrian trails with little evidence of vehicular use, and, together with the trails in moderate condition, provide access to some of the more scenic areas of the park. The good condition of these trails indicates that the alignments are suitable for formal trail development.

Typical trail in good condition

Area of intensive mountain biking

Typical trail in moderate condition

+
Existing pedestrian access to park at end of 53 Ave.

+
Existing parking + access at end of 53 Ave.

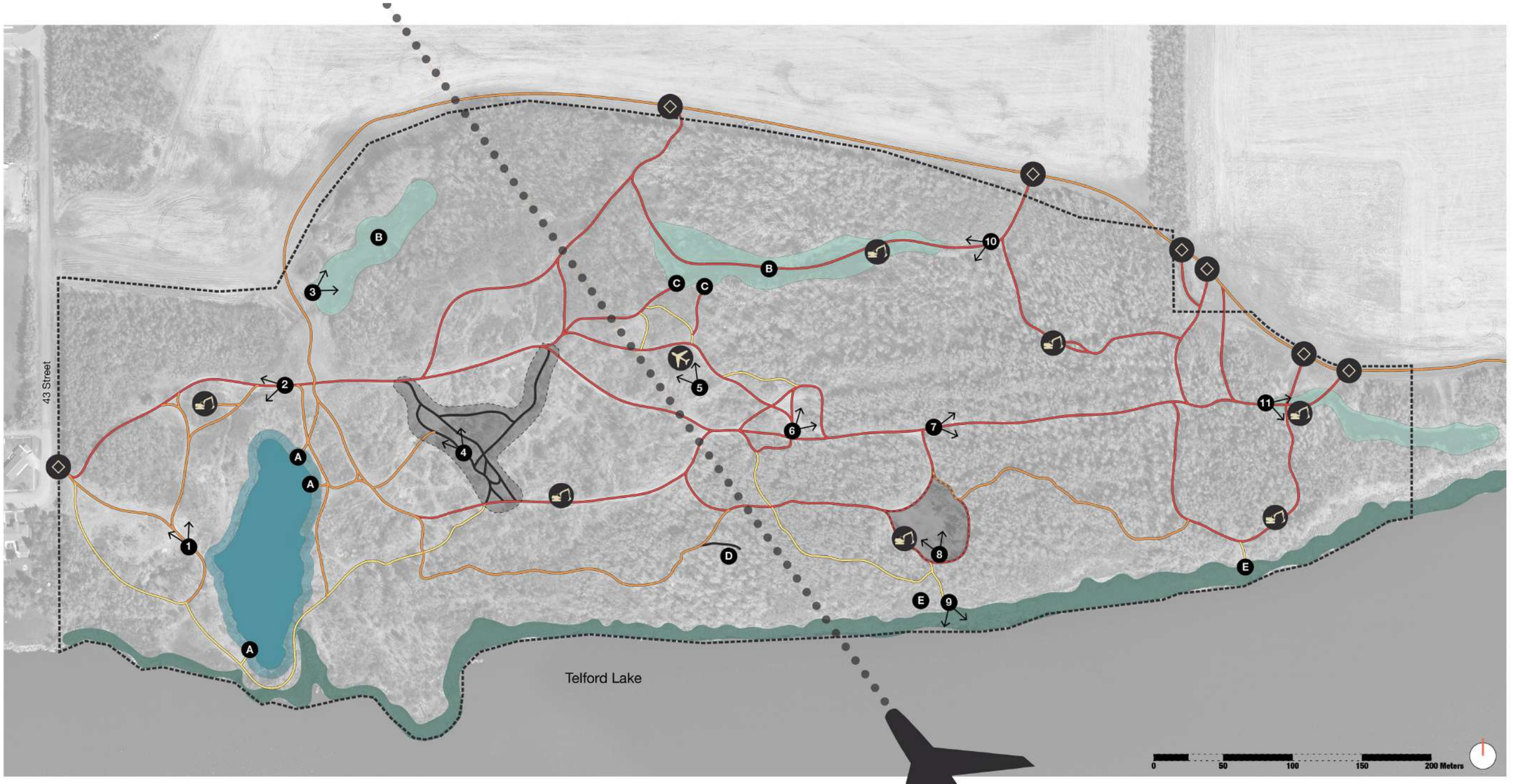
2.5 Vehicular Access

Vehicle access to the north shore of Telford Lake is currently provided via 43rd Street from 53rd Avenue and 56th Avenue. 53rd Avenue is a residential street that terminates at the west end of the park. Residents of the North Telford neighborhood have expressed concern about increasing traffic volumes on 53rd Avenue related to the North Telford Recreational Lands development.

56th Avenue is a newly developed street that passes through a light industrial district and is more suitable for large vehicles and heavier traffic loads. 56th Avenue will eventually be extended through the Sawridge Business Park and Harvest Industrial Park developments to the north of the site to meet up with a future extension of the east Spine Road (Range Road 250). In the future, it may be possible to access Municipal Reserve lands on the north shore of Telford Lake from the east Spine Road.

For the purposes of this project, the vehicular access to the park will be provided from 43rd Street, with a parking lot for approximately 30 vehicles located inside the park, as indicated in the Telford Lake Master Plan.

Historically, off-road vehicles have accessed the site from the east end of 53rd Avenue, and via multiple entry points along the agricultural fields to the north of the park. Since the City of Leduc purchased the property in 2013, a gate and signage prohibiting motorized vehicles has been installed at the east end of 53rd Avenue. Construction of the Sawridge Business Park development has cut off most of the vehicular access from the north with a large temporary berm along the north edge of the park. A privacy fence will be constructed along this boundary prior to completion of the Sawridge Business Park development. Vehicular access from the future Harvest Industrial Park site is currently accessible and temporary barriers may be required to prevent unauthorized access until construction of this development has begun.



North Telford Recreational Lands Development

EXISTING CONDITIONS
Trail Conditions + Amenities

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Legend

- Wetland - Class V (Permanent) — These wetlands have permanent open water in the central zone that is free of vegetation.
- Wetland - Class II (Temporary) — Dominated by wet meadow vegetation, standing water is typically visible for only a few days of the year after snowmelt or a heavy rainstorm.
- Wetland - Fringe
- Existing Informal Bike Park
- Informal Trail - Good Condition
- Informal Trail - Moderate Condition
- Informal Trail - Poor Condition
- Informal Mountain Biking Trail
- Flight path
- Project Boundary
- Access Point
- Major Debris/Structure
- 1973 Plane Crash Debris

Notes

A. Existing wetland access for trail users and off-leash dogs. Wetland access should be minimized to allow for habitat regeneration and protection of rare plant species.

B. Trails through seasonal wetland (Class II) should be removed and appropriate buffer zone created.

C. Incomplete trails do not connect to larger network. Trail reclamation required.

D. Bike jump exists as an offshoot of minor informal trail. Bike activity should be concentrated in designated areas to allow for habitat regeneration and protection.

E. Break in vegetation allows for unobstructed views of Telford Lake.

Map 2. Existing Trails + Amenities

View from west side of Class V wetland

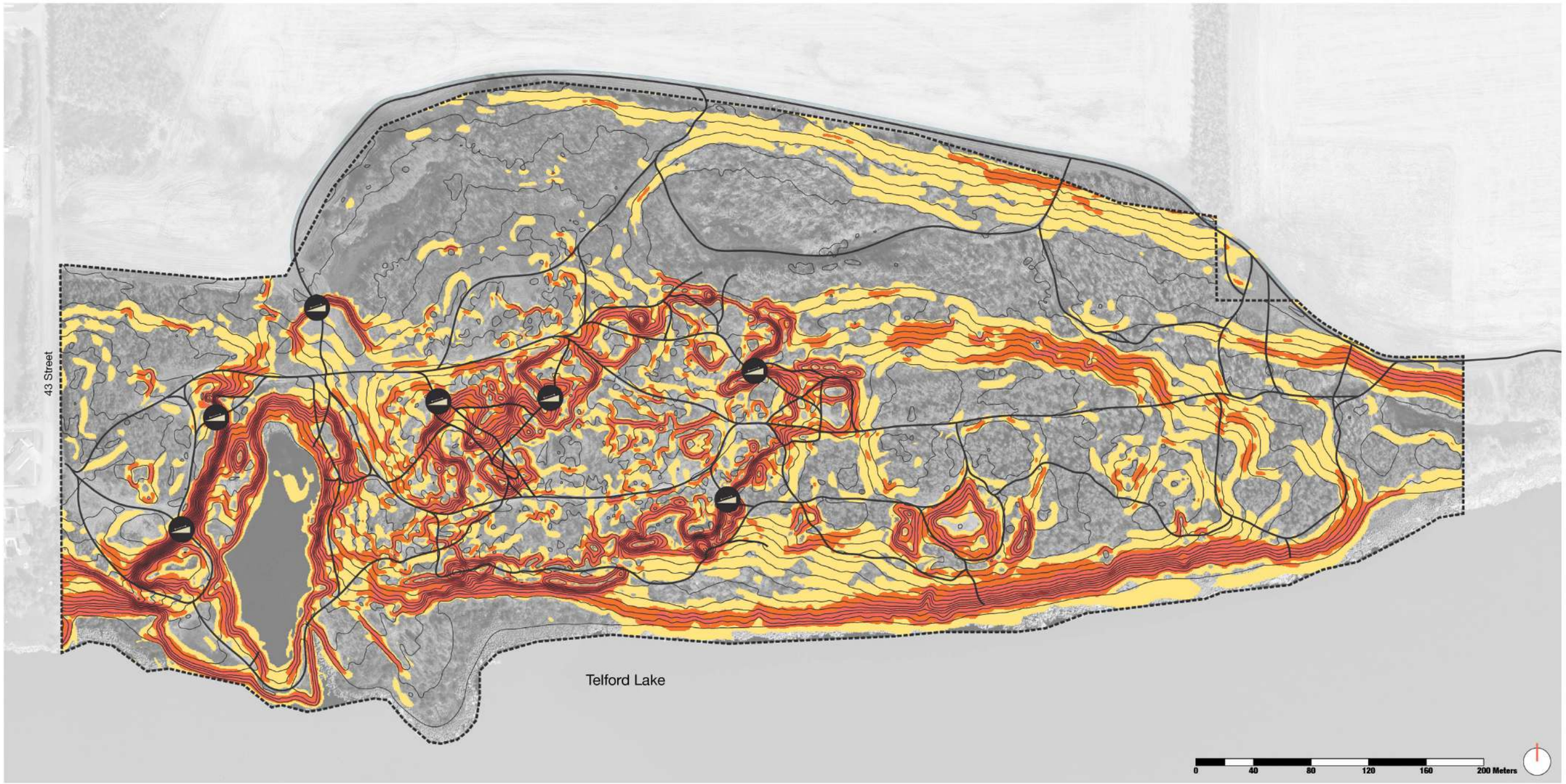
2.6 Topography

The topography of the North Telford Recreational Lands has been highly disturbed by gravel mining activities. The most disturbed area is a zone of small knolls and depressions formed by spoil piles and excavations, located in the southwest quadrant of the site. The central feature of this area is a permanent Class V wetland, formed from a gravel borrow pit that has since filled with water. Slopes around the wetland and throughout the zone of highest disturbance are relatively steep, ranging from 10 to 40%.

A wide ridge running east-west through the park creates a high point along the south side of the site that coincides with the greatest number of informal trails. This ridge, combined with land sloping south from the agricultural fields north of the site, contributes to trapping drainage in a low point along the north edge of the park. This is an area where wet soils and two Class II wetlands were identified during the field review that was undertaken on October 17, 2013, by O2 Planning + Design.

Along the north shore of Telford Lake, the bank rises steeply (15 to 40%) to a bench between 2 and 5m above the surface of the lake. There are only two points in the park where it is possible to access the lake level via a gentler slope: immediately east of the Class V wetland, and at the easternmost end of the site. The steep bank along the lake edge may have implications for locating trails along the lake edge, as well as water access points.

Another topographic feature of interest is a steep slope located at the west side of the Class V wetland. A relatively flat, open area at the top of the slope is well-suited to park amenities such as picnic sites. The top of the slope is clear of trees and provides good views of the wetland and Telford Lake beyond.



North Telford Recreational Lands Development

EXISTING CONDITIONS
Slope Analysis

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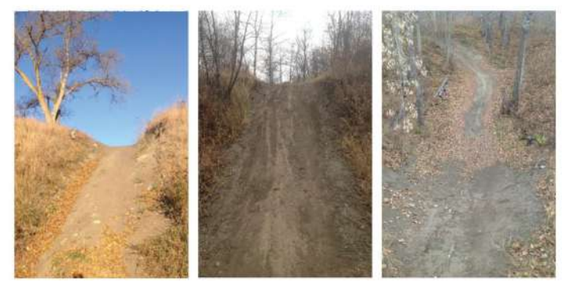
Legend

- Slope Gradient 5 - 10%
- Slope Gradient 10-15%
- Slope Gradient 15-40%
- Slope Gradient 40% and steeper
- Informal Trail
- Major Slope Gradient on Informal Trail
- Project Boundary

Trail Considerations

Informal trail overlap with steep slopes will need to be analyzed for either regrading or integration into mountain bike terrain park. Appropriateness of regrading will need to consider habitat disturbance, soil saturation and overall trail connectivity.

40% AND GREATER SLOPE EXAMPLES



Map 3. Slope Analysis

Typical trail with poor drainage

Footbridge crossing Class V wetland outlet

Typical Class II wetland vegetation

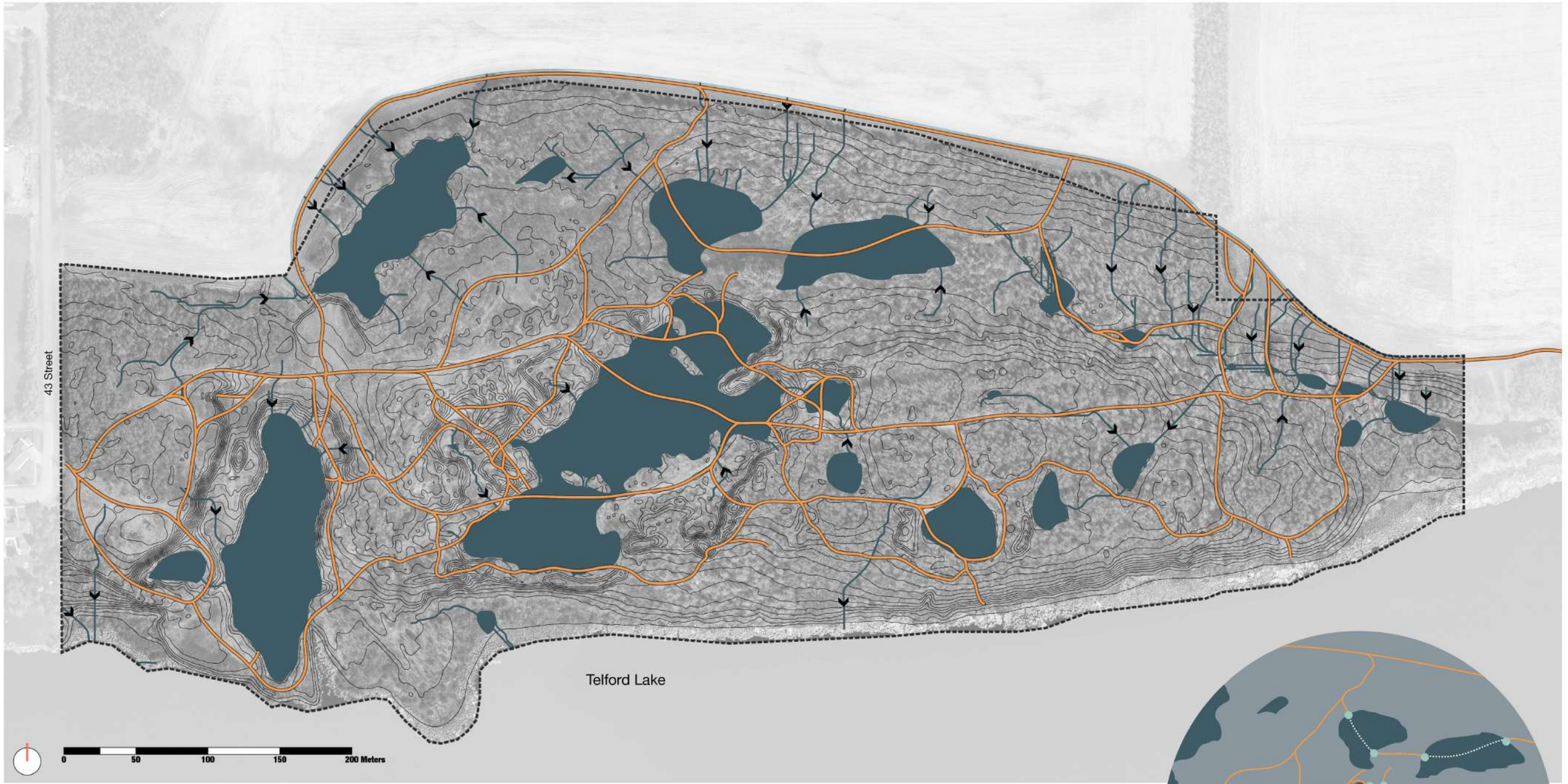
2.7 Hydrology

The drainage patterns in the park generally follow the topography of the land. Major points of runoff collection include the Class V wetland in the southwest quadrant of the site and the Class II wetlands along the north edge.

These wetlands have been classified using the Stewart and Kantrud Wetland Classification System (Stewart and Kantrud, 1971), which uses dominant plant species as indicators of the moisture regime to classify wetlands. A Class V wetland is defined as a permanent water body with open water in the central zone that is free of vegetation. A Class II wetland is defined as a temporary wetland that is periodically covered by standing or slow-moving water, which is typically visible for only a few days of the year after snowmelt or a heavy rainstorm. Class II wetlands are dominated by wet meadow vegetation.

A minimum 20m vegetated buffer is recommended to protect a permanent wetland or water body (Alberta Environment, 2012). In addition, if the bank of the water body is steeply sloped, the buffer zone should be extended or measured from the top of bank. In the development of a natural park, this buffer should be considered when locating features such as buildings, parking lots and roads. Low impact uses, such as walking trails, may be located within the buffer zone.

Other minor drainage basins in the park include the east half of the main gravel mining area, and a smaller gravel borrow pit in the southeast quadrant of the park. These natural drainage collection areas should be considered in trail design and when locating amenities in the park. Trail alignments in drainage basins should be avoided, or kept to the shortest crossing possible if a crossing is necessary.



North Telford Recreational Lands Development

EXISTING CONDITIONS
Site Drainage

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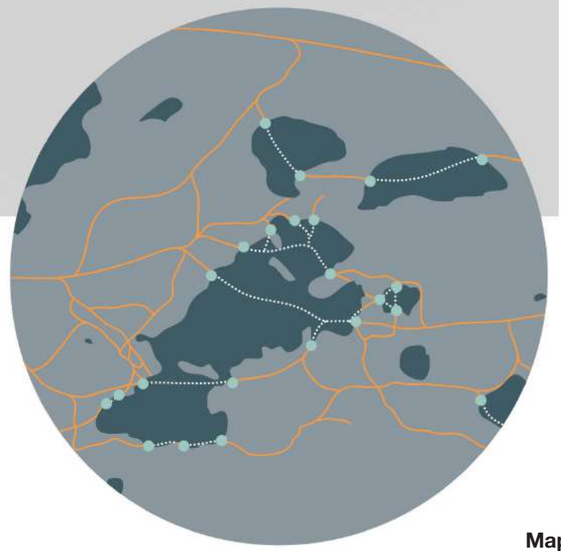
Legend

- Drainage basin
- Informal trail
- Drainage Flow
- Drainage Direction
- Project Boundary

Trail Considerations

Informal trail overlap with drainage basins will need to be analyzed for either repair or reclamation. In areas of soil saturation and poor trail conditions, reclamation rather than repair should be prioritized. Where existing primary trails overlap with drainage basins, trail design should mitigate degradation due to freeze-thaw cycles and allow for appropriate bearing loads.

- Potentially saturated informal trail
- Connection between saturated and unsaturated informal trail



Map 4. Site Drainage

2.8 Soils and Erosion

According to Sheet 83H (West Half) of the Soil Survey of Edmonton (Canada Department of Agriculture, 1962), the dominant soils in the Telford Lake area are Kavanagh Loam (70%) and Camrose Loam (30%). Both are Solonetzic soils, developed on glacial till or residual materials.

Solonetzic soils have formed from parent materials rich in sodium or from materials enriched with sodium. A key characteristic of Solonetzic soils is their low calcium (Ca2) to sodium (Na) ratio (10 Ca2 :1 Na or less), whereas Chernozemic soils, one of the most common agricultural soils in Alberta, typically have a calcium to sodium ratio between 40 Ca2 :1 Na and 20 Ca2 :1 Na. As groundwater percolates through the soil, soluble salts are leached from the parent materials, resulting in the salinization of the subsoil, or B Horizon layer. Salinization may also be caused by the presence of groundwater high in dissolved salts (www.soilsofcanada.ca, University of Saskatchewan).

The sodium binds with clay particles and causes the clay to be depleted from the topsoil, or A Horizon, while it collects in the B Horizon below. Eventually the clay clogs the pores of the B Horizon and prevents water from percolating into the lower soil layers. When this sodium and clay-rich B Horizon is exposed at the soil surface, it will dry out and become very difficult for tillage equipment and roots to penetrate. This type of soil is known as hardpan (www.soilsofcanada.ca, University of Saskatchewan).

It is likely that much of the A Horizon has been eroded away on informal trails in the park with the highest use and the greatest off-road vehicle use. The exposed B Horizon may have some of the characteristics noted above, exhibited as a poorly draining soil layer that dries out very slowly, is slippery to walk or drive on when wet, and becomes very hard when dry. This type of soil condition is not ideal for trail beds due to its inability to drain water away. However, over-excavation to remove the entire B Horizon prior to trail construction should remove the clay-saturated soil and allow drainage of the trail bed. For natural tread trails, rototilling calcium into the soil (in the form of lime and gypsum) may be an effective method of improving soil structure, and therefore drainage (Alberta Agriculture and Rural Development, 1993).

Solonetzic soils can be difficult to work with because they tend to dry unevenly, and if cultivated when wet or after they have dried, the soil forms large clods that are difficult to break down. It is recommended to perform grading and cultivation work during cool weather when soils are moderately dry to give the best results (Alberta Agriculture and Rural Development, 1993).

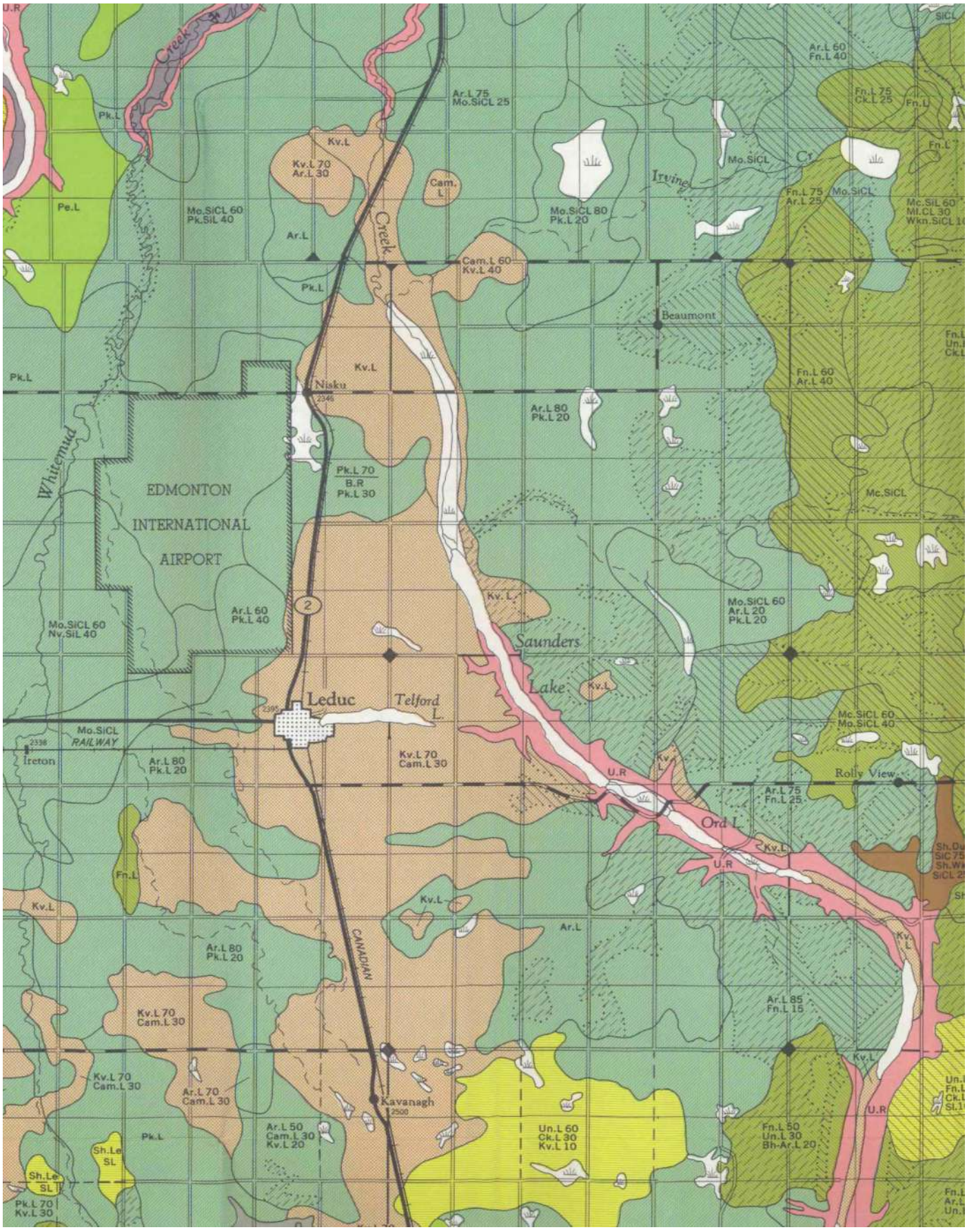


Figure 2. 1962 Soil Survey of Edmonton, Sheet 83H

Typical Class II wetland vegetation

Typical Late Seral Aspen forest

Typical Late Balsam Poplar forest

2.9 Vegetation

An informal field review of existing vegetation was conducted by O2 Planning + Design on October 17, 2013. Field observations and the results of the 2009 Telford Lake Master Plan Biophysical Review have informed the Vegetation section of this report.

Existing vegetation types are a combination of upland forest communities and wetlands. Emergent wetland vegetation can be found along the shore of Telford Lake and in the Class V permanent wetland. During the biophysical surveys of 2009, a rare liverwort (Purple-fringed Riccia) was observed at the inlet to this wetland. “This species has a provincial status of S2, indicating that there are between 6 to 20 occurrences or many individuals in fewer occurrences within the province” (Telford Lake Master Plan, 2010). Interpretive opportunities related to this species are currently being explored.

Other wetlands along the north edge of the park are Class II temporary wetlands that are dominated by sedges. Even though the soils are saturated, these wetlands tend to dry out every season. Along the lake edge, typical riparian vegetation can be found, including various shrubs such as dogwood and willow. Balsam poplar trees, adapted to periodic flooding, can be found in low-lying areas throughout the park. However, they are mainly located in the area to the north of the main ridge in the site, where drainage from the northern properties is collected in the Class II wetlands and associated low areas.

The remaining vegetation in the park is aspen forest, in various stages of ecological succession. The youngest stands of aspen are located in areas that have been subject to the most recent disturbance (i.e., the gravel pit operation). Since aspen are clonal species and prolific seed producers, they have successfully re-established in the disturbed areas. The older stands of aspen are located on the eastern end of the park, in areas that are relatively undisturbed.

The forest understory in undisturbed areas has a full complement of forest strata, such as tall shrubs, low shrubs, forbs and grasses. In the western portions of the park, the understory has been impacted by non-native plantings, such as caragana, and the invasion of restricted weeds from surrounding agricultural fields. Weeds such as Common tansy and Canada thistle tend to colonize in disturbed areas, and the North Telford infestation is likely due to the lack of previous reclamation activities (i.e., topsoil placement and revegetation) following gravel pit operations. Weed species have continued to spread from the previous gravel pit site throughout the North Telford Recreational Lands, through the proliferation of trails and off-road vehicle traffic. The infestations are more severe in open unforested areas at the west end of the study area and gradually become less severe moving eastward through the site.

North Telford Recreational Lands Development

EXISTING CONDITIONS
Vegetation Classification

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Legend

- Wetland - Class V (Permanent) These wetlands have permanent open water in the central zone that is free of vegetation.
- Wetland - Class II (Temporary) Dominated by wet meadow vegetation, standing water is typically visible for only a few days of the year after snowmelt or a heavy rainstorm.
- Wetland - Fringe
- Early Seral Aspen
- Late Seral Aspen
- Riparian vegetation
- Balsam Poplar
- Informal Trail
- Project Boundary
- Rare Species

VEGETATION CLASSIFICATIONS

Map 5. Vegetation

2.10 Wildlife Habitat

The North Telford Recreational Lands are classified as aspen woodlot and aspen/disturbed habitat (Telford Lake Master Plan, 2010), a sub-classification of the Aspen Parkland Ecoregion of east-central Alberta. Breeding bird point count surveys and amphibian surveys were conducted in the park by Spencer Environmental, on May 11, 2009, and June 10, 2009, respectively.

2.10.1. Songbirds

A total of 16 bird species were observed on the site, including the provincially listed Sensitive species, least flycatcher and northern oriole. The North Telford Recreational Lands and other aspen woodlots around Telford Lake had the highest species richness (number of species) observed out of the habitats in the survey area. A notable drop in species diversity was recorded in the most heavily disturbed area of the park, where the most intensive gravel mining activity was conducted. Although the bird species observed were common to the Aspen Parkland Ecoregion, the diversity and density of birds may provide an opportunity for novice bird-watching. There is some risk that increased access and activity on the site will negatively impact bird numbers in the park.

2.10.2. Waterfowl

The west end of Telford Lake adjacent to the park and the Class V wetland contained a relatively low number and diversity of waterfowl compared to other areas of Telford Lake. However, the emergent vegetation at the edge of the lake and the Class V wetland provides good cover for waterfowl moving around the area and their young. The Telford Lake Master Plan Biophysical Review notes that the presence of recreational trails next to the lake may contribute to disturbances to nesting waterfowl. This factor should be considered when developing trails in the North Telford Recreational Lands.

2.10.3. Mammals

Incidental observations of mammals noted in the park area included muskrat (in the Class V wetland), white-tailed deer, and signs of northern pocket gophers, beavers (in the Class V wetland), and coyotes. Other mammals observed in a 2000 field survey (conducted by RL & L Environmental Services) included moose, red fox, striped skunk, short-tailed weasel, snowshoe hare, porcupine, ground squirrel, red squirrel and white-tailed jack rabbit.

2.10.4. Amphibians and Reptiles

Boreal chorus frogs and wood frogs were recorded in high numbers at the North Telford Recreational Lands site. No toad species were observed, but the Telford Lake Master Plan Biophysical Review notes that the Class V wetland and surrounding area may offer suitable habitat for toad species such as the Canadian toad. During the stakeholder focus group sessions held for the North Telford Recreational Lands Park Development project, a Leduc resident noted that they had observed plains spadefoot toad and

great plains toad in the park; however, these species were not recorded in the Telford Lake Master Plan Biophysical Review, and are not common to the Leduc region (Alberta Environment and Sustainable Resource Development website). No reptiles were recorded on the site. However, the habitat is suitable for red-sided garter snakes.

2.10.5. Wildlife Habitat Recommendations

Key recommendations of the Telford Lake Master Plan Biophysical Review relating to protection of habitat in the North Telford Recreational Lands include:

- Avoid development of new trails in areas of mature forest
- Restrict trail widening or paving to existing trail alignments
- Locate trail development in previously disturbed areas and at edges of vegetation
- Protect emergent vegetation and a shoreline buffer zone at the edges of Telford Lake (recommended buffer width 30m)
- Avoid increasing areas of manicured lawn adjacent to the lakeshore
- Avoid the loss of large areas of habitat from existing mature forest
- Protect existing wetland habitat (Class V wetland)
- Confine development to previously disturbed areas
- Avoid the construction of physical infrastructure in the locations of rare plants (Class V wetland)
- Control weed species on the site

Typical viewpoint overlooking Telford Lake

Typical viewpoint overlooking Telford Lake

View of industrial/agricultural lands to northwest

2.11 Scenic Resources

The visitor experience of the North Telford Recreational Lands consists mainly of areas of forest with occasional clearings that reveal a view of features adjacent to the park. Notable viewpoints include:

- Top of slope overlooking Class V wetland, at west end of site
- Top of bank overlooking Telford Lake, just south of smaller gravel borrow area
- Top of bank overlooking Telford Lake, near east end of site

These sites have been identified for potential viewpoint development as part of the park plan.

Upon entering the site, visitors pass through an open area to the west of the Class V wetland with expansive views of the Class V wetland and Telford Lake beyond. To the south, an informal pedestrian trail network winds through shrubby riparian vegetation around the south edge of the wetland. The existing trail to the north of the Class V wetland passes through a thick grove of caragana before descending the slope from the plateau to the main park level.

In much of the west end of the park, the character consists of early seral aspen forest stands interspersed with open clearings that afford views across the Class V wetland and Telford Lake to the south, and of the agricultural fields and industrial areas to the north. Within this area, the former gravel mining operation has created a landscape of mounds and depressions that have been crisscrossed with informal mountain biking and off-road vehicle trails. The high point of this landscape is open and offers views of the industrial area to the northwest of the park site. This area is also under the Edmonton International Airport flight path for Runway Route 12/30, and the combination of the clear views and height above the surrounding landscape makes this one of the best locations in the park for observing planes.

Progressing east, the forest becomes denser and more mature, with greater variation in species. Clearings are smaller and less frequent in this area, and the taller trees create a canopy effect over the trails. Occasional breaks in the forest offer views of Telford Lake to the south, and the agricultural fields to the north.

The edge conditions where the forested North Telford Recreational Lands site meets Telford Lake and the agricultural fields are some of the more interesting landscapes in the park, contrasting the natural environment of the forest with the open water of the lake, or the highly ordered landscape of agricultural cultivation. However, in the future, the agricultural fields to the north will be redeveloped as industrial and business parks, and views at the north edge of the park will be blocked by a privacy fence. The character of this edge will be changed considerably by this future development, and a vegetative buffer may be required to mitigate the impact of the development on the park visitor's experience.

3.0 Context and Market Assessment

3.1 Community Context

The City of Leduc (population 27,241) (City of Leduc, Municipal Census, 2013) is located approximately 20 km south of the city of Edmonton, and is well known for its high quality of life and economic vibrancy. The history of the community dates back to the late 1880's when Robert Telford settled on property near what would later become known as Telford Lake. Originally referred to as the settlement of Telford, the community was given the name "Leduc" in honour of long serving Roman Catholic missionary Father Hippolyte Leduc (www.leduc.ca, City of Leduc). Leduc was incorporated as a Village in 1899, a Town in 1906 and earned City status in 1983.

Growth of the community and region throughout the latter half of the 20th century was largely driven by the discovery of oil at nearby "Leduc No.1" and the aggressive development of the energy industry in Alberta. The Leduc - Nisku area has become an important staging area for oilfield activities throughout central and northern Alberta, with significant commercial and retail development also occurring in lockstep in recent years. Major expansion of the Edmonton International Airport and continued growth along the Queen Elizabeth II Highway corridor between Edmonton and Calgary has also contributed to the ongoing prosperity and growth of Leduc.

The rapid growth of the community (60.6% since 2006) (City of Leduc, Municipal Census, 2013) has been resulted in the provision of many new services and opportunities for residents. The development of the C-Line Public Transportation Partnerships has provided bus service between Leduc, Nisku, the Edmonton International Airport and Edmonton. A number of new and enhanced recreation and leisure facilities and spaces have also been developed in recent years to accommodate a growing population. The Leduc Recreation Centre, opened in 2009, features an aquatics facility, three NH sized ice sheets, a curling rink, a fitness centre, a running / walking track, two field houses, concessions and a restaurant as well as a variety of multi-purpose and program spaces.

Residents and visitors to Leduc have access to an abundance of high quality outdoor facilities and natural spaces. William F. Lede Regional Park includes numerous sports fields and adjacent outdoor park and open space, and is located on the south side of Telford Lake from the North Telford Recreational Lands site. Telford Lake, located at the eastern boundary of Leduc, offers a unique and well used natural recreation area which includes the Telford Lake Alberta Training Centre for paddling and rowing sports. Leduc also encompasses over 46 km of outdoor trails, 310 acres of parkland and numerous community playgrounds.

Economic Highlights:

- Over two-thirds (69%) of Leduc residents work locally; 44% in the City of Leduc, 25% in Nisku/ EIA/Leduc County (2013 Municipal Census).
- 75% of companies based in the 'International Region' (comprised of the City of Leduc, Leduc County, the Towns of Beaumont, Calmar and Devon and the Villages of Thorsby and Warburg) are established in international markets (2013 Leduc- Nisku Economic Development Association Opportunity Report).
- The nearby Nisku Business Park remains Canada's largest industrial park, employing between 8,000 – 10,000 workers (2013 Leduc- Nisku Economic Development Association Opportunity Report).
- The Edmonton International Airport (EIA) currently accommodates over 6 million passengers annually and creates 9,900 jobs (4,400 direct). It is anticipated that by 2035 the airport will serve over 13 million passengers annually (EIA Master Plan 2010).
- The City of Leduc has over 2,000 hotel rooms and more than 40 restaurants (City of Leduc website).

3.2 Population Analysis

Data referenced in this section is taken from the City of Leduc Municipal Census (2013), unless otherwise identified.

The 2013 Municipal Census population count of 27,241 residents reflected a 6.9% increase (1,759 residents) from the previous count in 2012. Since 2009, the population of Leduc has grown by over 26% (5,644 residents). The annual average growth rate of 5.8% is significantly higher than the majority of surrounding municipalities. By comparison, from 2006 to 2011 (Statistics Canada, Census of the Population, 2011) the annual growth rates in the City of Edmonton (2.2%), Strathcona County (2.4%), City of Wetaskiwin (1.4%) and Town of Devon (0.8%) were less than half of that experienced in Leduc.

Residential development in Leduc in recent years has impacted a number of population characteristics of the city. The highest proportion (40%) of Leduc's population reside in developing (newer) neighbourhoods, while 39% reside in established neighbourhoods and 20% in core neighbourhoods. Approximately 40% of Leduc's population now resides west of the Queen Elizabeth II Highway.

A number of core and established neighbourhoods in the northeastern quadrant of Leduc are located in close proximity to Telford Lake. The following chart provides an overview of the population characteristics of these neighbourhoods as well as comparison to overall City data. As reflected in the chart, the overall population in the five neighbourhoods identified is stable but not growing at the same rate as most other areas of Leduc. The data also indicates that the neighbourhoods around Telford Lake have an older population as compared to other areas of the city, with higher proportions of retired residents and lower proportions of primary and secondary students and residents working full time.

Table 1. Population Characteristics of Neighbourhoods Near Telford Lake

Neighbourhood	2009 Population	2013 Population	% change (2009 - 2013)	Employed (F/T)	Retired	Student (K-12)
North Telford	281	285	1.4%	61.4%	13.6%	12.2%
South Telford	789	805	2.0%	48.9%	32.3%	11.5%
Central Business District	696	770	10.6%	59.6%	22.8%	3.2%
Alexandra Park	851	925	8.7%	58.7%	21.7%	8.1%
South Park	2,468	2,330	-5.6%	66.2%	14.2%	15.4%
TOTAL	**5,085**	**5,115**	**0.6%**	**61.2%**	**19.3%**	**11.0%**
City of Leduc	**21,597**	**27,241**	**26.1%**	**65.0%**	**15.0%**	**14.3%**

Identified below are a number of additional population characteristics of the City of Leduc (Statistics Canada, Census of the Population, 2011).

- The median age of the population in Leduc is 34.0 years of age (provincial median age - 36.5 years of age).
- 15.1% of the population in Leduc is between 0 and 9 years of age (provincial average - 12.7%).

- 12.0% of the population in Leduc are youth aged 10 to 19 years old (provincial average - 12.6%).
- 62.3% of the population in Leduc are working adults aged 20 to 64 years old (provincial average - 63.5%).
- 16.7% of the population in Leduc are seniors aged 65 and older (provincial average - 11.1%).
- The proportion of young adults in Leduc aged 20 to 39 has increased from 27.6% to 32.7% of the overall population between 2006 and 2013, while the proportion of middle aged adults has decreased from 29.2% to 24.8% of the overall population during the same period of time.
- Core neighbourhoods in Leduc have an average of 2.2 people per dwelling, lower than established neighbourhoods (2.7 people per dwelling) and developing neighbourhoods (2.9 people per dwelling).

3.2.1. Growth Potential

A growth projection scenario developed for the City of Leduc's 2012 Municipal Development Plan (MDP) anticipates that in 2020 the City will have 33,279 residents and will grow to 42,389 residents in 2030. This projection was based on 5% annual growth through 2016, 2.5% to 3% annual growth from 2017 to 2025, and 2% annual growth beyond 2025. In 2010, the Capital Region Board also developed a growth projection scenario for Leduc which identified a projected growth rate of between 1.4% and 2.7% annually. Reflecting the rapid growth of Leduc in recent years, the 2013 Municipal Census population count of 27,241 residents is already well ahead of the 24,732 population figure projected for Leduc in 2015 and nearing the 27,866 population figure that was projected for Leduc in 2020. Both growth projection scenarios are illustrated in the following graphic.

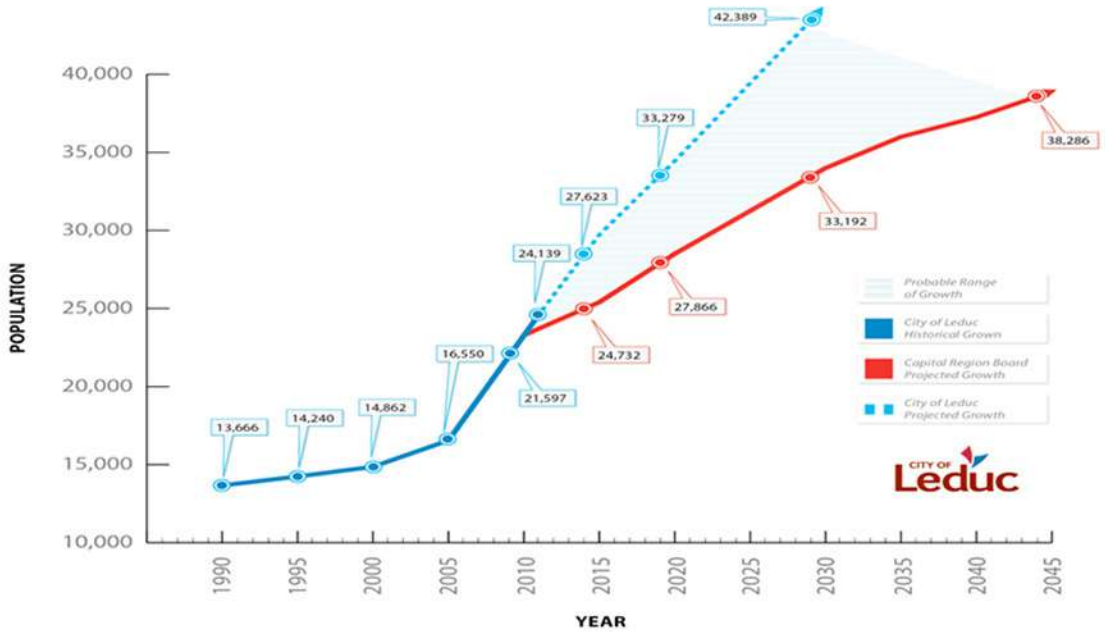


Figure 3. Growth Projection Scenarios for Leduc

3.3 Facilities Inventory

While a concept plan is being developed for the North Telford Recreational Lands, previous planning efforts (i.e. Parks, Open Space, and Trails Plan-2012 and the Telford Lake Master Plan-2010) have referenced the North Telford Recreational Lands and possible park components.

Telford Lake Master Plan (2010)

This plan identified several elements for inclusion in the North Telford Recreational Lands site. These included:

- Mountain bike and cross country ski trails – granular
- Mountain bike terrain park
- Walking / interpretive trails
- Multi-way (multi-use trail) – paved trails
- Day use area and community / neighbourhood park

Based on the recommended uses included in the Telford Lake Master Plan, an examination was undertaken to identify similar elements throughout Leduc and the Capital Region. Should an element be plentiful throughout the region (and in Leduc) or be in close proximity to Leduc, consideration should be given regarding its inclusion in the North Telford Recreational Lands concept plan. Consideration should also be given to its disposition as a regional or neighbourhood amenity. The inventory is presented below.

3.3.1. Cross Country Ski Trails (Groomed) (Capital Region)

Cross country ski trails can be developed in a variety of places, from school yards to wooded areas. In some instances, trails have been permanently developed and serve as mountain bike trails during the non-winter months. For this inventory, year round trail systems that accommodate both skiing and mountain biking have been identified. This list has then been augmented by including the prominent cross country ski trails in Capital Region communities.

Devon

- River Valley (12km of trails)

Edmonton

- Gold Bar
- Kinsmen Park
- Capilano
- Rundle
- Victoria Park
- William Hawrelak Park

Fort Saskatchewan

- Agrium-Turner Park
- River Valley - City Centre
- River Valley - Chabot
- Wetlands
- Rivers Edge

Leduc

- Leduc Golf and Country Club (6 km)

Spruce Grove

- The Links Golf Course*

St. Albert

- Kingswood Park*
- Liberton Park*
- Riverlot 56

Stony Plain

- Stony Plain Golf and Country Club*

Strathcona County

- Strathcona County Wilderness Centre

** Denotes managed ski areas that do not provide mountain bike trails experience.*

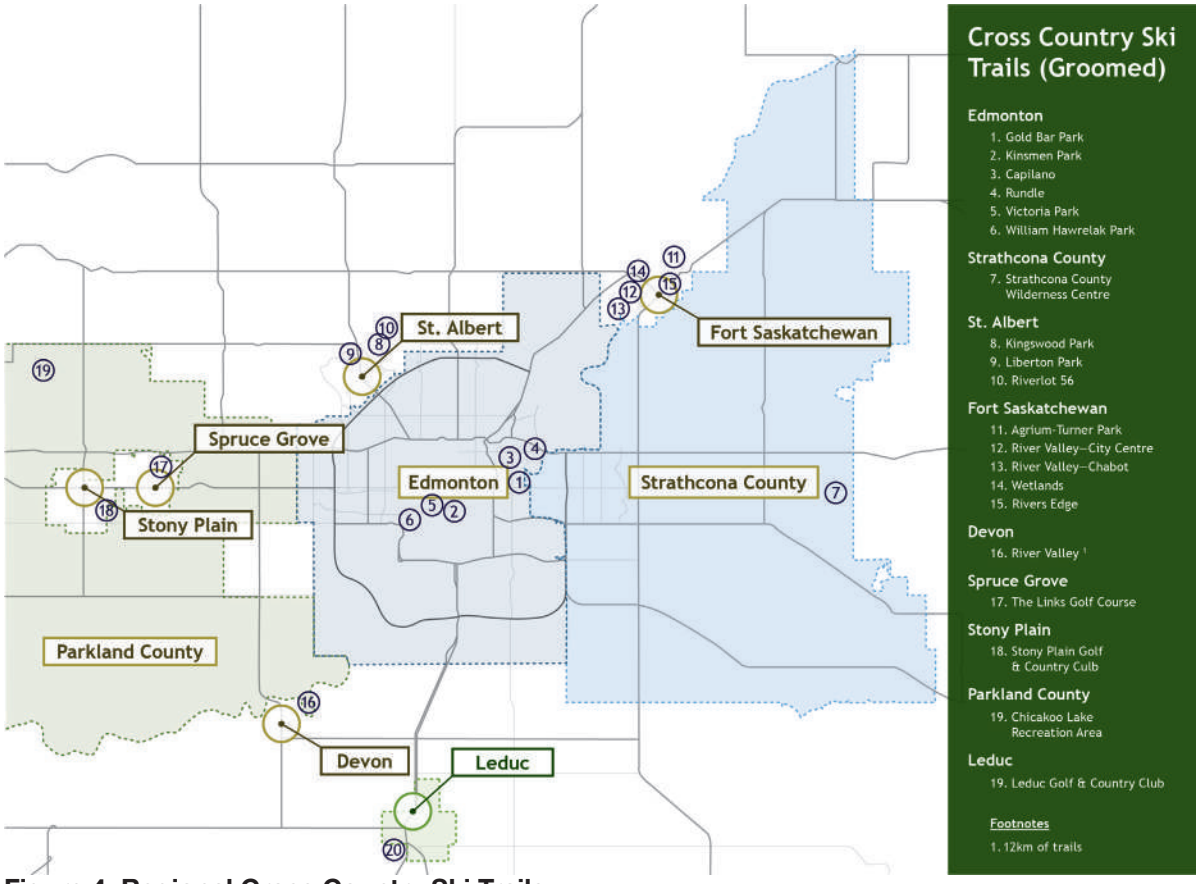


Figure 4. Regional Cross Country Ski Trails

3.3.2. Cross Country Running Trails (Competition Capability)

Fort Saskatchewan

- River Valley Trails (5 Peaks Trail Running Series)

Edmonton

- Terwillegar Park (5 Peaks Trail Running Series)
- Sunridge Ski Area (5 Peaks Trail Running Series)
- Goldstick Park (Athletics Alberta, Saucony Series)
- Hawrelak Park (High School City Championships)
- Gold Bar Park (Junior High City Championships, ACAC)

Parkland County

- Chickakoo Lake Recreation Area (5 Peaks Trail Running Series)

Devon

- River Valley Trails (5 Peaks Trail Running Series)

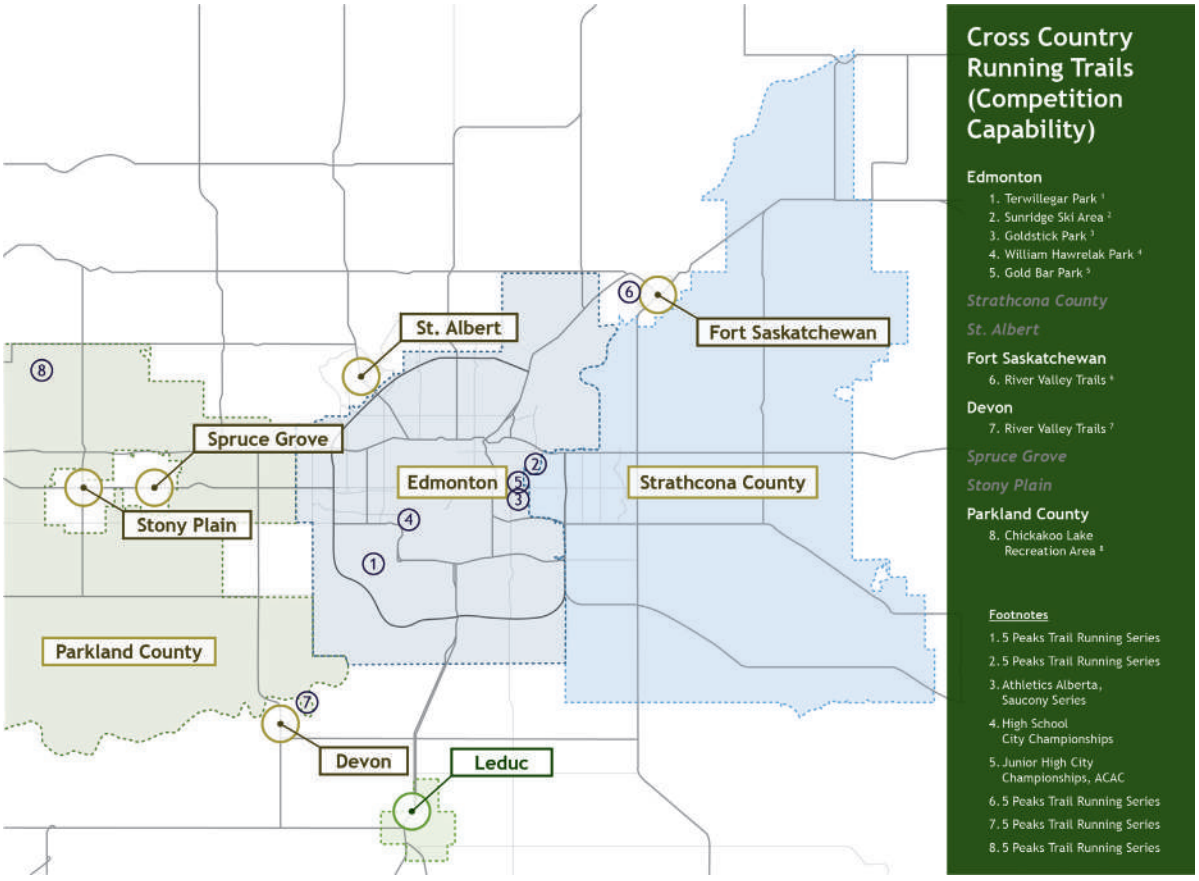


Figure 5. Regional Cross Country Running Trails

3.3.3. Mountain Bike Terrain Parks (Capital Region)

Devon

- Riverview Bike Park (Devon)

  ** Usage data was requested from the Town of Devon. They do not track facility usage.*

Edmonton

- Rabbit Hill Snow Resort (Edmonton) * bike course closed as of 2012
- Terwillegar Park (Edmonton) * not dedicated but some terrain features

St. Albert

- St. Albert Bike Skills Park (planned to open in 2014/2015)

Strathcona County

- Strathcona County Bike Park (Sherwood Park)

  ** While Strathcona County doesn't regularly track usage data, it is estimated that 50 kids per day use the facility when weather conditions are fair to good. Events held at the facility also attract approximately 200-250 kids.*

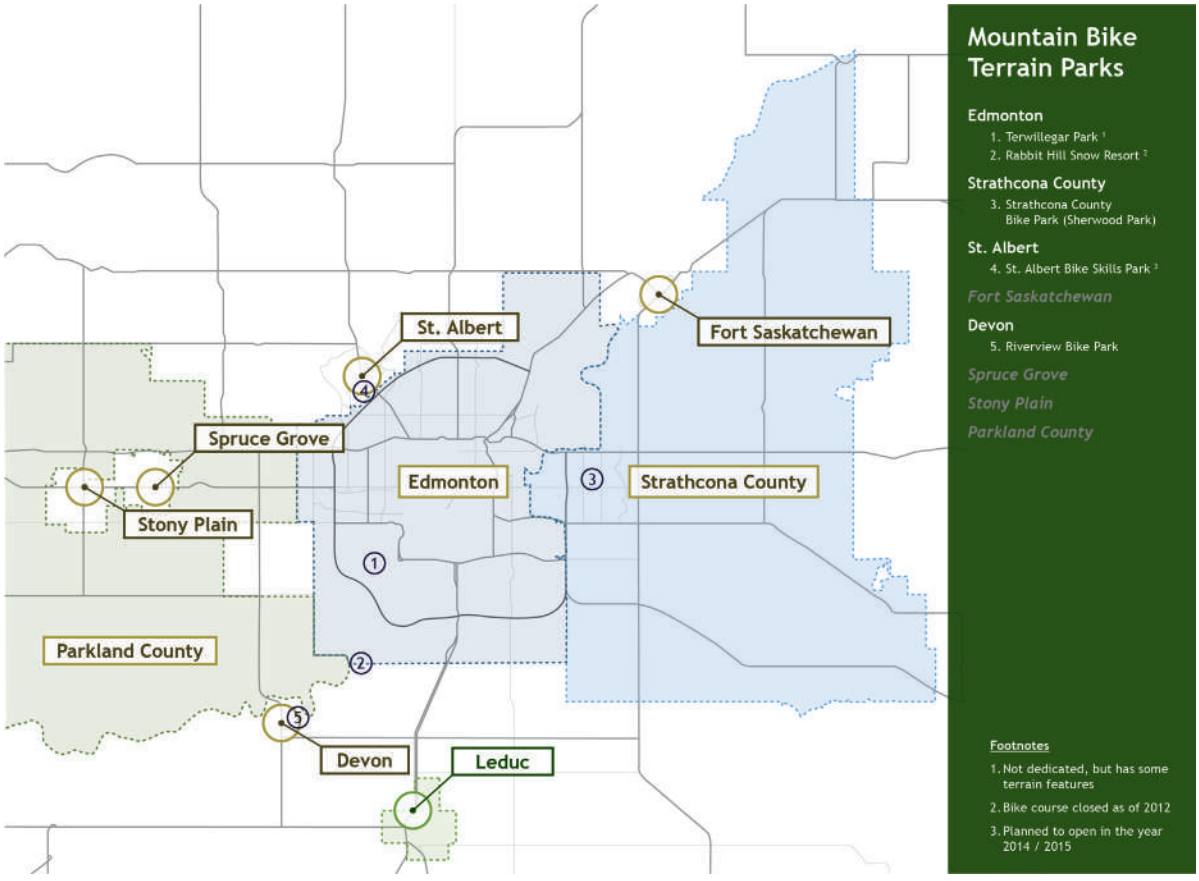


Figure 6. Regional Mountain Bike Terrain Parks

3.3.4. Natural Interpretive Areas (Dedicated) (Capital Region)

Edmonton

- John Janzen Nature Centre

St. Albert

- Lois Hole Centennial Provincial Park (Formerly Big Lake Natural Area)

Strathcona County

- Strathcona County Wilderness Centre

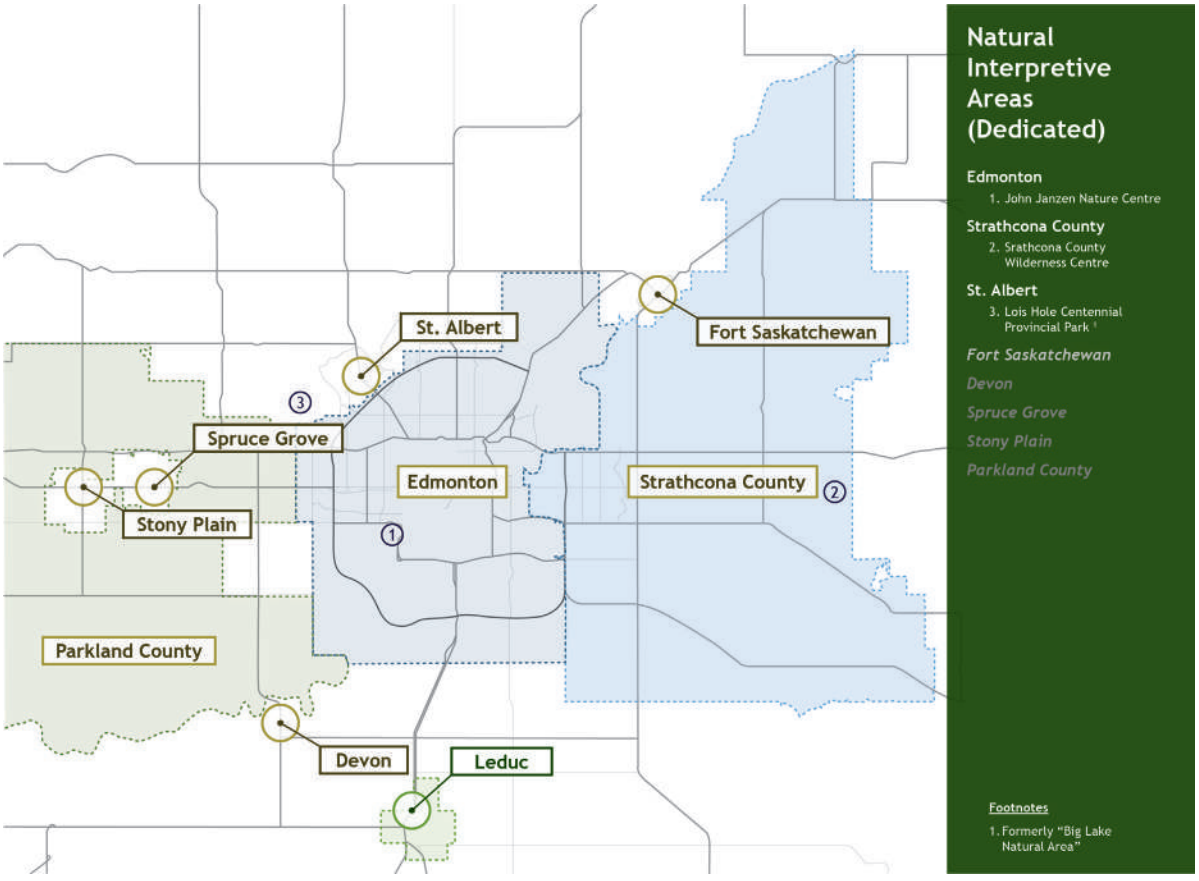


Figure 7. Regional Natural Interpretive Areas

3.3.5. Telford Lake Neighbourhoods Parks and Playgrounds

Community Gardens (South Telford)

- Garden plots available to residents for rent. City of Leduc provides tilling and watering.

William F. Lede Park (South Telford)

- Major outdoor recreation facility including multiple ball diamonds, soccer fields, and rugby / football fields. Also includes an off-leash dog park and playgrounds.

Telford Park (South Telford)

- Passive green space near Leduc Boat Club dock. Telford Park includes a boardwalk system and lookout that extends into Telford Lake, and is the site of Telford House, which houses the Leduc and District Senior Centre.

George Liggins Park (North Telford/Central Business District)

- Small passive green space in a mainly residential area.

Notre Dame Park (South Park)

- Open park space that includes a ball diamond, basketball court and playground. Adjacent to Notre Dame separate school.

Grassy Nook Park (South Park)

- Small passive green space in a mainly residential area.

Figure 8. Local Green Spaces Near Telford Lake

3.4 Market Potential

A number of the potential activities that could occur at the North Telford Recreational Lands Park development are popular and in demand throughout Alberta and the Capital Region. Furthermore, there is a growing demand for outdoor natural spaces in urban areas that can accommodate a variety of outdoor pursuits for residents of all ages and interests. As such, many urban municipalities are continuing to expand their inventory of natural (non-paved) trails, parks and open spaces. Well designed and maintained outdoor spaces and facilities can attract visitors to the community for purposed recreation, sport and leisure activities such as trail running, cross country skiing, mountain biking, nature watching and day hiking.

The 2008 Alberta Recreation Survey provides provincial participation rates for a variety of recreation, sport and leisure activities. The following chart outlines participation rates for a number of potential activities that could occur at the North Telford Recreational Lands Park development and extrapolates this data to the City of Leduc's population (City of Leduc, Municipal Census, 2013) in order to estimate of the number of residents that might participate in these activities at least once annually.

Table 2. Projected Recreational Activity Participation Rates

Activity	Participating Respondents (Participated in the previous 12 months)	Potential City of Leduc Participants (Extrapolated to the City of Leduc
Walking for pleasure	81.4%	22,174
Bicycling	41.9%	11,414
Day hiking	36.9%	10,052
Picnicking (within a city)	31.9%	8,690
Jogging/running	27.5%	7,491
Birdwatching	18.8%	5,121
Cross-country skiing	11.4%	3,105
Off-road mountain biking	9.9%	2,697

Another growing trend observed in municipalities across the region is the development of dedicated mountain bike terrain park facilities. The Town of Devon and Strathcona County have opened mountain bike terrain parks within the past two years, with the City of St. Albert currently planning to develop a facility by 2015. In response to the growing usage of Terwillegar Park by mountain bike enthusiasts, the City of Edmonton has also explored the development of additional terrain amenities on the site. The development of many mountain bike terrain parks across the province in recent years has been driven by not for profit mountain bike clubs and user groups. Increasingly, many of these groups are becoming well organized, resourced, and have had success in leveraging public and / or private funding for capital projects.

Recent economic impact studies and assessment conducted in British Columbia also attest to the increasing popularity and economic impact of the sport of mountain biking. Identified below is an overview of the findings from

these studies that may be relevant to consider in the context of the potential North Telford Recreational Lands project.

Sea to Sky Mountain Biking Economic Impact Study (2006, Western Canada Mountain Bike Tourism Association)

- The largest age segment of mountain bikers that use the trails network are 30-39 years of age (41%) followed by 19-29 year olds (27%)
- 77% of the mountain bikers that utilize the trail networks are males.
- Mountain bikers participating in day trips spent an average of $39.12 - $98.95 per trip when visiting the four trail networks that make up the Sea to Sky Mountain Biking routes (day trip routes).

Ride the Caribou - Economic Impact Assessment and Phase 2 Implementation Report (2012, Caribou Mountain Bike Consortium)

- From 2010 to 2012 usage of the mountain bike trails network in the Caribou region has increased by 30% (much of this increase has been attributed to increased trail development and marketing).
- 80% of trail network users are local.
- Daily expenditures from riders is estimated to be $19 for day trip users and $77 for overnight users.
- The overall economic impact of mountain biking is estimated to have grown by over 11% since 2010.

4.0 Opportunities and Constraints

Development opportunities and constraints that have been identified through the analysis of site and market conditions are discussed in this section. For each subject that was analyzed in previous sections of this report, opportunities and constraints associated with the subject are summarized in the table below.

Table 3. Opportunities and Constraints

Existing Condition	Opportunities	Constraints
Site Context		
Development of agricultural fields north of site to industrial and business park	• Park provides an amenity for workers to utilize during the day	• Character of park will become more suburban • Increased local traffic may impact wildlife • Introduced stormwater runoff into park (as retention ponds) impacts trail locations and existing wetlands • Privacy fence along property line may impact natural park experience
Completion of multi-way loop around Telford Lake (Telford Lake Trail)	• Leduc residents will be able to access the park by foot or bicycle from a wider range of locations • Park will be better connected to other Leduc recreational amenities	• Increased activity levels in park
Municipal Reserve land dedication not finalized for east portion of park		• Park design may be impacted if Municipal Reserve area/location changes • Connectivity to Telford Lake Trail may be impacted if sufficient width is not provided at lakeshore
Proximity to Edmonton International Airport	• Plane watching opportunities / interpretation in the park	• Park development cannot result in increased Canada goose activity
Site History		
Use of site for gravel / sand excavation	• Remnant spoil piles and excavations create varied terrain for cross-country running, skiing and mountain biking	• High level of disturbance to wildlife habitat in some areas of park
1973 plane crash on site	• Interpretive opportunity	• Debris scattered in parts of the park impacts wildlife habitat quality and natural park experience • Park visitors may attempt to remove pieces of debris – may be injured by sharp metal, etc., could damage habitat in process
Current Use		
Unauthorized off-road vehicle and mountain biking use in the park	• Extensive network of informal trails has been developed in the park	• Some trails are highly eroded • Some areas of habitat have been fragmented by trails • A culture of environmental degradation has been established among some users of the site • Difficult for emergency services to access all areas of the site if necessary

Existing Condition	Opportunities	Constraints
Large debris accumulated in the park	• Some of the items provide a link to the agricultural history of the area (e.g. old tractor)	• This material may pose a health and safety risk • Debris scattered in parts of the park impacts wildlife habitat quality and natural park experience
History of undesirable behaviour linked to "Whiskey Hill"	• Many Leduc residents are already familiar with the site	• A culture of environmental degradation has been established among some users of the site • Difficult for emergency services to access all areas of the site if necessary • Fires in the grassland areas are occasionally started
Walking, dog walking and running current uses	• Increased presence of park users helps to curtail undesirable activities	• Site access is currently unregulated
Trails		
Some existing trails are located in wet or low-lying areas. In some locations it may be necessary to cross a wet area to provide connectivity to other trails.		• These trail alignments are not sustainable and the trail surface will be frequently wet and muddy unless significant trail bed stabilization is undertaken
Some trails are heavily rutted		• Reclamation will be required to repair the damage to the trail surface
An extensive network of informal trails has been developed in the park	• It may be possible to access most areas of the park using existing trail alignments • Natural trails may not require much construction to improve them for park use	• Some existing trails may conflict with other proposed uses or site conditions • Some trails will need to be reclaimed to reduce habitat fragmentation
Existing trail along north boundary of park is outside property line		• In order to complete a north trail loop, a new trail will have to be cleared inside the park property
Vehicular Access		
The park site is located at the end of a residential street	• Easy walking access for local residents	• Concern about increased traffic on the street • Concern about degradation of 53rd Ave. roadway condition
Off-road vehicles are able to access the site from the northeast edge of the park		• Temporary barriers may be required to keep vehicles out until construction of the Harvest Industrial Park project begins
Snowmobiles are accessing the park from multiple entry points		• Access is difficult to control during winter months • Potential damage to park
Topography		
Varied terrain located in area of remnant spoil piles and excavations	• These variations in topography may be an ideal site for mountain bike terrain park	• This area could require a great deal of reclamation to naturalize it if not used for more intensive programming
Steep bank along lakeshore	• Provides natural protective barrier at riparian buffer • Allows more expansive views over the lake	• Limits ability to interact with Telford Lake
Steep slope overlooking Class V wetland	• Good viewpoint with views of wetland and Telford Lake	• Steepness of slope makes access to area around wetland more challenging

Existing Condition	Opportunities	Constraints
Hydrology		
Large drainage basin runs along north edge of park (including two Class II wetlands)		• Impacts ability to locate trails and other amenities in this area
Class V wetland at west end of park	• Good wildlife viewing opportunities • Rare plant living in wetland is an interpretive opportunity • Increases habitat diversity of park	• Recommended buffer of 30m around wetland may limit adjacent uses / amenities • Need to balance access to this area with protection of habitat
Soils and Erosion		
Soil types are not well-suited for trail construction	• Gravel and paved trails will require excavation of unsuitable materials, so subsoil type should not impact these trails	• Natural trails may require additional resurfacing to stabilize trail bed
Topsoil has been eroded away from trail surfaces		• For trails being reclaimed, import topsoil or other soil amendments may be required
Vegetation		
Provincially listed rare plant growing in Class V wetland	• Interpretive opportunity	• Need to balance access to this area with protection of habitat
Aspen forest is re-establishing in disturbed areas	• Site is naturally reclaiming previous damage	• Newly reforested areas may need to be cleared for more intensive development
Weed colonization in west end of park		• Weeds must be controlled to prevent further spreading • Some weeds are listed in the provincial Weed Control Act and carry penalties associated with failure to control them
Wildlife Habitat		
High diversity of songbirds on the site	• Novice bird watching opportunities	• Birds may be impacted by increased access and activity in the park
Low number and diversity of waterfowl in park area	• Emergent vegetation at lake edge and Class V wetland provides habitat for waterfowl – numbers may increase	• Recreational trails next to Telford Lake may cause disturbance to nesting waterfowl
Beavers and muskrat observed in Class V wetland	• Wildlife viewing / interpretive opportunity	• Beaver cutting of trees in park may become an issue
Scenic Resources		
Open elevated plateau at park entrance with views of wetland and Telford Lake	• Opportunity for formalized viewpoint with connections to nearby park amenities	• Steep bank may require guardrail at edge of viewpoint
Elevated disturbed area / clearing under Edmonton International Airport flight path	• Plane spotting and interpretation opportunity	• Noise of planes can detract from natural park experience
Views of lake from forest clearing along top of bank	• Opportunity for formalized viewpoint with trail connections	
Context and Market Assessment		
Historic and projected rapid population growth in Leduc	• Increased demand for park and recreation facilities	• Higher usage rates of park and recreation facilities may detract from overall experience, especially in a more natural setting
Neighbourhoods around Telford Lake have an older population compared to other areas of Leduc		• Playground and terrain park users will likely access the park from farther away, by car

Existing Condition	Opportunities	Constraints
20 Cross-country ski trail facilities (groomed trails) identified in Capital Region area, including Leduc Golf Club	• Most of the existing facilities are relatively far from Leduc and another local option would be beneficial	• The area is well-supported in terms of cross country ski facilities
8 Cross-country running competition level facilities identified in Capital Region area	• The park is suitable for training trails and younger age group running events	• North Telford Recreational Lands are not large enough to support upper-level competition trails • Competition trails must be wider than typical multi-way trails to allow for passing
3 Active mountain bike terrain parks and 1 park in construction identified in Capital Region area	• Mountain biking is growing in popularity	• Mountain biking is a higher-impact sport that can be damaging to natural environments if not restricted to specific areas
3 Interpretive natural parks identified in Capital Region area	• There is a need for more of these types of facilities in the region	
City parks in the immediate area are mostly recreational or passive manicured green space	• A natural environment park will introduce a new type of recreational amenity in the area	

North Telford Recreational Lands Development

EXISTING CONDITIONS
Opportunities + Constraints

CITY OF Leduc

02 PLANNING + DESIGN

RC strategies

Legend

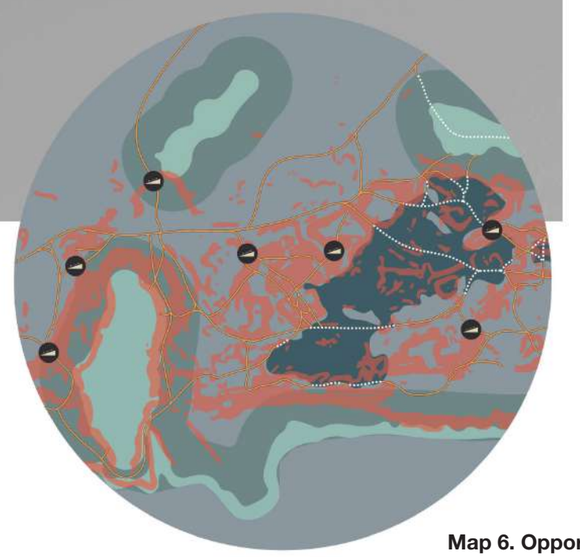
- Wetland
- Recommended Vegetated Buffer Zone (30 m)
- Major Drainage Basin
- Informal Open Space
- Proposed Stormwater Retention Pond (Sawridge Business Park)
- Lookout Point
- Potential Plane 1973 Crash Interpretive Site
- Informal Trail
- Informal Mountain Biking Trail
- Proposed Amenity Zone (TLMP)
- Proposed Telford Lake Trail (TLMP)
- Future Multi-use Trail (TLMP)
- Proposed Fence (Sawridge Business Park)
- Proposed Swale (Sawridge Business Park)
- PUL/Walkway (Sawridge Business Park)
- Boardwalk Opportunities
- Proposed Road Closure
- Proposed Road Realignment
- Project Boundary
- Stormwater Flow

NOTE: TLMP REFERS TO THE 2010 TELFORD LAKE MASTER PLAN

Trail Considerations

Informal trails which bisect areas requiring extensive regrading in a wet area should be reclaimed rather than enhanced or repaired where appropriate. If trail is deemed necessary, design should consider drainage conveyance, habitat disturbance and on-site soil reuse.

- Potentially Saturated Informal Trail
- Slope Greater than 10%
- Major Slope Gradient on Informal Trail



Map 6. Opportunities + Constraints

5.0 Engagement Summary

In order to develop a draft concept plan for the North Telford Recreation Lands site, input from community members was sought. A schedule of public and stakeholder consultation input opportunities was designed and implemented to gather feedback.

The input opportunities included discussion sessions with:

- Students and staff at the **Black Gold Outreach School** – the school was contacted directly regarding this opportunity. The session was convened on November 13, 2013, with three students and two staff in attendance.
- Students in the **Recreation Leadership** class at **Christ the King School** – the school was contacted directly about the opportunity for students to provide input. It was determined that the Recreation Leadership class was a suitable venue in which to discuss this project (November 14, 2013). Eighteen students were in attendance.
- **Community groups and service clubs** – a notice was sent to a list of community groups and service clubs the City of Leduc holds. Group representatives then responded regarding their attendance. Eight participants were in attendance, including representatives from Girl Guides of Canada, Communities in Bloom, Tri-County Snowmobile Club, and the Leduc Boat Club. This session was convened on November 14, 2013.
- **Residents of North Telford.** A “door hanger” was developed and hand delivered to all houses in the North Telford neighbourhood. The door hanger promoted the session for residents to learn about the project and share their thoughts. Ten residents were in attendance at the November 18, 2013 session.
- **City Administration**. A group of City staff was hosted in a discussion session on November 19, 2013. Invitations were extended to individuals representing areas with a particular interest in the development of the site. Included in the session were representatives from Emergency Services; Planning; Parks, Recreation and Culture; Engineering; and Operations.
- **Parks, Recreation and Culture Committee** and representatives from the **Leduc Environmental Advisory Board.** A portion of the November 21, 2013 regular meeting of these groups was allocated to discussing the concept plan for the North Telford Recreation Lands.
- **City Council.** During a Committee of the Whole meeting on December 9, 2013, Council members were presented with the work done to date (including the consultation). They then discussed the potential development of the North Telford Recreational Lands.

A **public open house** was held from 6:00 pm. to 8:00 p.m. on November 19, 2013, in the foyer of the Leduc Recreation Centre. Panels describing the

project and presenting mapping of the site were presented. Attendees were able to complete a feedback form. The panels along with the feedback form were available on the City's website from November 20 through to November 30, 2013. In total 71 comment forms were received (53 online and 18 at the open house).

5.1 Input Overview

The feedback from each of the input opportunities is presented below. Please refer to the Appendix for the community engagement presentation.

Black Gold Outreach School (November 13, 2013)

- Great resource for learning
- Interpretive centre at north west near parking along with picnic sites and fire pits
- Maintain natural areas and access along northern edge should be prevented
- Would like to see permanent washroom buildings not porta-potties
- Some concerns were expressed about run off from the industrial site north of the North Telford Recreation Lands

Christ the King School, Recreation Leadership class (November 14, 2013)

- Non motorized use – maybe the installation of bollards would help prevent motorized access
- Natural areas with signage that interprets nature. Maps would be good as well.
- Trails are good as is a terrain park and BMX track
- Could use the large open area on west side for gatherings
- No off leash in certain areas
- Recognition that the noise from construction could be a nuisance for neighbours
- This park is considered a regional resource.

Community Groups / Service Clubs (November 14, 2013)

- Need to ensure that resources are in place for ongoing maintenance and management. The site needs to include only sustainable uses – in other words the uses allowed in the park should not cause deterioration of the site.
- Complaints about motorized vehicle use in the park
- Access from the lake should be considered (snow machines, rowing)
- Some interest was expressed from snowmobile club about having access to the site

- Concerns expressed that too much of the site will be developed. There needs to be natural space in Leduc. This could be like the Strathcona Wilderness Centre, offering a wild experience in the city. A concerted effort to leave some portions undeveloped should occur. While people may explore that portion of the park there will not be developed trails to fully enable it.
- Interpretive signage that explains the ecology and biology of the area. This is done to some degree on the other side of the Lake currently. Interpretive signage for the plane crash site is warranted.
- Consideration should be given to the capacity of the entire park site when determining the size of the parking lot.
- Restrict commercial business. There could be a rental shop however that sets up in the staging area.
- As much as possible make use of existing trails.
- This is considered a regional resource although it will serve the neighbourhood and the city.

North Telford Residents (November 18, 2013)

- The fence and gate has reduced the undesirable behaviour
- Concerned about traffic through the neighbourhood and parking. Concerns also expressed regarding use after hours (e.g. partying during the night) that may accompany formal development and the opening of access.
- In favour of trails, interpretive signs, and natural spaces. Need to ensure that the park is wheelchair accessible. A lookout over the lake is desired.
- Keep development simple and minimized. Having a landing area for row boats / canoes is acceptable. Leave as much in a natural state as possible.
- Incorporate a memorial element
- Do not feel lighting is needed in the park
- Preservation of the site is a key tenet. Development should be limited to the northwest portion (aside from some trail development).
- This is already recognized as a regional resource.
- There were questions raised about the monitoring of the water. This was partially seen as important due to the run-off from the north of the site (soon to be developed industrial park).

City Administration (November 19, 2013)

- Secure from motorized vehicles but needs access for emergency vehicles
- Environmental Reserve / Municipal Reserve east of site is still to be negotiated / finalized
- Current use has defined the need

- Mix of trail types, ensure universal access to viewpoint
- Integrate with City way-finding strategy
- Discussion about the need to close 43 Street still to be resolved
- Fire risk should be considered in design (e.g. trail alignment)
- Lighting is desirable from a safety perspective, motion activated lights along main multi-way were discussed
- Amenities within the park need to be accessible by vehicle for maintenance

Parks Recreation Culture Committee / Leduc Environmental Advisory Board (November 21, 2013)

- Multi-way through centre of the site makes sense and is central
- Development on northwest is a good spot as close to road and no impact on canopy
- Issues of conservation vs. development
- Allows for different groups and abilities to use the site

Leduc City Council – Committee of the Whole (December 9, 2013)

- Develop a small parking lot on 43 Street just north of 53 Avenue.
  - Close 43 Street north of parking lot
  - Include a turn around
- Develop a larger parking lot on 43 Street near the north terminus of the park site
- Facility development onsite (i.e. shelter and washroom building) should be adjacent to the parking lot.

Public Open House (November 19, 2013)

From a list of amenities, respondents were asked to indicate whether each amenity should be included in the concept plan for the North Telford Recreation Lands. (It is important to note that the responses gathered online and at the open house are combined and reported on herein.) As illustrated in the graph below, trails for mountain biking / walking / running were supported by 97% of respondents. Natural undisturbed area was the next most supported plan element with 94% of respondents identifying this as an element. Items that received support from less than two-thirds of respondents included: terrain park (59%), warm up shelter (54%), and playgrounds for younger children (52%) and older children (51%).

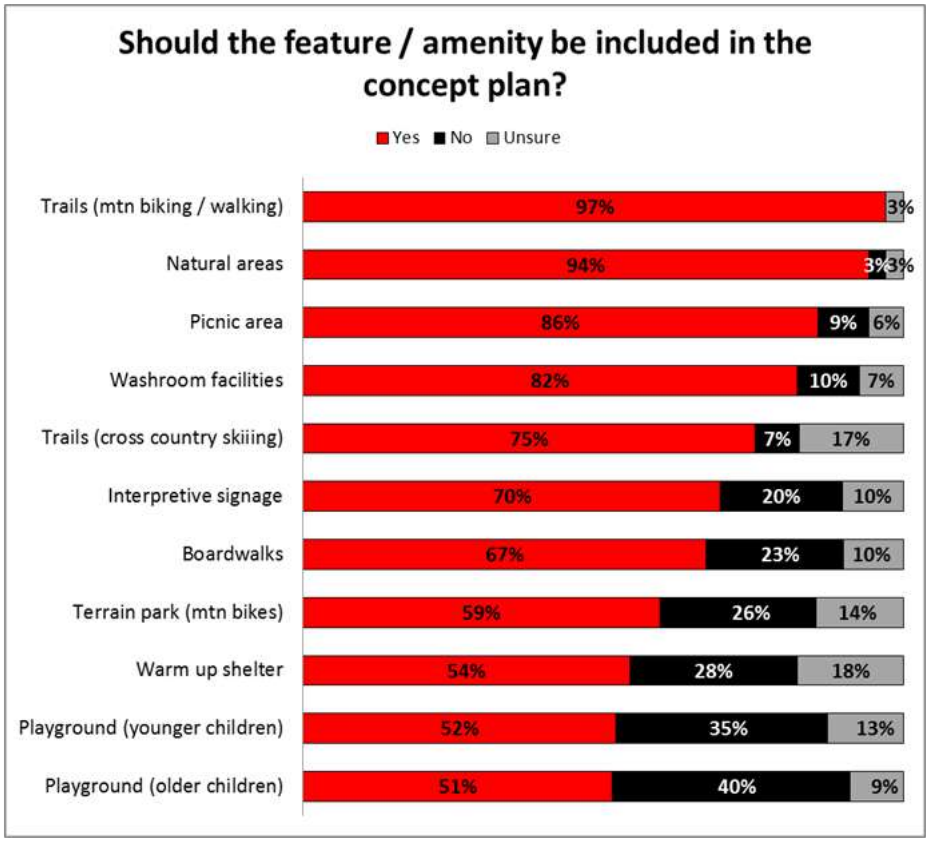


Figure 9. Public Open House Survey Responses

When asked to identify other features that should be considered for the park site, four items were mentioned by more than one individual. They include:

- Close circuit television to monitor the site and deter vandalism. (3 mentions)
- Connection of multi-way with the trail on the south side. (2 mentions)
- Outdoor skating. (2 mentions)
- Dog off leash site. (2 mentions)

Next, respondents stated any concerns they had regarding the development of the land into a park. Comments made by more than one respondent included the following.

- Loss of the natural / wild area. Concern regarding over-development. (13 comments)
- Development will bring undesirable behaviour. (8 comments)
- There will be a need for adequate policing and security. (5 comments)
- Concerns expressed by the impact on the site due to the industrial development to the north – including run-off, noise, pollution. (3 comments)

- The property and privacy of the North Telford residents needs to be considered as the park is developed and operational. (3 comments)
- The cost of developing and maintaining the park site concerned some. (2 comments)

Some respondents provided additional comments. The comments centered on the site being a valuable and important asset within Leduc and that it should be seen as something different from the other parks. The natural, wild aspects of the site should be respected and maintained.

5.2 Synopsis

A number of key points emerged from the various consultation activities.

- The North Telford Recreational Lands are a valuable asset in Leduc, particularly because of the natural, wild elements. A strong desire has been expressed to maintain as much of this as possible with minimal development.
- With the exception of some trails through the site and viewpoints, development should be limited to the northwest portion of the site.
- Development should be minimal and might include picnic areas and a washroom building.
- Use of the park should be limited to non-motorized activities. Motorized access should be accounted for however, as it pertains to emergency vehicles (fire, police, ambulance).
- Safety and security of users and neighbours needs to be considered and addressed as the park becomes operational. Concerns exist for the site hosting activities that may negatively impact other users and nearby residents.
- Traffic flow to and from the park needs to be designed in such a way to minimize disruption and safety concerns of users and neighbouring residents. Adequate parking needs to be addressed.

Grassland at north edge of park

Looking south over Class V wetland

Typical forest trail

6.0 Summary

In completing the process of undertaking a thorough site analysis, needs assessment, and public engagement, it was verified that the proposed amenities and park development of the Telford Lake Master Plan are appropriate to the physical setting and market context of the area. The location of the amenities within the park will be changed from the concept plan shown in the Telford Lake Master Plan to match the site conditions observed and the feedback gathered from the public.

- New opportunities that were identified through this process include:
- Idea of incorporating a memorial element such as a memorial forest or specific object in the park (such as a bridge or piece of furniture).

- Accommodating canoe / kayak access from the lake (launch pad only, does not include a dock).
- Interpretive opportunities specific to plane spotting / identification, 1973 plane crash history, wildlife and bird watching, and rare aquatic liverwort in Class V wetland.
- The area disturbed by gravel operations near the west end of the park appears to be more suitable for mountain bike terrain park development than the area shown in the Telford Lake Master Plan. It is more heavily disturbed, has more variation in terrain, is larger, and has easier access from the proposed vehicular access point.

Some key constraints to consider in the next phase of design include:

- Impact of light industrial development to the north of the park will change the character of the place, and may physically impact the site through stormwater run-off and fencing.
- Municipal Reserve land dedication is not finalized for the east portion of the park. Designs for this area should be flexible and may require changing when the dedication is finalized. However, the City is actively planning for the multi-way to continue around Telford Lake.
- Site hydrology and soil types are not conducive to locating trails in low-lying wet areas. These areas should be avoided unless necessary, and significant trail bed stabilization will be required in order to cross these wet zones.
- The existing trail along the north boundary of park is outside the property line. In order to complete a north trail loop, a new trail will have to be cleared inside the park property.
- The steepness of the bank along the north shore of Telford Lake limits the ability for park visitors to interact with the water. Any trails along the lakeshore will have to be located at the top of bank.
- In order to preserve the existing habitat in the park and minimize disturbance to wildlife, development should be confined to areas that have been previously disturbed as much as possible.

In the next phase of the project, a series of development scenarios will be created, incorporating the feedback and information gathered during the analysis and assessment phase. These scenarios will be made available for public review and refined into the final concept plan for the park.

Concept Design

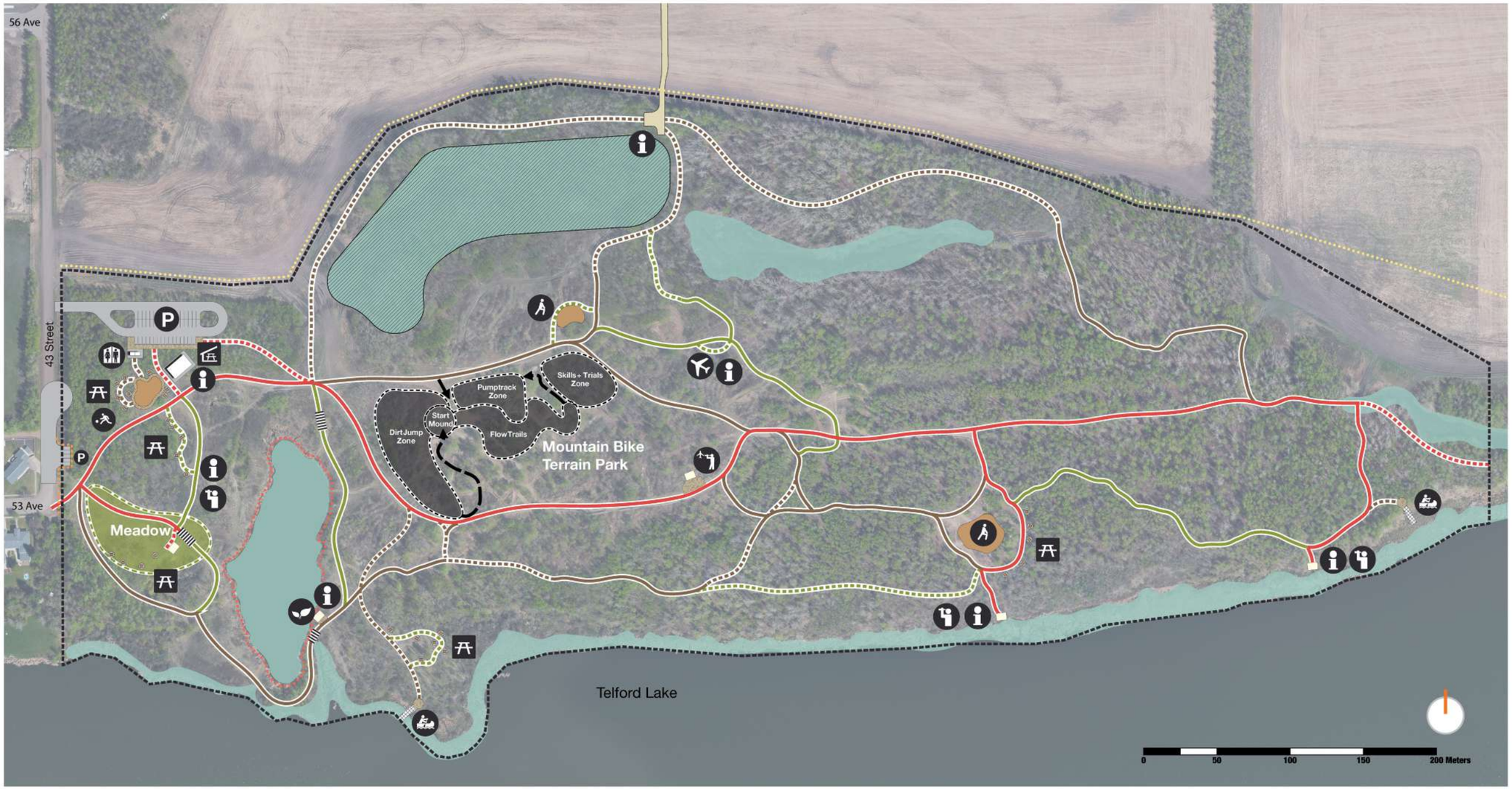
7.0 Design Objectives

Building on the design objectives for the North Telford Recreational Lands that were initially identified by the City of Leduc in the Request for Proposals that was issued for the development of a concept plan and phased implementation plan for the site, as well as the opportunities and constraints that were identified during site analysis and stakeholder engagement, the following objectives have been used to guide the concept design of the park:

- The development of new trails and amenities within areas of mature forest should be avoided, and, if possible, all development should occur on existing trails/areas of disturbance.
- Outdoor recreation and nature interpretation should be the main activities in the park.
- The natural elements of the park should be preserved as much as possible, and development should be minimized.
- With the exception of some trails through the site and viewpoints, intensive development should be limited to the northwest portion of the site.
- Use of the park should be limited to non-motorized activities, except for emergency vehicle (fire, police, ambulance) access.
- Safety and security of users and neighbours should be considered and addressed in the park design.
- Traffic flow to and from the park should be designed in such a way to minimize disruption and safety concerns of users and neighbouring residents. Adequate parking needs to be addressed.
- The design should consider and accommodate the impact of light industrial development to the north of the park.
- Low-lying wet areas should be avoided in trail planning, as the site hydrology and soil types are not conducive to sustainable trail development in these areas.

8.0 Concept Design

The concept design for the North Telford Recreational Lands incorporates a range of outdoor recreational and interpretive opportunities with as little impact to the existing high-quality aspen forest habitat in the park as possible. The development of more intensive-use amenities, such as the parking lot, picnic shelter, washrooms, natural playground and mountain bike terrain park have been confined to the pre-existing disturbed areas on the west side of the park, leaving the east areas for passive trail use and nature interpretation. The plan includes recommendations for reclaiming existing trail alignments that conflict with the design objectives, and are not part of the planned trail network, as well as recommendations for screening the site from neighbouring residences and restoring disturbed areas to a more natural condition. The following sections provide a detailed description of the proposed concept design for the park.



North Telford Recreational Lands Development

CONCEPT DESIGN

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RC strategies

Legend

Existing Trail Alignment	New Trail Alignment	
		Multiway
		Gravel Trail
		Nature Trail
		Proposed Silt Fence
		Proposed Post and Cable Fence
		Fence by Developer
		Project Boundary

- PUL/Walkway (Sawridge Business Park)
- Existing Wetland
- Stormwater Retention Facility
- Engineered Wood Fibre Play Surface
- Asphalt Paving
- Gravel Pad
- Stairway
- Picnic Table

Amenities

- Trailhead Information / Interpretive Sign
- Parking Area
- Washroom Building
- Rare Plant Species Location
- Canoe / Kayak Launch Pad
- Lookout Point
- 1973 Plane Crash Site
- Plane Spotting Platform
- Natural Playground
- Challenge Zone
- Picnic Shelter
- Picnic Area

Map 7. Concept Design Plan

8.1 Functional Site Zoning

The park has been divided into a series of six different zones that are largely based on the existing areas of disturbance and types of habitat in the area. These zones reflect the recommended types of development for the different areas of the park based on the existing conditions, design objectives and planned activities and amenities.

8.1.1. Park Amenity Zone

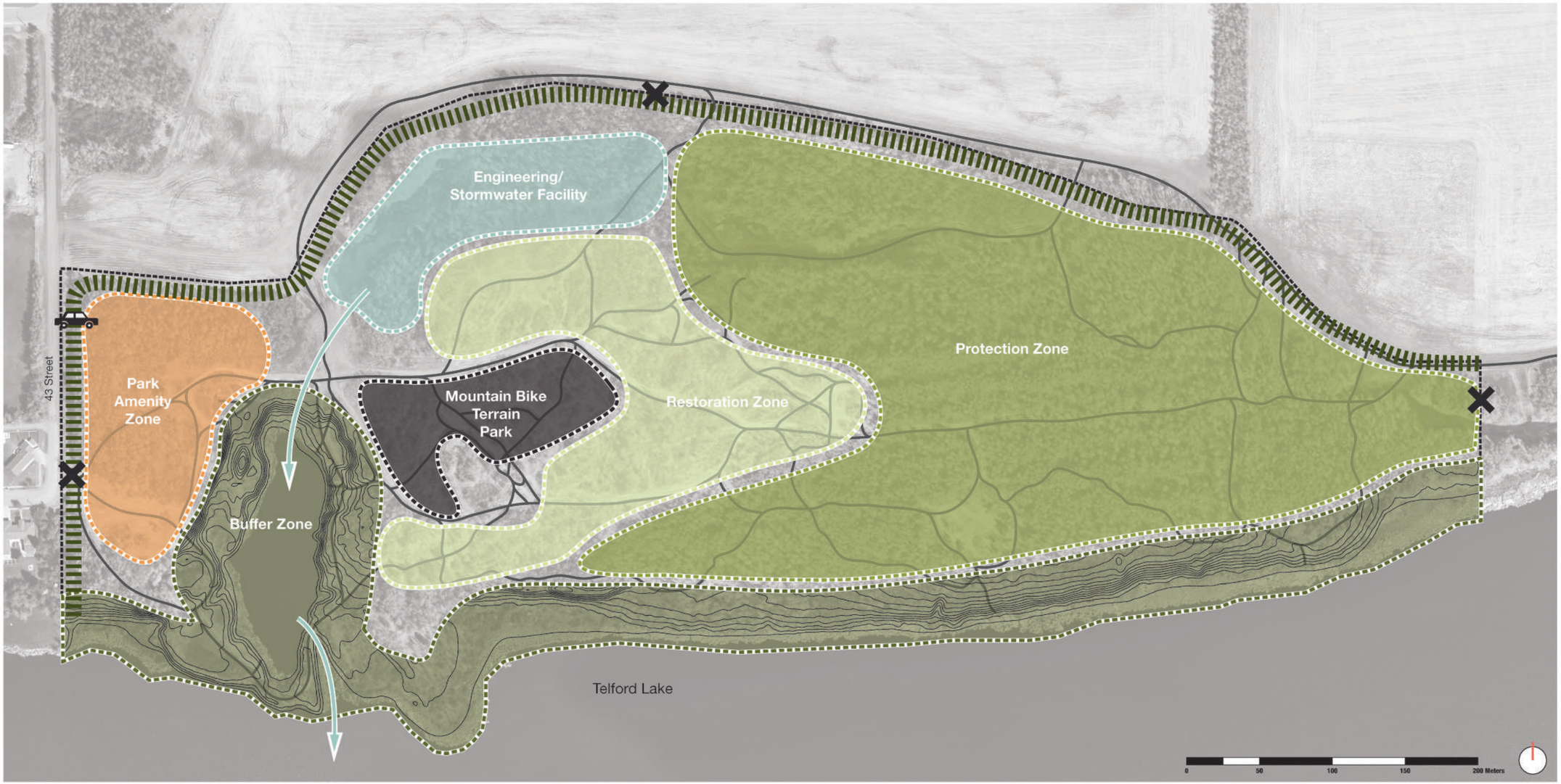
The Park Amenity Zone is shown in an area of disturbed vegetation that includes a mowed grass meadow and non-native species such as Caragana and Elm trees. This zone is located closest to 43 Street and the identified vehicle access point off of 43 Street. Located at the western-most edge of the park, it provides a buffer and transitional space from the existing residential neighbourhood of North Telford. Because this area will be easily accessible to vehicles, it is recommended that the most intensive park activities and highest-maintenance facilities be clustered in this zone. This zone's proximity to adjacent residential areas and vehicle access also makes it a logical location for amenities such as the natural playground and picnic area, which are likely to be used on a regular basis and by families who can take advantage of convenient parking and washroom facilities.

8.1.2. Mountain Bike Terrain Park Zone

Located in a disturbed area of Early Seral Aspen Forest that is crisscrossed with informal trails, the Mountain Bike Terrain Park is closely associated with the Park Amenity Zone. It is anticipated that the trail riding, jumps and skills training areas in the Mountain Bike Terrain Park will accommodate a total of 50 riders, which makes the terrain park one of the most intensive uses proposed in the park. Because terrain park users may drive to the facility from other areas in the region, it is recommended that the terrain park be located close to the parking lot to minimize the zone of impact and disturbance generated by this facility. It is also desirable to maintain easy access to the terrain park for emergency vehicles, since mountain biking is a higher risk activity than some of the other uses proposed in the park.

8.1.3. Engineering / Stormwater Facility Zone

This zone encompasses a stormwater retention facility that services the Sawridge Business Park light industrial development to the north. Located in an existing low area of the site, the stormwater facility will be a mostly dry pond that may fill with stormwater runoff during storm events. This runoff will quickly drain to the existing Class V wetland in the park, and then on to Telford Lake. However, because this area is subject to periodic flooding, it is not recommended to develop permanent facilities or amenities within the Engineering / Stormwater Facility Zone.



North Telford Recreational Lands Development

DRAFT CONCEPT DESIGN
Functional Zoning Diagram

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Legend

- Vehicle Access Point
- Pedestrian Access Point
- Vegetated Buffer at Park Boundary
- Stormwater Outlet

Park Amenity Zone
The most intensive park activities and highest maintenance facilities will be clustered close to the vehicle entry to the park.

Engineering / Stormwater Facility
Land set aside to collect stormwater runoff from Sawridge Business Park to the north.

Mountain Bike Terrain Park
This area will be developed as a mountain bike skills and terrain park.

Buffer Zone
Recommended 30m setback at lakeshore and Class V wetland to protect sensitive habitat.

Restoration Zone
This area was the most heavily impacted by gravel extraction and other historic uses of the site. Re-vegetation and weed control efforts should be focused in this zone.

Protection Zone
This area has the most mature forest in the park and should be protected from intensive distrubance.

Map 8. Functional Zoning Diagram

8.1.4. Buffer Zone

The Buffer Zone represents a recommended 30 m vegetated buffer to protect permanent wetlands and water bodies in the park. The maintenance of natural vegetation on slopes and at the top of slopes draining to wetlands and water bodies helps prevent sediment from draining into these receiving water bodies, which would negatively impact water quality and the habitat of fish, insects and amphibians. Protecting this vegetative buffer is also valuable in maintaining riparian habitats that are used by birds and small mammals for feeding and nesting. The development of buildings, parking lots and roads should be avoided in the Buffer Zone. Low impact uses, such as walking trails, may be located within this area.

8.1.5. Restoration Zone

The Restoration Zone is the area of the site most heavily impacted by gravel extraction and unauthorized trail use, in addition to the areas included in the Park Amenity and Mountain Bike Terrain Park Zones. The Restoration Zone is characterized by poorly developed Early Seral Aspen stands interspersed with open clearings and informal trails, many of which are infested with “restricted” weed species under the Alberta Weed Control Act, including Common Tansy and Canada Thistle. Re-vegetation and weed control efforts should be focused in this zone.

8.1.6. Protection Zone

This area represents the most mature Aspen and Balsam Poplar Forest habitat in the park. The Protection Zone has the greatest species diversity of songbirds, compared to the disturbed areas on the west side of the site (Telford Lake Master Plan, 2010), greater diversity of vegetation, and offers some of the most scenic environments in the park. In accordance with the design objectives and the recommendations of the Telford Lake Master Plan, this zone should be protected from intensive disturbances and managed to maintain a healthy stand of native vegetation.

8.2 Site Access

8.2.1. Vehicle Access

As recommended by the Telford Lake Master Plan, the main vehicle access to the site has been shown off of 43 Street, which is connected to the main City of Leduc street network via 53 Avenue, a residential street, and 56 Avenue, which passes through a light industrial area (refer to Map 1. Site Context). The concept plan initially showed both 53 Avenue and 56 Avenue as options for travelling to the park by vehicle. However, the overwhelming feedback received during a public open house (February 6, 2014) and online survey (February 7 – 24, 2014) indicated that residents were concerned about potentially increased traffic volumes on 53 Avenue, and the decision was made to prevent the majority of vehicle traffic from accessing the park via 53 Avenue.

The concept plan includes a proposal to close 43 Street to all but emergency vehicle access. Bollards will be placed across the existing road, which may be broken away in case of an emergency. On the south side of the road closure, a turn-around bulb will allow vehicles that mistakenly proceed north on 43 Street to turn around. The road closure should be placed north of the lane behind 53 Avenue to allow continued access to the laneway.

The main parking lot provides parking for 50 vehicles, as well as a turn-around for buses and other large vehicles. With the closure of 43 Street to the south, it is intended that the majority of vehicle traffic will access the park and the parking lot via 56 Avenue. The parking lot surfacing is specified as asphalt with concrete curb and gutter, but may be constructed initially of gravel and paved at a later date. A small parking lot shown on 43 Street south of the proposed road closure may be deferred until additional parking capacity is needed.

8.2.2. Bicycles and Pedestrians

Currently, the North Telford Recreational Lands are accessible to pedestrians and bicycles at the corner of 53 Avenue and 43 Street. This entry point will likely continue to be an important gateway into the park, both for local residents and future connections to the multi-way. The multi-way route from Telford House (to the southwest) to the North Telford Recreational Lands has not been finalized, but it is expected to utilize 53 Avenue or the Telford Lake shoreline.

A new pedestrian connection will be constructed from the Sawridge Business Park development to the north, using a Public Utility Lot (PUL) alignment. This walkway will terminate at the northwest corner of the stormwater facility that is also related to the Sawridge Business Park development.

A multi-way loop around Telford Lake will eventually provide a trail connection at the east end of the park. Currently, this area is undeveloped agricultural land that is privately owned, and the timeline for development of this land is unknown. The City of Leduc is working to establish a precedent of consolidating required Municipal Reserve dedications for new developments along the north shore of Telford Lake, which will allow for the continuation of the multi-way next to Telford Lake.

8.3 Trail Network

The proposed trail network for the North Telford Recreational Lands includes a hierarchy of three trail types, designed to accommodate a wide range of seasonal uses, which utilize existing informal trail alignments wherever possible. Existing trail alignments that conflict with the design objectives and are not part of the planned trail network will be reclaimed and re-vegetated.

The trail network is designed to connect to a future Telford Lake Loop trail, which may include cross-country skiing and/or a paved multi-way loop that circumnavigates Telford Lake.

8.3.1. Existing Trail Alignments

Informal use of the site has resulted in a well-developed network of natural trails, including those used by unauthorized off-road vehicles (2.5 to 3 m wide) and those used by pedestrians and cyclists (0.5 to 2 m wide). An extensive inventory of existing trails was conducted in the site analysis phase of the park design project to identify trails in poor, moderate, and good condition. Depending on the type of trail proposed for a particular alignment and the condition of the existing trail, it may be necessary to perform the following improvements to formalize the trail alignment as part of the park's permanent trail network:

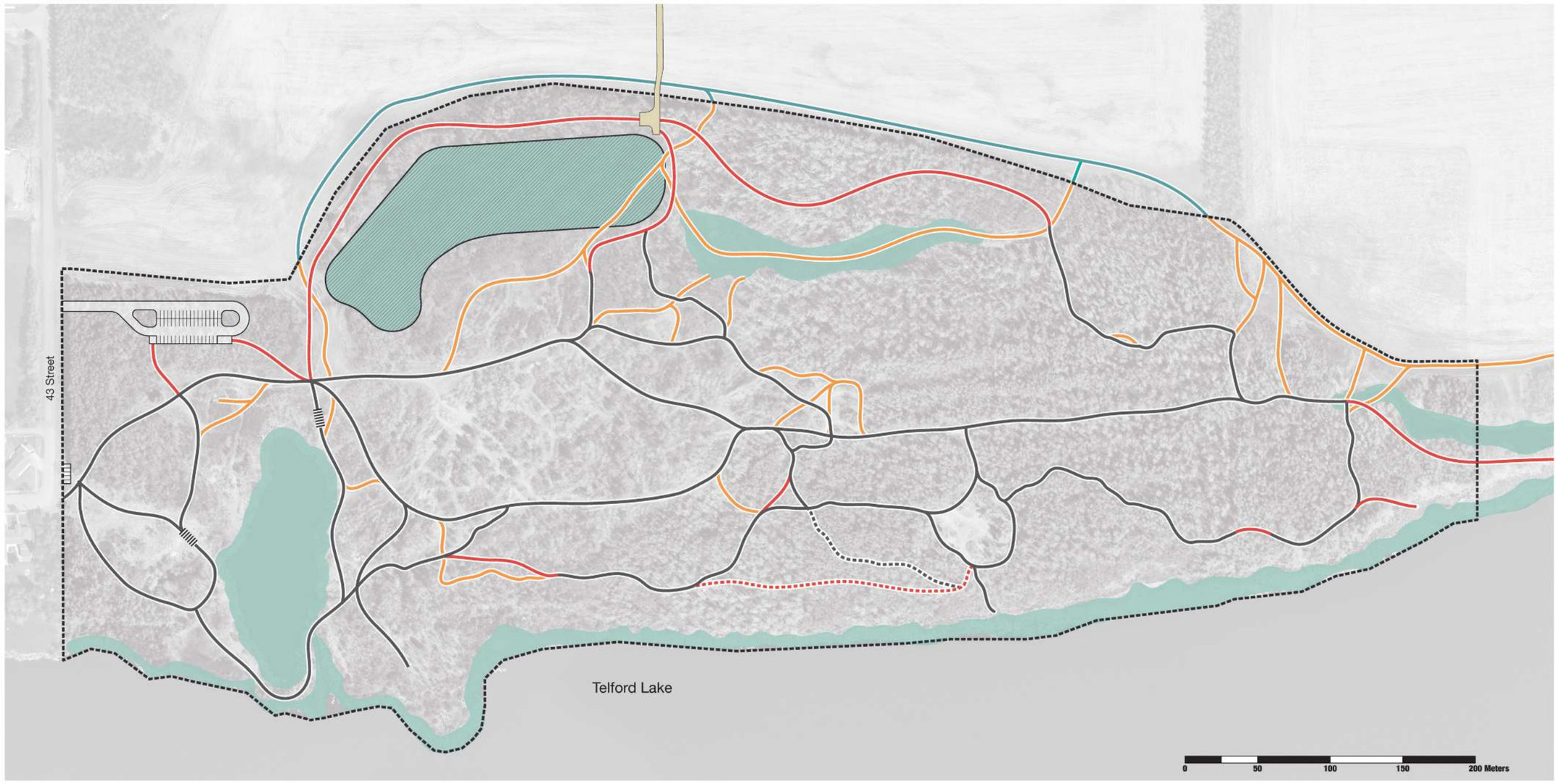
- Re-grade or fill existing ruts with gravel;
- Clear and grub organic material and strip and stockpile topsoil where an existing alignment is to be widened;
- Excavate existing trail surface to prepare for new gravel base and surface material;
- Lay geogrid stabilizer in wet areas to stabilize trail base;
- Place gravel base and trail surface material (asphalt, gravel or bark mulch); and,
- Rototill, place topsoil and seed in areas disturbed by construction and braided trail alignments adjacent to the main route.

Existing trail alignments that are not part of the planned trail network will be reclaimed using rototilling, topsoil placement, seeding, and planting of container trees and shrubs in native species appropriate to the existing vegetation community, as well as native tree and shrub plugs.

8.3.2. New Trail Alignments

In order to maximize programming options and make connections to proposed amenities both in and adjacent to the park, it is necessary to develop some new trails. New trail alignments have been designed in accordance with the following criteria:

- Avoid locating trails in low-lying wet areas unless necessary;
- Incorporate multiple loops that can be used for sporting events and to improve the variety of experience for regular park visitors;
- Provide access to proposed park amenities and connections to new and existing developments adjacent to the site; and
- Provide barrier-free access to look-out points.



North Telford Recreational Lands Development

DRAFT CONCEPT DESIGN
Existing + Proposed Trails

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RC strategies

Legend

- Existing Trail Alignment to Remain in Park (With Upgrades to Surfacing)
- Optional Trail Route Using Existing Alignment
- Existing Trail Alignment to be Removed and Reclaimed
- Proposed New Trail Construction
- Optional Trail Route Requiring New Trail Construction
- Existing Trail Alignment to be Abandoned
- Project Boundary
- PUL/Walkway (Sawridge Business Park)
- Existing Wetland
- Stormwater Retention Facility

Trail Considerations

The proposed trail network has been developed based on the following considerations:

- Slope and suitability for different uses. Very steeply sloped trails are suitable for hiking only.
- Drainage. Trails that are mostly located in low-lying wet areas are recommended for closure and reclamation.
- Duplication of routes. Where many trails serve the same general area, one route has been selected to remain.
- Ability to complete a loop around the park. An overall loop around the park perimeter has been considered, as well as smaller loops within the park to increase variation of routes for regular park visitors.
- Access to key features and areas of the park.
- Accessibility. A wheelchair accessible route has been provided to many of the key amenities in the park.

Map 9. Existing and Proposed Trails

In addition, the following recommendations have been considered with respect to specific types of trail uses:

Table 4. Trail Use Design Requirements

Use	Surface	Width	Slope
Bicycling (Multiway)	Asphalt	3m	up to 10%
Trail Biking	Granular	1 - 2m	up to 15%
Cross Country Running	Granular	1 - 2m	up to 20%
Cross Country Skiing	Groomed	2 - 4m	up to 20%
Snowshoeing	Packed	1.5 - 2.5m	up to 20%
Walking	Natural Tread or Bark Mulch	1 - 2m	up to 20%
Hiking	Natural Tread	0.3 - 1m	up to 45%
Maintenance Access	Natural or Improved	2.5m min.	up to 15%

Note:
Based on Alberta Recreation Corridor & Trails Classification System, Government of Alberta, 2009

8.3.3. Trail Types and Uses

The trail network for the North Telford Recreational Lands was designed to accommodate a wide range of trail activities, including winter season use. Programming options that were explored during the early concept design phase of the project include:

- Paved multi-way route for connection to future Telford Lake loop trail;
- Cycling (mountain bikes to road bikes);
- Cross-country running;
- Cross-country skiing;
- Snowshoeing;
- Walking and hiking; and,
- Maintenance and emergency vehicle access.

North Telford Recreational Lands Development

DRAFT CONCEPT DESIGN
Proposed Trail Network

CITY OF Leduc
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RC strategies

Legend

- Telford Lake Trail (3m wide asphalt multi-way)
- Gravel Trail (2 m wide)
- Natural Trail (1 m wide bark mulch)
- Optional Natural Trail
- New Trail Construction Required
- Stairway
- Project Boundary
- PUL/Walkway (Sawridge Business Park)
- Existing Wetland
- Stormwater Retention Facility
- Parking Area

NOTE: TRAIL NETWORK UTILIZES EXISTING TRAIL RIGHT-OF-WAY UNLESS INDICATED

Optional Routes

A1 / A2. A nature trail link closer to the lake may be provided. Route A1 is closer to the lake but requires construction of a new trail. Route A2 uses an existing trail alignment, but is not as close to the lake.

Map 10. Proposed Trail Network

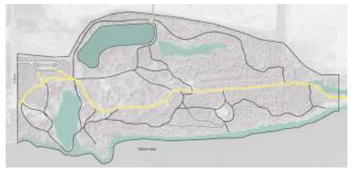


Figure 10. Multi-Way Routes in the Proposed Trail Network

The design criteria for each programming option were analyzed as summarized in Table 4. Trail Use Design Requirements. Additional program-specific design requirements that were considered included:

- Criteria for cross-country running competition facilities. The International Association of Athletics Federations (IAAF) Manual of Competition Rules for Cross-Country and Mountain Races was consulted to gain a baseline understanding of the design characteristics for cross country running courses. A description of the key criteria referenced in the design of the North Telford Recreational Lands and their implications for the park design follows:
  - A loop course should be provided, with the loop measuring between 1.5 and 2.0 km. Additional feedback from the City of Leduc indicated that a total 5 km loop was desired, consisting of a perimeter loop 3 km in length, with a smaller inside loop to make up the remaining 2 km.
  - The crossing of roads or other paved surfaces should be avoided. This is a concern where sections of the proposed cross-country running route follow the paved multi-way. It was determined that a grassy area to the side of the trail should be provided for cross-country running wherever the running route parallels the multi-way.
  - The recommended width of the cross-country race course is 5 m. This width is greater than the width of any of the proposed pathways and constructing trails of this size would result in a high level of disturbance to the site. It

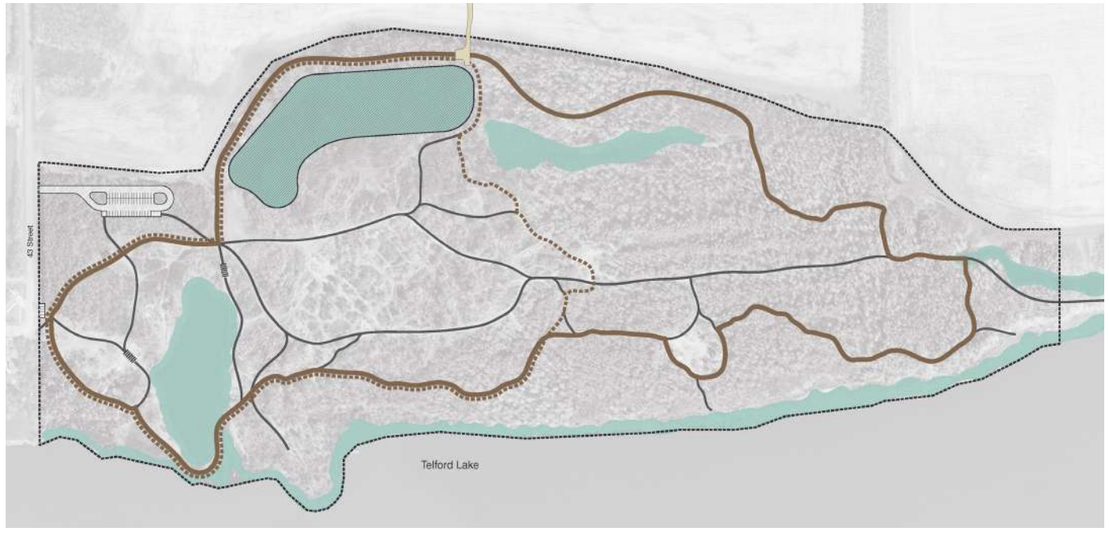


Figure 11. Cross-Country Running Routes in the Proposed Trail Network

was determined that it would not be feasible to meet this recommendation within the design objectives for the park.

  - Recommended race distances are 8 km for junior men and 6 km for junior women, and 6 km for youth boys and 4 km for youth girls. The recommended distances for adult races are 12 km (men) and 8 km (women), which may exceed the amount of space available in the park. A total of 3 circuits of the perimeter loop would be required to provide a race distance of 12 km.

    Because the proposed cross-country running route does not meet all of the IAAF Competition Rules for Cross-Country Races, the park may not be able to host competition events that use these rules as a reference for course requirements. However, the trail network has been designed to accommodate smaller-scale races that do not have stringent requirements regarding the course design.

- Compatibility of winter trail use. Both cross-country skiing and snowshoeing were initially explored as programming options for the park. However, it was noted that these activities are not compatible on the same route, as snowshoeing would impact groomed ski trails and affect the quality of skiing available in the park.

  In a public online survey that was open to comments from February 7, 2014 through February 24, 2014, respondents were asked to indicate their preference for snowshoeing or cross-country skiing. Over three quarters of the respondents (77% of a total 45 submitted surveys) indicated that they preferred cross-country skiing over snowshoeing, and thus snowshoeing was not pursued as a programming option in the final park design.

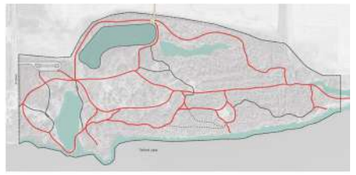


Figure 12. Cycling Routes in the Proposed Trail Network

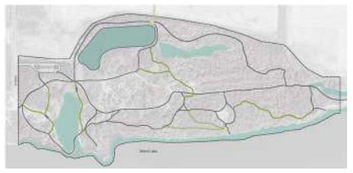


Figure 13. Nature Trails in the Proposed Trail Network

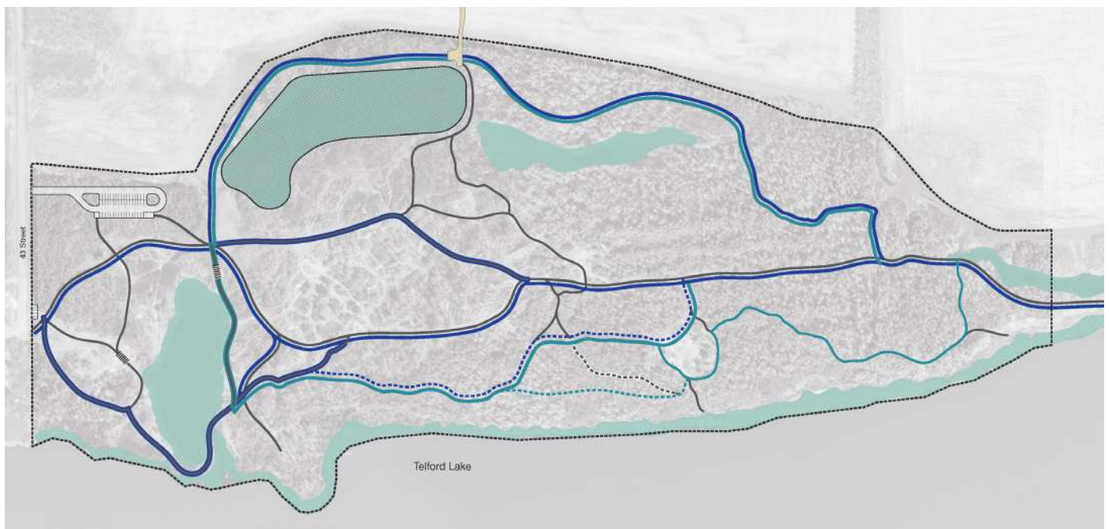


Figure 14. Cross-Country Skiing and Snowshoeing Routes in the Proposed Trail Network

Table 5. Trail Use Compatibility Matrix

Use	Surface (Summer)				Surface (Winter)				Width						Slope				Use Compatibility							
	Asphalt	Granular	Natural Tread	Bark Mulch	Cleared	Groomed	Packed	Natural	3m	≥2.5m	2 - 4m	1.5 - 2.5m	1 - 2m	0.3 - 1m	up to 10%	up to 15%	up to 20%	up to 45%	Bicycling (Multiway)	Trail Biking	Cross Country Running	Cross Country Skiing	Snowshoeing	Walking	Hiking	Maintenance Access
Bicycling (Multiway)	●				●				●						●				●					●		●
Trail Biking		●							●	●	●	●	●		●	●				●	●	●	●	●		●
Cross Country Running		●							●	●	●	●	●		●	●	●			●	●	●	●	●		●
Cross Country Skiing	●	●	●			●			●	●	●				●	●	●			●	●	●		●		●
Snowshoeing	●	●	●	●			●	●	●	●	●	●			●	●	●			●	●		●	●		●
Walking	●	●	●	●	●			●	●	●	●	●	●		●	●	●		●	●	●	●	●	●	●	●
Hiking			●		●			●	●	●	●	●	●	●	●	●	●	●						●	●	
Maintenance Access	●	●	●		●	●	●	●	●	●	●				●	●			●	●	●	●	●	●		●

Table 6. Trail Hierarchy Matrix

Trail Type	Surface (Summer)				Surface (Winter)				Width			Slope				Use							
	Asphalt	Granular	Natural Tread	Bark Mulch	Cleared	Groomed	Packed	Natural	3m	2m	1m	up to 10%	up to 15%	up to 20%	up to 45%	Bicycling (Multiway)	Trail Biking	Cross Country Running	Cross Country Skiing	Snowshoeing	Walking	Hiking	Maintenance Access
Type 1 - 3m Wide Asphalt Multiway																							
Type 2 - 2m Wide Granular																							?
Type 3 - 1m Wide Nature Trail																							

Another concern regarding cross-country skiing in the park was the potential conflict with snow clearing on the multi-way. The City of Leduc routinely clears snow from all multi-way trails, but also plans to complete a cross-country ski loop around Telford Lake in the future that follows the multi-way route. The proposed solution to address this conflict is to locate cross-country skiing trails on a cleared grassy area to the side of the multi-way.

A matrix of the proposed trail uses in the park, critical design criteria (surface type, width and slope) and compatibility of uses was developed to identify uses that shared common design criteria, and could therefore share the same route, and uses that were incompatible and would require a designated route. The design criteria were used to develop a hierarchy of trail types that minimized the number of trail design variables while accommodating all of the proposed trail uses.

8.3.4. Proposed Trail Hierarchy

The proposed trail hierarchy for the park includes three trail types: a 3 m wide asphalt multi-way, 2 m wide gravel trails, and 1 m wide nature trails. These trail types accommodate the following uses:

3 m Wide Asphalt Multi-Way

- Bicycling (mountain bikes through road bikes)
- Walking
- Maintenance and emergency vehicle access

The multi-way trail will include a 3 m wide trail bed, as well as a 3 m wide cleared grassy area to one side of the paved trail for cross-country running and skiing where it overlaps with these routes. 1 m of this grassy area is to be allocated for the placement of cleared snow, with the remaining 2 m to be used for cross-country running and skiing. An additional 1 m on either side of the total trail alignment should be kept clear of shrubs and tree branches to a height of at least 3 m, based on recommendations of the Alberta Recreation Corridor & Trails Classification System, for a total clear width of 5 to 8 m.

It should be noted that cross-country ski routes may be designated on multi-way routes that are not cleared in winter without the requirement for an additional 2 m wide clearing to the side of the paved trail. However, any proposed cross-country running routes that are concurrent with the multi-way should include the 2 m wide grassy clearing for runners, who often wear cleats that are not compatible with asphalt.

The possibility of providing lighting along the multi-way to extend the hours of use in winter was discussed. If this option is pursued in the future, the ability to use solar powered lights should be investigated.

In consultation with the North Telford Recreational Lands Steering Committee, it was determined that paved multi-way access would be provided to each of the lookout points to ensure barrier-free accessibility. These trails will be considered secondary routes and will be 2 m wide.

Figure 15. Multi-Way with Ski Trail

Figure 16. Typical 3m Wide Multi-Way

2 m Wide Gravel Trails

- Bicycling (mountain bikes and hybrids)
- Cross-country running
- Cross-country skiing
- Walking
- Limited maintenance and emergency vehicle access (4-wheeled “Gator” utility vehicles, winter maintenance access may be restricted)

Gravel trails will include a 2 m wide trail bed, as well as an additional 1 m on either side of the trail alignment to be kept clear of shrubs and tree branches to a height of at least 3 m, for a total clear width of 4 m.

Figure 17. Typical Gravel Trail

1 m Wide Nature Trails

- Hiking
- Walking

Nature trails are typically surfaced with either a natural tread, which consists of a cleared, compacted trail bed on existing soil, or bark mulch. The concept design for the North Telford Recreational Lands specifies the nature trail surface as bark mulch, which may be derived from chipped trees that are cleared onsite during park development. Bark mulch was selected in part to deter cyclist use on nature trails, which access some of the more fragile environments in the park. Trail cycling tends to be a higher-energy activity that may disturb wildlife, and can cause erosion on trail surfaces. In order to provide high-quality nature appreciation opportunities and protect steep slopes and other sensitive areas, the decision was made to designate the nature trails as pedestrian-only.

Nature trails will include a 1 m wide trail bed, as well as an additional 1 m on either side of the trail alignment to be kept clear of shrubs and tree branches to a height of at least 3 m, for a total clear width of 3 m. Two sets of timber stairs are included where the nature trails descend the steep slope on either side of the existing Class V wetland.

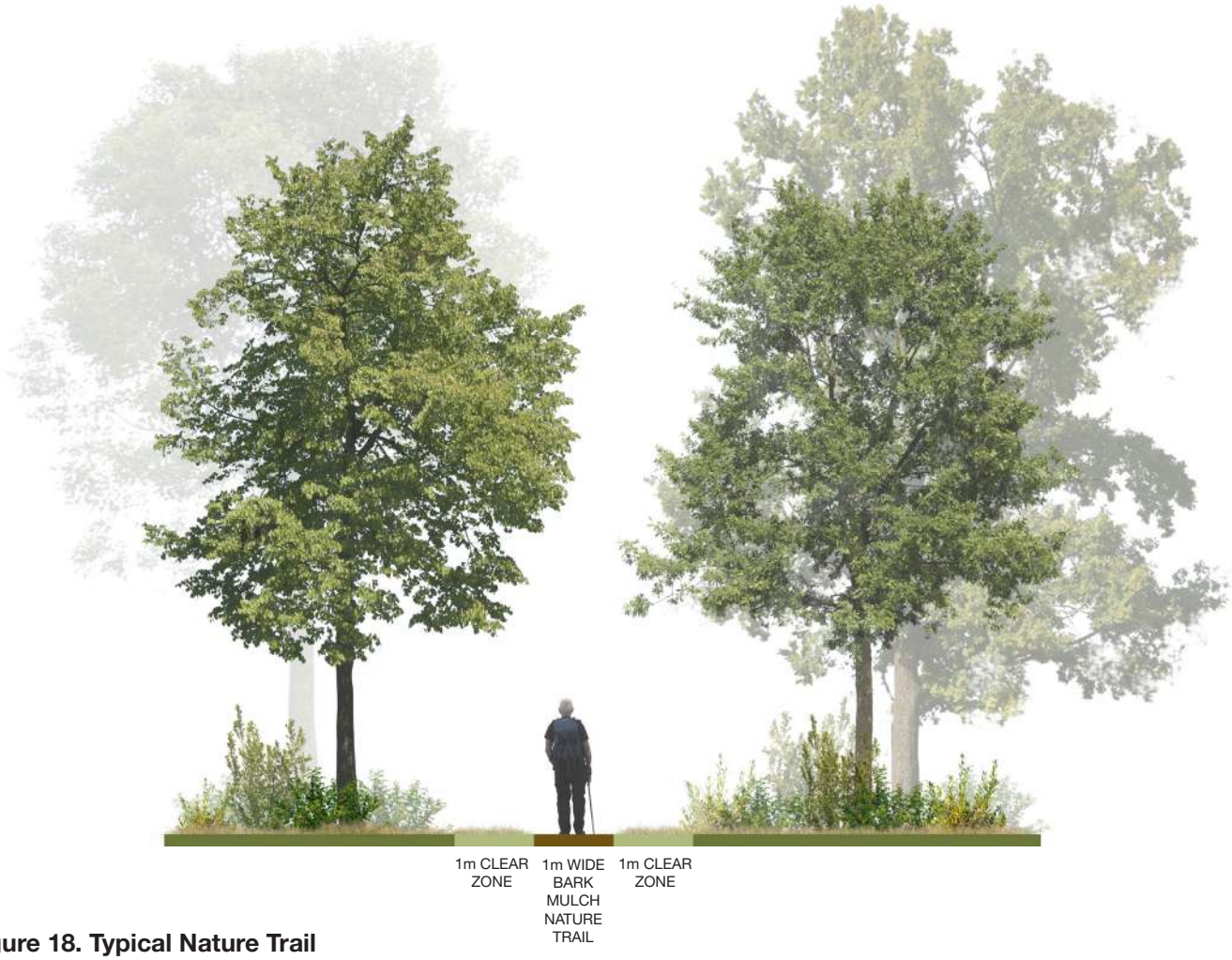
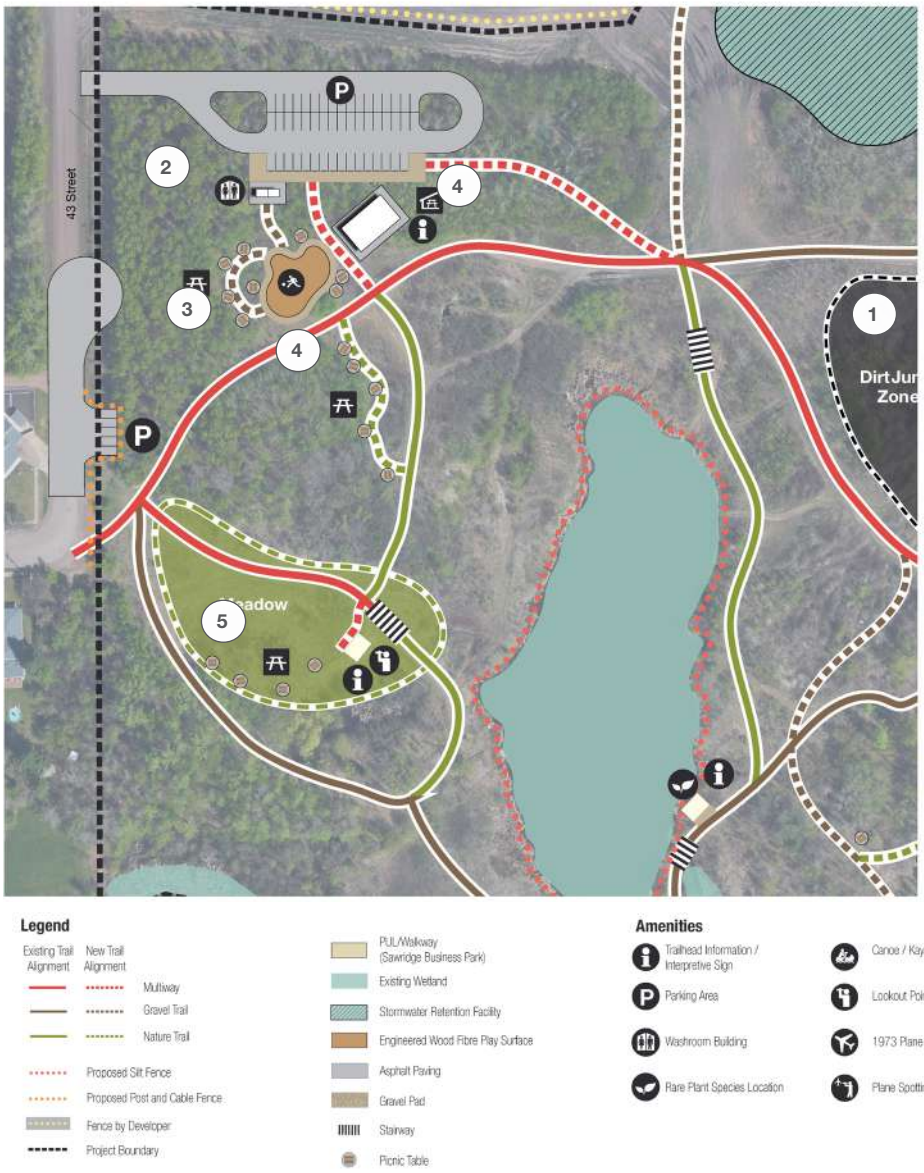


Figure 18. Typical Nature Trail

8.4 Park Amenities

The park plan includes a variety of proposed amenities to support and enhance the trail network and park program. In general, these amenities have been designed to add to the outdoor recreation and nature appreciation opportunities in the park, and to take advantage of the existing unique characteristics of the site. Most of the more intensive park activities and highest-maintenance facilities have been clustered in the Park Amenity Zone, nearest to the parking lot and park access.



Key:

1. Mountain Bike Terrain Park
2. Washroom Building
3. Children's Play Area
4. Picnic Area + Shelter
5. Rustic Picnic Sites

Figure 19. Amenity Zone Plan

8.4.1. Mountain Bike Terrain Park

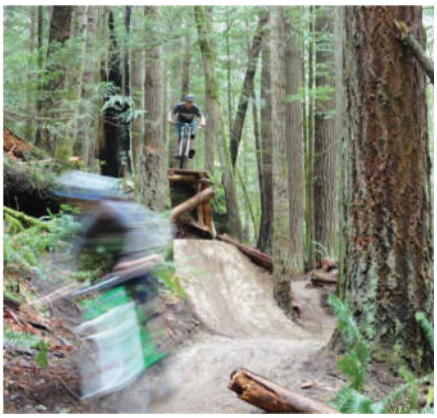
The mountain bike terrain park includes four separate areas that are accessed from either the terrain park entrance or the start mound. From the terrain park entrance, riders can access a skills and trials area, beginner and advanced pumptrack areas, and the start mound. The start mound provides a starting point for dirt jumps and flow trails. Entering and exiting the park is possible via a single location only, with the terrain park perimeter controlled by a combination of earthworks, planting and fencing to help maintain safety of the riders in the park.

The pumptracks, dirt jumps and flow trails will be constructed mainly using soil with a soil hardener additive, although these areas do include some pre-manufactured ramps and jumps. The skills and trials area includes a dirt trail and features built with hardened soil, as well as timber and rock elements.

Site furnishings including garbage receptacles, benches, picnic tables and fencing, as well as signage describing codes of conduct, trail etiquette, and park rules. Directional signage will be included inside the terrain park to assist in wayfinding.

+
Dirt jump features

+
Dirt jump features

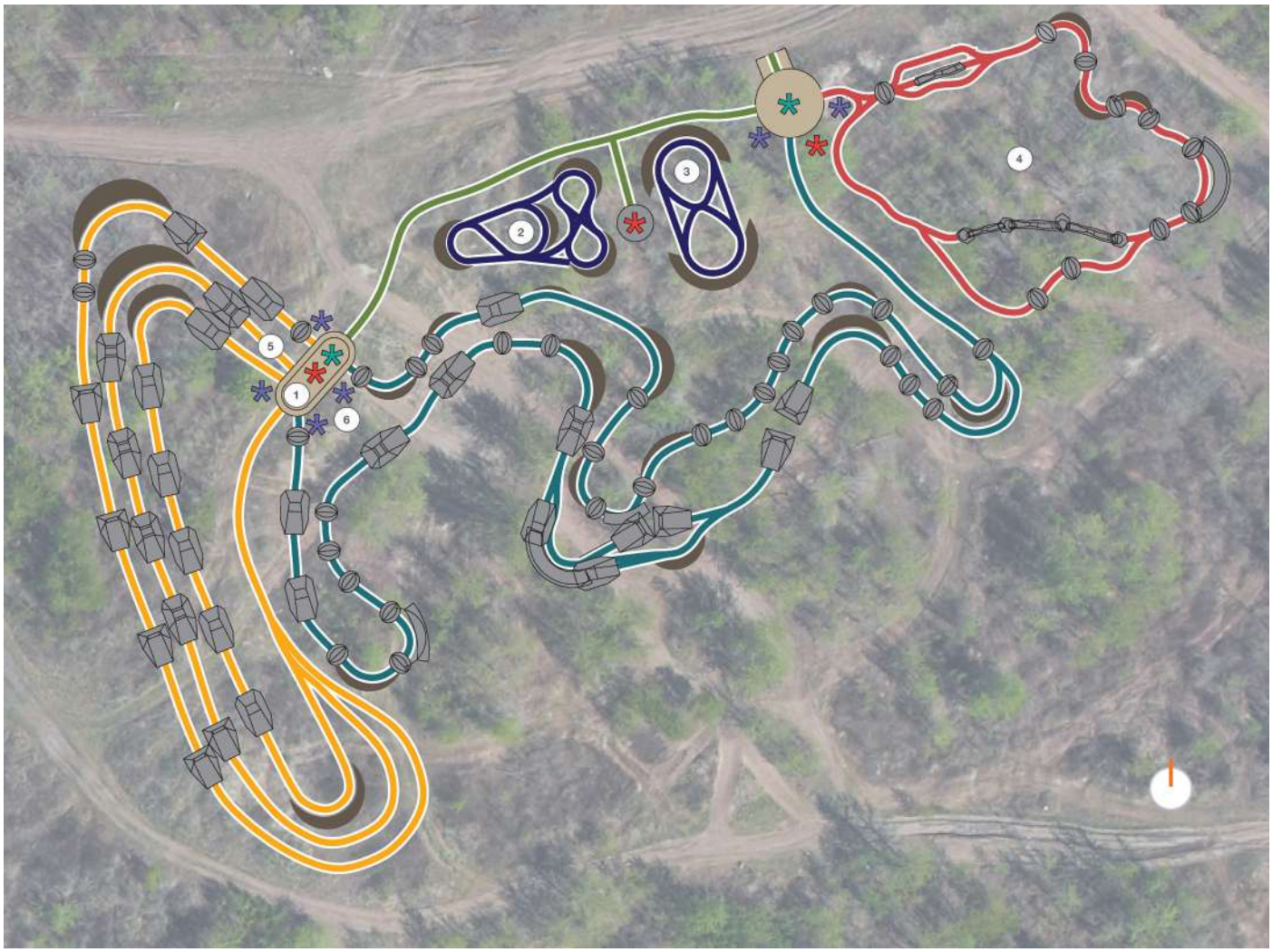


+
Flow trails

+
Pump track

+
Flow trails

+
Skills and trials area



Legend

- Signage - Trails
- Signage - Health and Safety
- Site Furnishings

1. Start Mound
2. Pumptrack - Advanced
3. Pumptrack - Beginner
4. Skills and Trials Area
5. Dirt Jumps
6. Flow Trails

Figure 20. Mountain Bike Terrain Park Plan

+
Colorful, bright and durable washroom designs

8.4.2. Washroom Building

A washroom facility will greatly improve the functionality of the park, particularly when large numbers of visitors are expected for special events. Because the park has been designed to accommodate all-season activities, it is recommended that the washroom facility remain open year-round to benefit park visitors. An all-season washroom should be serviced to provide heating and light in the winter months. Sanitary sewer, water and power must be extended into the park from 43 Street to service the proposed washroom.

Small buildings in parks are often the target of vandalism, and there is a tendency for designers to focus on durability at the expense of visitor comfort and other more attractive features. It is important for a park washroom to be resistant to vandalism and friendly and inviting to park visitors at the same time. The design precedents for the washroom building show how durable materials, such as concrete block, stone and steel can be used along with colour, natural daylight, and well-built details to meet both of these requirements.

Two pre-fabricated self-cleaning washroom units have been specified for the park. These units contain one toilet each, and additional space is available adjacent to the proposed washrooms should it be necessary to expand the park's washroom capacity in the future.

+
Two-unit self-cleaning washroom

8.4.3. Children's Play Area

A natural play area for younger children is proposed in the Park Amenity Zone near the park entrance. Natural playgrounds use materials found in nature, such as wood, logs, stones and rope, to create a play space for children. They look very different from the brightly coloured plastic and metal play structures found in many parks and school grounds. The use of natural materials and the design philosophy of natural playgrounds encourages open-ended, imaginative play that reconnects children with nature.

The children's play area includes an engineered wood fibre safety surface surrounded by a concrete curb and gravel trail, with picnic table seating arranged around the play area for parents. The play equipment will include a combination of active play elements, such as individual rockers, spinners, swings or hammocks, and imaginative play elements such as wood fort-building materials, balance beams, and jumping logs or boulders.

+ Natural materials play structure

+ Fort-building materials

+ Balance rope

+ Jumping logs

+ Individual play equipment for young children

+
Example pre-fabricated picnic shelters

8.4.4. Picnic Area and Shelter

A picnic shelter and adjacent picnic area are located near the park entrance, parking lot, washroom, and play area. Picnic shelters should provide shelter from the elements, while remaining safe and easy to see into. The design precedents for the picnic shelter show how this structure can remain light, airy and transparent, while still providing ample shelter for picnic tables. In addition to providing a sheltered gathering space in the park for picnicking, the shelter can serve as a staging area for educational programs and special events in the park. This facility could also be reserved by private groups for parties and other events.

The picnic shelter is specified as a pre-fabricated steel structure, with upgrades to improve its aesthetic appeal, such as wood cladding on the inside of the roof and stone cladding around the column bases of the structure. Power should be provided to the picnic shelter to support private bookings and special events. Additional picnic tables with access trails are also proposed around the play area and across the multi-way from the main picnic shelter to provide additional capacity for groups who wish to have nearby vehicular access and washroom facilities.

8.4.5. Rustic Picnic Areas

Rustic picnic areas include those which are not within easy access of the parking lot and washroom facilities. The rustic picnic areas are scattered throughout the park in three main groupings. They are located in areas with natural clearings or scenic views, or where informal seating may be desired. All picnic tables in the rustic picnic sites and the more formalized picnic areas described above should be fixed to a concrete base to prevent vandalism of the tables.

+
Open and airy construction of a wood picnic shelter

8.4.6. Site Furnishings

Park furnishings in addition to the proposed picnic tables include garbage receptacles and benches. Garbage receptacles should be animal-proof bins with both garbage and recycling receptacles, and should be located along paved multi-way routes for easy collection of waste.

A bench product has not been specified for the park at this stage of design. An allowance has been made for either new benches with concrete mounting pads, or for existing benches from the downtown area to be salvaged, refurbished, and mounted on new concrete pads.

The site furnishings have not been located on the concept plan.

8.4.7. Challenge Zones

The proposed challenge zones in the park consist of clearings in the forest with outdoor fitness equipment installed in them. This equipment could be used by individuals as part of a regular exercise routine, or by small groups of park visitors looking for a challenge or friendly competition. The fitness equipment may include features such as a climbing wall or bouldering wall, push-up and pull-up bars, step benches, balance ropes, sit-up benches, climbing poles and balance boards that are specifically manufactured to be installed outdoors. Engineered wood fibre safety surfacing will be required to protect visitors from fall injuries in the challenge zones.

The largest and main challenge zone is located in a bowl-shaped excavation and existing clearing in the eastern portion of the park. This challenge zone is along the perimeter loop trail, making it convenient for trail users to incorporate fitness activities into their exercise routine. The smaller challenge zone is located close to the mountain bike terrain park, and is easily accessible to workers from the Sawridge Business Park, via the PUL walkway.

The levels of use and popularity of various equipment in other fitness zones throughout Leduc should be considered before developing the proposed challenge zones in the North Telford Recreational Lands.

+
Types of outdoor fitness activites

+
Outdoor circuit-training equipment

Examples of decks and viewing platforms

8.4.8. Plane Spotting / Crash Viewing Areas

Interpretive opportunities were identified in the site analysis phase of the project related to the 1973 plane crash that occurred on the site, as well as the Edmonton International Airport flight path that frequently brings airplanes over the park at close range.

A plane spotting platform or deck for park visitors to watch airplanes passing overhead is proposed in the more disturbed area of the former gravel pit operation. This amenity could include interpretive signage about the different types of planes passing over the park, and other flight information.

At the 1973 plane crash site, interpretive signage to tell the story of the crash is proposed. The existing debris that remains from the crash will have to be removed to protect the public from injury and prevent the debris from being scattered throughout the park.

8.4.9. Canoe Landings

The idea of accommodating canoe and kayak access to the park was identified during stakeholder engagement activities in the site analysis phase of the project. With the Leduc Boat Club located directly across Telford Lake from the North Telford Recreational Lands, a place for paddlers to pull up their boats in the park will provide both a destination for recreational paddlers, as well as a refuge for boaters who may become caught on the lake in a storm.

The canoe landings will include a hardened ramp access into the lake and a gravel staging area at the top of the ramp. A dock is not proposed for the canoe landings.

8.4.10. Rare Plant Species Interpretive Area

A rare aquatic liverwort was identified in the existing Class V wetland during the biophysical assessment that was carried out for the Telford Lake Master Plan. This interpretive opportunity will be enhanced with a wood deck at the edge of the wetland that allows park visitors to get closer to the wetland, and possibly the rare plant species, without damaging its habitat. Interpretive signage will provide information about the plant species and its significance.

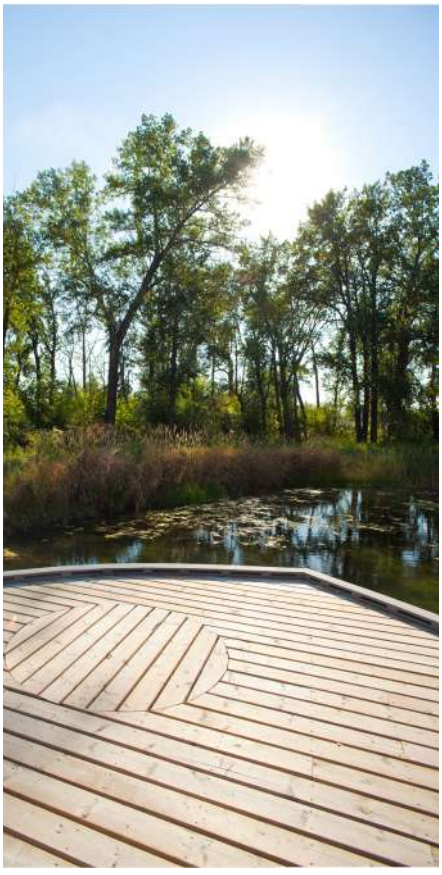
8.4.11. Lookout Points

Lookout points are proposed at locations in the park that are natural overlooks with scenic views. Because these points tend to draw more visitor traffic in a park, it is recommended to provide a deck or platform structure to protect the park environment from the extra foot traffic. These platforms can be extended out from the top of a slope to provide a better view, and may include seating and interpretive signage to enhance the viewing experience.

A total of three lookout points have been identified in the concept plan, each with a 2 m wide paved multi-way trail to provide barrier-free access.

8.4.12. Wayfinding

A family of new signage will be required to provide information to park visitors and to help visitors navigate the area. Such signs may include a park entry sign at the driveway on 43 Street, covered information kiosks with signage and bulletin boards at key trailheads in the park, interpretive signs, park maps, and trail markers. The signage family for the North Telford Recreational Lands will be developed as the City of Leduc develops an overall wayfinding strategy for the city.



+
Examples of lookout platforms

8.5 Park Restoration and Reclamation

The first phase of work that will be required to develop the park involves cleaning up the site to remove debris and hazards. Some of the specific work that will be required includes:

- Removing an existing barbwire fence along the west property line. This fence is effective at designating the boundary of the site, but the material may be hazardous to people and animals using the park. It is recommended to replace the barbwire with a post and cable fence to delineate the boundary of the park.
- Demolish subgrade loading bay. This feature was likely left onsite from the gravel pit operation. It is currently the site of campfires and other unauthorized activities. The loading bay creates an unsafe condition in the park, as people occupying the lower area are hidden from view. There is also a risk of park visitors falling from the top of the loading bay, which is about 3 m above the dugout area.
- Prepare existing trails for construction access. Some of the existing trails in the park, particularly the wider alignments, have significant ruts in the trail bed that would impede access by construction vehicles. These ruts should be removed by re-grading or filling them with gravel. Additional gravel may be required to stabilize wet trail beds.
- Remove debris from the site. A range of large debris, from vehicles to appliances, is scattered throughout the site. Old vehicles should be removed by the City of Leduc. Volunteers may be able to help clean up smaller trash items.
- Temporary construction signage and fencing. As the park construction progresses, it may be necessary to restrict access to certain areas of the park, or the entire site. Signage should also be provided to inform residents about the planned development activities.
- Install silt fence around wetland. The existing Class V wetland should be protected from silt that may be mobilized during construction activities. A silt fence should be established around the wetland at the start of construction and maintained throughout the park development until construction is complete.

Some of the existing trails in the park will not be used as part of the permanent trail network because they are not suitable for sustainable trail use, are too steeply sloped, or they parallel an access route that has already been provided. These trails will be reclaimed using rototilling, topsoil placement, seeding, and planting of container trees and shrubs in native species appropriate to the existing vegetation community, as well as native tree and shrub plugs.

Additional areas that have been heavily impacted by historic gravel pit operations, agriculture and informal trail use are mainly located in the Restoration Zone. These areas are characterized by poorly developed tree stands interspersed with open clearings and informal trails, many of which are infested with “restricted” weed species under the Alberta Weed Control Act. Reclamation and restoration efforts should be focused in these areas.

8.5.1. Weed Control

A large component of restoring the native vegetation on the site will involve controlling the weed populations, particularly of Common Tansy and Canada Thistle. The infestations of these species are more severe in open unforested areas at the west end of the park and gradually become less severe moving eastward through the site. The weed populations likely became established due to the lack of previous reclamation activities (i.e., topsoil placement and re-vegetation) following gravel pit operations. Weed species continued to spread from the previous industrial site throughout the North Telford Recreational Lands through the proliferation of trails and off-road vehicle traffic.

The City of Leduc should develop an Integrated Weed Management (IWM) Plan to address the weed infestations in the North Telford Recreational Lands area. Integrated Weed Management is a process by which one selects and applies a combination of management techniques (biological, chemical, mechanical, and cultural) that, together, will control a particular weed species or infestation efficiently and effectively, with minimal adverse impacts to non-target organisms (i.e., native plants). IWM seeks to combine two or more control actions which will interact to provide better control than any one of the actions might provide. IWM is species-specific, tailored to exploit the weaknesses of a particular weed species, site specific, and designed to be practical and safe (Colorado Natural Areas Program, 2000).

After conducting a detailed weed survey by a weed specialist, a weed-specific action plan should be developed and should include measures that may be implemented individually or in combination. It may not be possible or practical to completely eradicate these species, but measures can be implemented to reduce populations, prevent further establishment and should be in alignment with the City’s weed management objectives. Weed control measures may include activities such as mowing or handpicking, seeding with native species, and herbicide application.

The Alberta Invasive Species Council suggests that the most effective control method for Common Tansy combines mowing or hand cutting with chemical control and encouraging competition from native vegetation by seeding. The Council suggests the most effective approach to controlling Canada Thistle is a combination of spring-summer mowing, followed by herbicide application in the fall. When chemical herbicide is chosen as an option, a Certified Pesticide Dispenser should be consulted. Both species have extremely aggressive and persistent root systems that make them resilient and difficult to eradicate. It is possible that multiple applications (3 or more) of herbicide may be necessary in order to successfully control the weed species, and these activities will likely need to be carried out over multiple seasons.

8.5.2. Planting

Planting in areas where weed control is ongoing should be avoided until satisfactory weed eradication has been achieved. It is difficult to carry out weed control measures around new or existing native plants without damaging the native species in the process. Planting should be carried out using species common to the Aspen Parkland Ecoregion and the Central Parkland Natural Subregion (2006 Classification). Species specific to the North Telford Recreational Lands site can be found in the Telford Lake Master Plan biophysical assessment and are typical of the following plant communities as identified by the Central Parkland Range Plant Community Guide:

- Aspen / Snowberry – Choke Cherry – Saskatoon
- Aspen / Snowberry – Rose
- Aspen / Beaked Hazelnut
- Aspen – Balsam Poplar / Saskatoon – Red Osier Dogwood – Snowberry
- Balsam Poplar / Hazelnut – Red Osier Dogwood

Aspens, which dominate the site, are efficient colonizers that will naturally fill in clearings and abandoned trail alignments over time, provided that these areas are protected from regular access. Because of the relatively poor soils that exist onsite, restoration planting efforts should be focused on shrub planting and seeding, which will help to stabilize the soil and prevent erosion. Re-establishing a native understory will also help prevent further weed invasions, as weed species typically seek areas with open soil and full sun exposure.

Restoration planting should include both container plants (about 4 per 100 m2) and plugs (about 15 per 100 m2). The plants should be installed in groups of 3 to 5 plants that will create islands of shrubs and eventually spread outward from these established islands to fill the restoration area over time.

A limited amount of vegetation buffer tree planting is proposed along the north and west property lines of the park to screen the site from adjacent developments. Areas of particular concern include the west pedestrian entrance into the park, which is across the street from a residential neighborhood. This area is relatively open, and views into the Park Amenity Zone should be screened with tree planting to reduce the impact of increased park activity to the nearby residential properties.

Along the north boundary of the site, a privacy fence will be installed as part of the business park and light industrial developments that are currently in progress. For the majority of this boundary, there is a well-established forest stand that will provide adequate screening between the privacy fence and the perimeter loop trail. However, at the west end of the boundary, additional construction involving drainage swales along the property line may require planting of additional trees to screen the business park development.

North Telford Recreational Lands Development

CONCEPTUAL PLANTING PLAN

CITY OF Leduc

O2 PLANNING + DESIGN

RC strategies

Legend

- Existing Trail to be Reclaimed
- Proposed Trail Alignment
- Existing Trail Alignment
- Project Boundary
- Restoration Planting Area
- Proposed Tree
- Stairway
- Picnic Table
- PUL/Walkway (Sawridge Business Park)
- Existing Wetland
- Stormwater Retention Facility
- Engineered Wood Fibre Play Surface
- Asphalt Paving
- Gravel Pad
- 1 Landscape screening to provide buffer from adjacent developments.

Map 11. Conceptual Planting Plan

9.0 Community Engagement

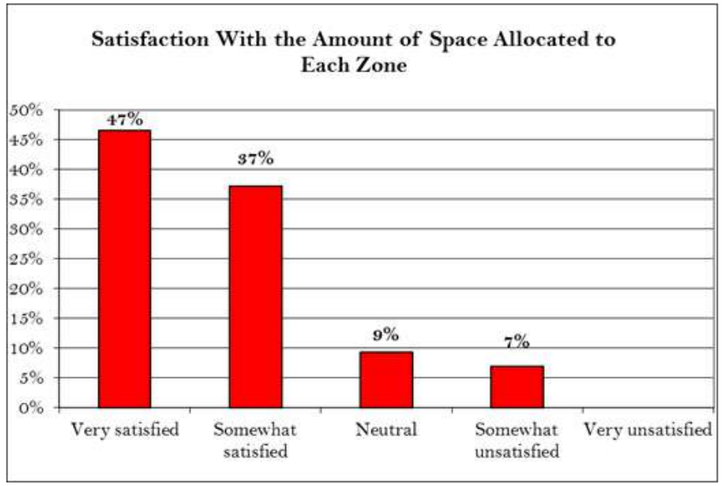
An open house was convened to present the draft concept plan to the public. Groups and individuals who participated in the previous consultation activities for the project were contacted and informed about the open house. The City of Leduc also promoted the open house through its own communication channels: electronic sign board, website, etc.

The open house was convened at the Leduc Recreation Centre on Thursday February 6, 2014 from 6:30 to 8:30 p.m. Display panels were used to present the draft and members of the project team (including both City and consulting team representatives) were available to speak with attendees and answer questions. In addition, a comment form was available for attendees to provide their opinions on the draft design. The information panels and the comment form were available on the City's website from February 7 through to February 22, 2014. Approximately 45-50 people attended the open house.

Twenty-seven comment forms were collected at the open house. A further eighteen were completed online. The findings from all forty-five comment forms are presented below. It should be noted that all questions were not completed on each form; the percentages represent only those that have answered the question.

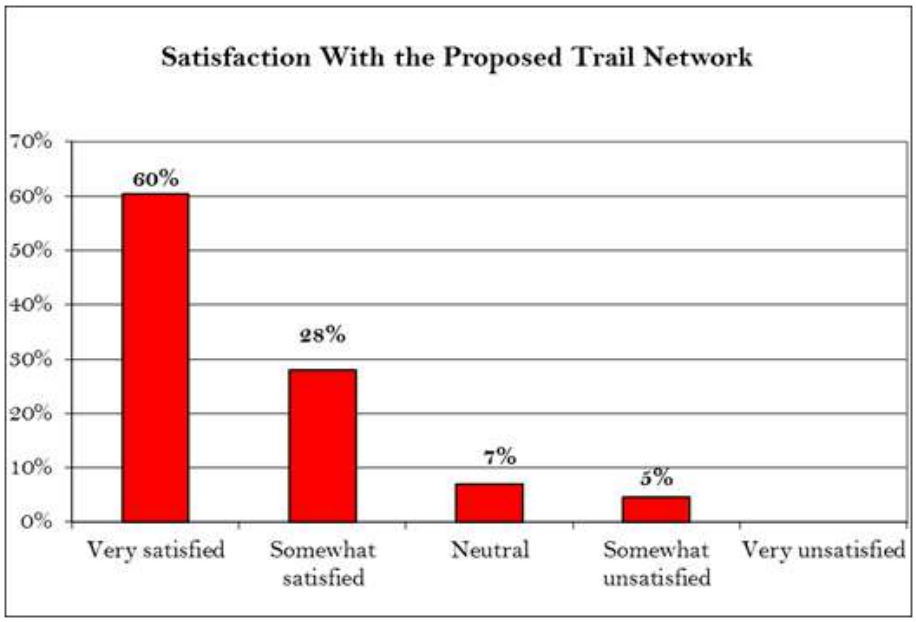
9.1 Findings

The findings from the draft comment forms are presented below. To begin, respondents were asked to indicate their level of satisfaction with the amount of space allocated to each zone. As noted in the graph below, 84% of respondents were satisfied with the amount of space allocated to each zone. Seven percent were dissatisfied.



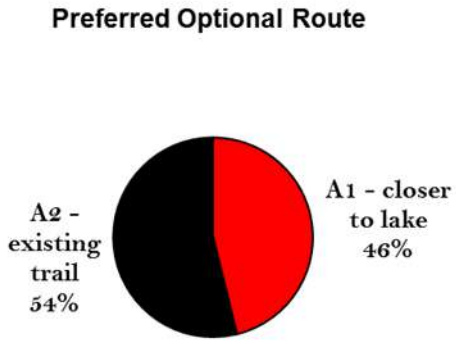
Three respondents commented that the playground should be moved closer to the parking lot. Of the comments made regarding the size of each zone, two commented that the amount of space that should be left natural should be greater. Two others suggested that the park space itself is a little small and that it would be great if a larger parcel of park was available.

A high level of satisfaction was expressed with the proposed trail network – 88% of respondents were satisfied with the network. Only 5% expressed some dissatisfaction. See below for specific results with regard to the proposed trail network.



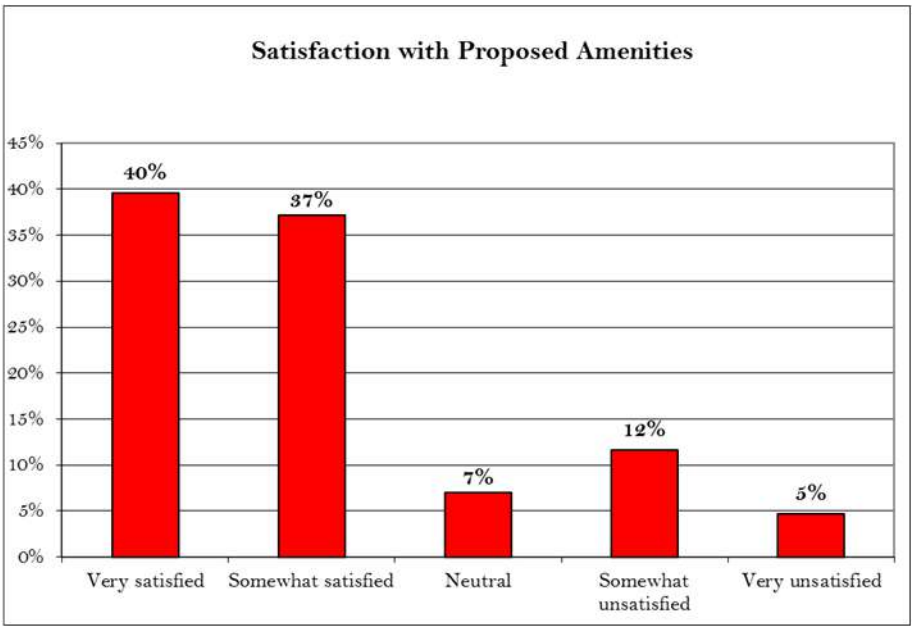
Four respondents specifically commented positively about the inclusion of cross country ski trails. Two others offered praise for the inclusion of natural trails.

When asked about their preference for one of two optional routes, the split was relatively close. A majority however (54%) indicated that utilizing the existing trail is the preferred option of developing a new trail closer to the lake. See the following graph.



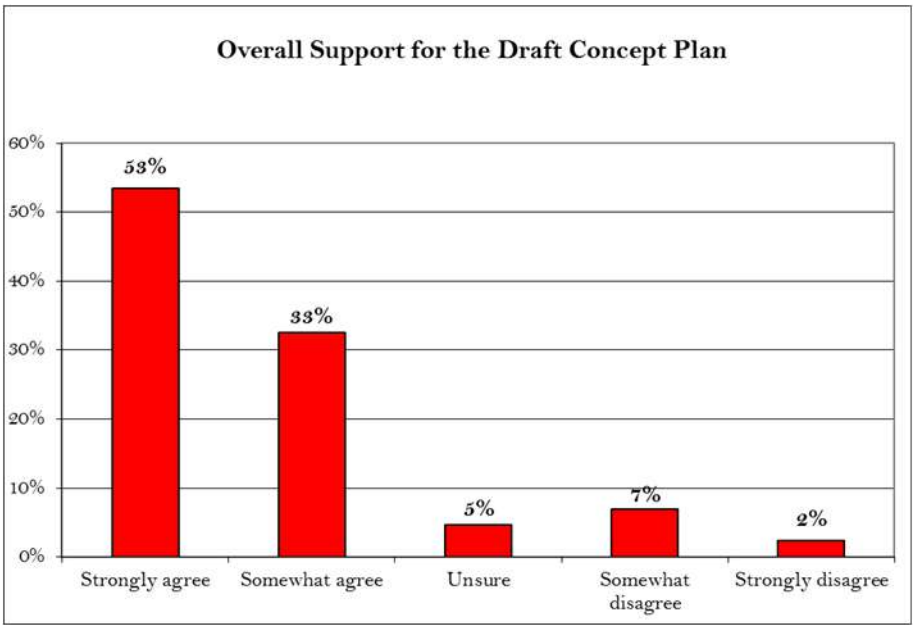
Over three-quarters of respondents (77%) showed a preference for cross country ski trail designation versus snowshoe designation as illustrated in the following graph.

The draft concept plan presented a number of amenities distributed in the park. Respondents were asked to indicate their satisfaction with the proposed amenities. As illustrated below, over three-quarters (77%) of respondents expressed satisfaction with the amenities. Seventeen percent were dissatisfied.



Several comments were offered when asked about amenities. Five specifically commented on the need to close 53 Avenue to limit the impact of traffic on the residences. Two comments related to parking advocated eliminating the small parking lot on the south west edge of the site. One person suggested expanding the large parking lot on the northwest side. Some concern was expressed about the number of amenities suggesting fewer is better, particularly from a maintenance perspective. Another comment suggested the addition of other facilities in the east side of the park, including a bathroom and picnic shelter.

Finally, respondents were asked to indicate their support overall for the draft concept plan. Eighty-six percent expressed support for the plan while nine percent indicated that they did not support the overall concept plan. See the following graphic.



While there were a number of comments expressed regarding the overall plan, there were two primary issues. Eleven respondents expressed concern about the traffic on 53 Avenue and suggested that it be closed to through traffic. A small number of respondents specifically commented that their support for the plan hinged on the closing of 53 Avenue. Two respondents commented that the primary purpose for the park should be preservation and not development.

Eighty-eight percent of respondents are residents of the City of Leduc. Almost half of these respondents (17 of the 38 respondents) live in North Telford. Five percent of respondents live in Leduc County, while 7% live outside the area.

10.0 Phasing and Implementation

The concept design for the park was broken out into a total of 19 separate phases for the purpose of cost estimating and prioritization of park development work. The phasing breakdown was developed based on input from the North Telford Recreational Lands Steering Committee at a progress meeting on February 27, 2014.

The 19 separate phases identified are listed below. Detailed preliminary cost estimates and annotated plans showing the work included in each phase may be found in Appendix B. The order in which the phases are listed and named does not necessarily indicate the order of priority or the sequence of implementation.

- Phase A – Site Clean-Up
- Phase B – Road Closure (43 St.) and Parking Lot
- Phase C – Multi-Way to Mountain Bike Terrain Park
- Phase D – Mountain Bike Terrain Park
- Phase E – Washroom Building
- Phase F – Perimeter Loop Trail and Inside Loop
- Phase G – Children's Play Area
- Phase H – Picnic Area and Shelter
- Phase I – Rustic Picnic Areas, Benches and Garbage Receptacles
- Phase J – Challenge Zone(s)
- Phase K – Wayfinding
- Phase L – Reclamation and Restoration
- Phase M – Plane Spotting / Crash Viewing Area
- Phase N – Canoe Landing(s)
- Phase O – Completion of Multi-Way
- Phase P – Rare Plant Species / Signage
- Phase Q – Lookouts
- Phase R – Natural Trails and Stairs
- Phase S – Weed Control

The steering committee members were asked to vote on the phases that they considered to be the highest priority. The phases of Site Clean-Up, Wayfinding and Weed Control were not voted on, as this work is viewed as essential to the park development, regardless of the timing of construction for other phases. It should be noted that although some phases of work did not receive any votes, this indicates that they are a lower priority or were assumed to be a logistical necessity in developing the park that would be completed regardless of preference. The results of voting, in order of preference, are listed below. Votes were made by a total of 8 steering committee members, with 6 votes each to be distributed as preferred.

- Phase E – Washroom Building – 10 votes
- Phase H – Picnic Area and Shelter – 10 votes
- Phase F – Perimeter Loop Trail and Inside Loop – 9 votes
- Phase I – Rustic Picnic Areas, Benches and Garbage Receptacles – 9 votes
- Phase O – Completion of Multi-Way – 7 votes
- Phase B – Road Closure (43 St.) and Parking Lot – 6 votes
- Phase C – Multi-Way to Mountain Bike Terrain Park – 5 votes
- Phase D – Mountain Bike Terrain Park – 5 votes
- Phase G – Children's Play Area – 5 votes
- Phase R – Natural Trails and Stairs – 3 votes
- Phase J – Challenge Zone(s) – 1 vote
- Phase L – Reclamation and Restoration – 0 votes
- Phase M – Plane Spotting / Crash Viewing Area – 0 votes
- Phase N – Canoe Landing(s) – 0 votes
- Phase P – Rare Plant Species / Signage – 0 votes
- Phase Q – Lookouts – 0 votes
- Phase A – Site Clean-Up – Not voted on
- Phase K – Wayfinding – Not voted on
- Phase S – Weed Control – Not voted on

In further consultation with the City of Leduc, it was decided to group the phased development activities into three groups for budget planning purposes. The three development stages for the park include the following work:

Stage 1

- Phase B – Road Closure and Parking Lot
- Phase E – Washroom Building
- Phase H – Picnic Shelter and Area
- Phase I – Rustic Picnic Areas and Site Furnishings
- Phase A – Site Clean Up

Stage 2

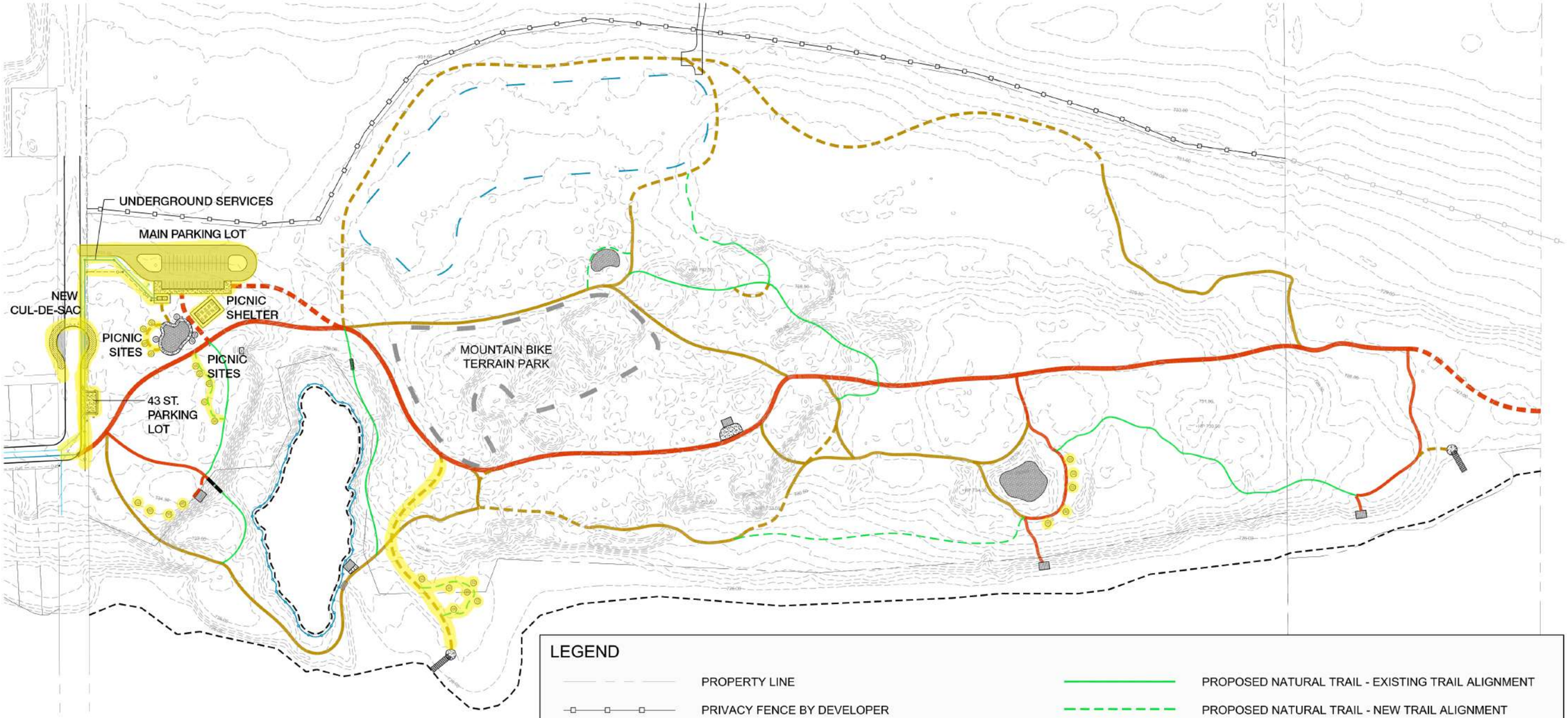
- Phase C – Multi-way to Mountain Bike Terrain Park
- Phase O – Completion of Multi-way
- Phase F – Perimeter Loop Trail and Inside Loop
- Phase G – Children's Play Area
- Phase D – Mountain Bike Terrain Park
- Phase R – Natural Trails and Stairs

Stage 3

- Phase J – Challenge Zones
- Phase P – Rare Plant Species
- Phase L – Reclamation and Restoration
- Phase N – Canoe Landings
- Phase Q – Lookouts
- Phase M – Plane Spotting/Crash Viewing Area

Note: Phase K – Wayfinding to take place independently as part of a city-wide wayfinding implementation project. Phase S – Weed Control to be carried out concurrent with Site Clean-Up and other development stages.

The following plans show the three stages with relevant areas of work for each stage highlighted in yellow.



STAGE 1 IMPLEMENTATION

0 25 75 125m

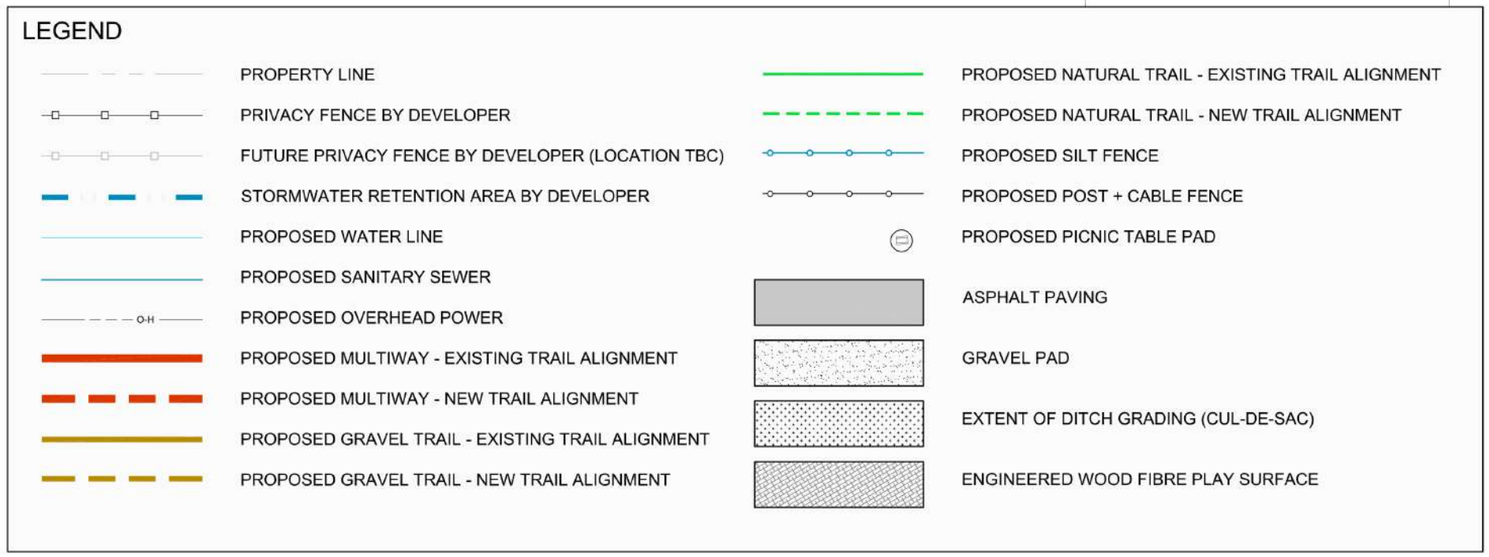
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

Figure 21. Stage 1 Implementation Plan



STAGE 2 IMPLEMENTATION

0 25 75 125m

SCALE = 1:2500

NORTH

Figure 22. Stage 2 Implementation Plan

PLANE CRASH SITE
INTERPRETIVE SIGNAGE

MOUNTAIN BIKE
TERRAIN PARK

PLANE SPOTTING
PLATFORM

WOOD DECK W/
INTERPRETIVE SIGNAGE

STAGE 3
IMPLEMENTATION

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

Figure 23. Stage 3 Implementation Plan

10.1 Estimated Costs

The total estimated cost of developing the North Telford Recreational Lands as described in this report is $4.67 million, including a 20% contingency. This estimate does not include fees for additional consulting or an escalation factor, as the exact timeline for development is not known. Additional costs that may be associated with hoarding, haulage, maintenance and multi-year / multi-contractor phasing are also excluded. Due to the conceptual nature of the design, unforeseen site conditions may add to the cost of development, although this risk is mitigated to some extent by the inclusion of the 20% contingency.

The estimated cost by stage is as follows:

- Stage 1 - $1.69 million
- Stage 2 - $2.10 million
- Stage 3 - $753,000
- Ongoing Work (Wayfinding and Weed Control) - $130,000

11.0 Next Steps

Once the North Telford Recreational Lands Concept Design Plan has been approved, the City of Leduc can proceed with development of the park in a phased approach. Budget will be allocated to each phase or stage of work over a number of years, as the City balances the development costs of the park with other planned projects in Leduc.

The eastern portion of the park, south of the future Harvet Industrial Park, has not yet been allocated to the City of Leduc as Municipal Reserve. The timeline for the development of the industrial park is subject to the developer's internal considerations and may not move forward for a number of years. Park development activities in this area may need to be deferred until the land has been dedicated for public use.

The City of Leduc should also continue to pursue the design and construction of multi-way connections to the park at the west and east ends of the site. The eastern connection may be several years away from realization, as the dedication of Municipal Reserve lands along the north shore of Telford Lake is also tied to developer timelines that are not within the control of the City. At the west end of the park, there are challenges with routing the multi-way through an existing residential area, which the City is currently working to address.

It is the intent of this report to provide a foundation for the development of the North Telford Recreational Lands that will guide the City of Leduc in creating a municipal amenity that brings vitality and accessibility to this important ecological area, and a park that is unique in the region.

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Appendix A

Detailed Public Engagement Information

Community Engagement Session Presentation

North Telford Recreational Lands Development

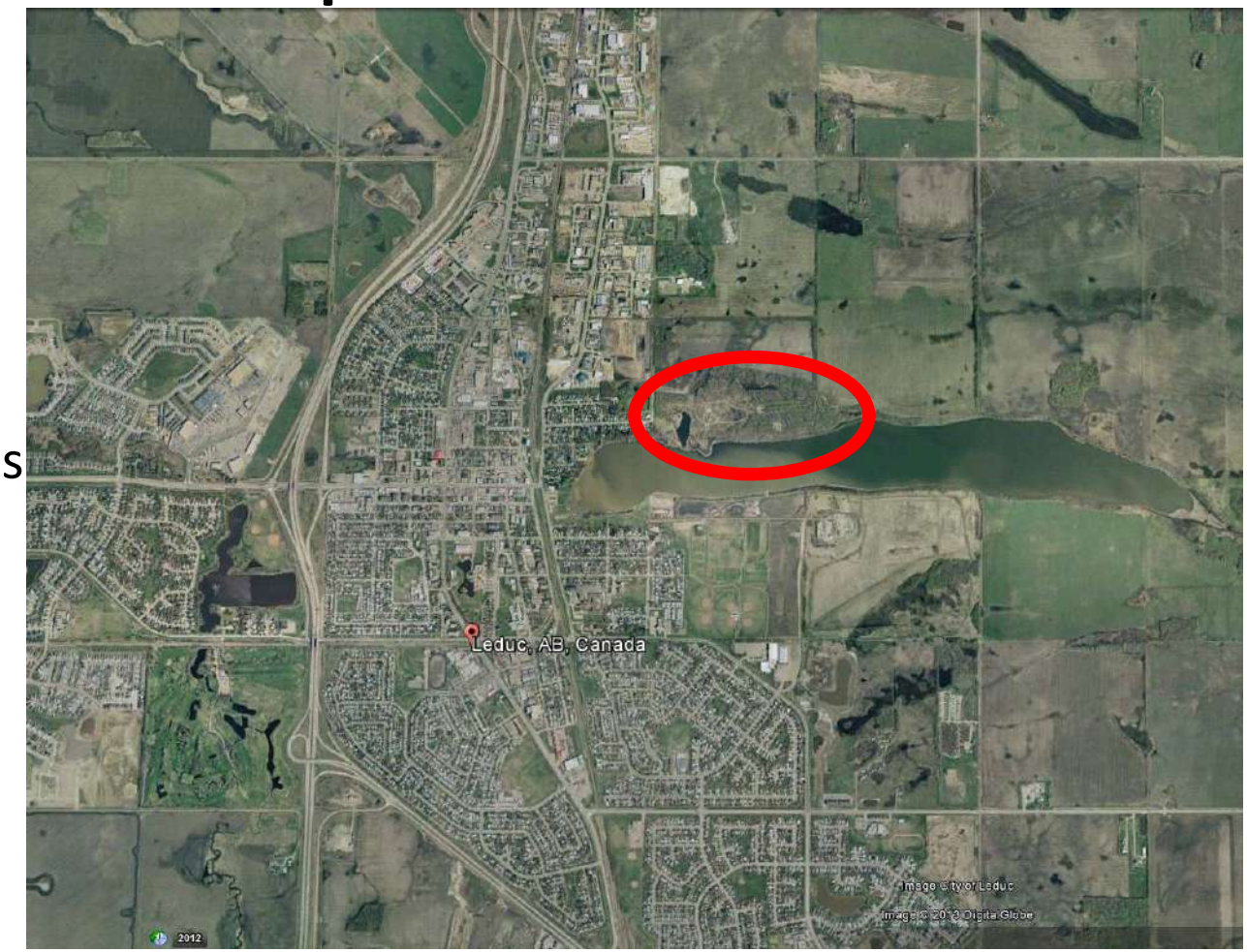
Community Engagement

Agenda

- About the project
- Why a concept plan
- Our process
- Context / Plan review
- Site assessment
- Discussion
- Next steps

Concept Plan

- A team has been retained by the City to develop a concept plan for the Sawridge Lands
- The City recently purchased the parcel and is looking to develop it into a park.



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Sawridge Lands

Sawridge Lands

Current Status

- The site has been used & enjoyed by many people over the years for many different uses:
  - Motorized vehicles
  - Mountain bikes
  - Runners / walkers
  - Nature enthusiasts
  - Social gatherings
  - Others
- Have you used it / visited it?
  - What activities have you done there?

Concept Plan

- Why develop a concept plan if the site is currently being used?
  - Protect and enhance ecological features
  - Safety concerns
  - Balance uses
  - Sustainable use
  - Manage the area
  - Other….

Our Process

- Context & Market Assessment
- Plan Review
- Site Analysis
- Consultation
- Concept Development
- Review
- Concept Plan Finalized

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Context

- Leduc's population – 27,241 (2013)
  - ↑ 6.9% from 2012
- Young population (median age is 34.0 vs 36.5 prov'l)
- Majority of population (60%) is east of QE II
- Younger families are generally living away from established neighbourhoods

Plan Review

– Telford Lake Master Plan (2010)
  - Mountain bike & cross country ski trails (granular)
  - Mountain bike terrain park
  - Walking / interpretive trails
  - Multiway – paved trail
  - Day use & community / neighbourhood park

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Site Analysis – Area Context

North Telford Recreational Lands Development

EXISTING CONDITIONS
Context

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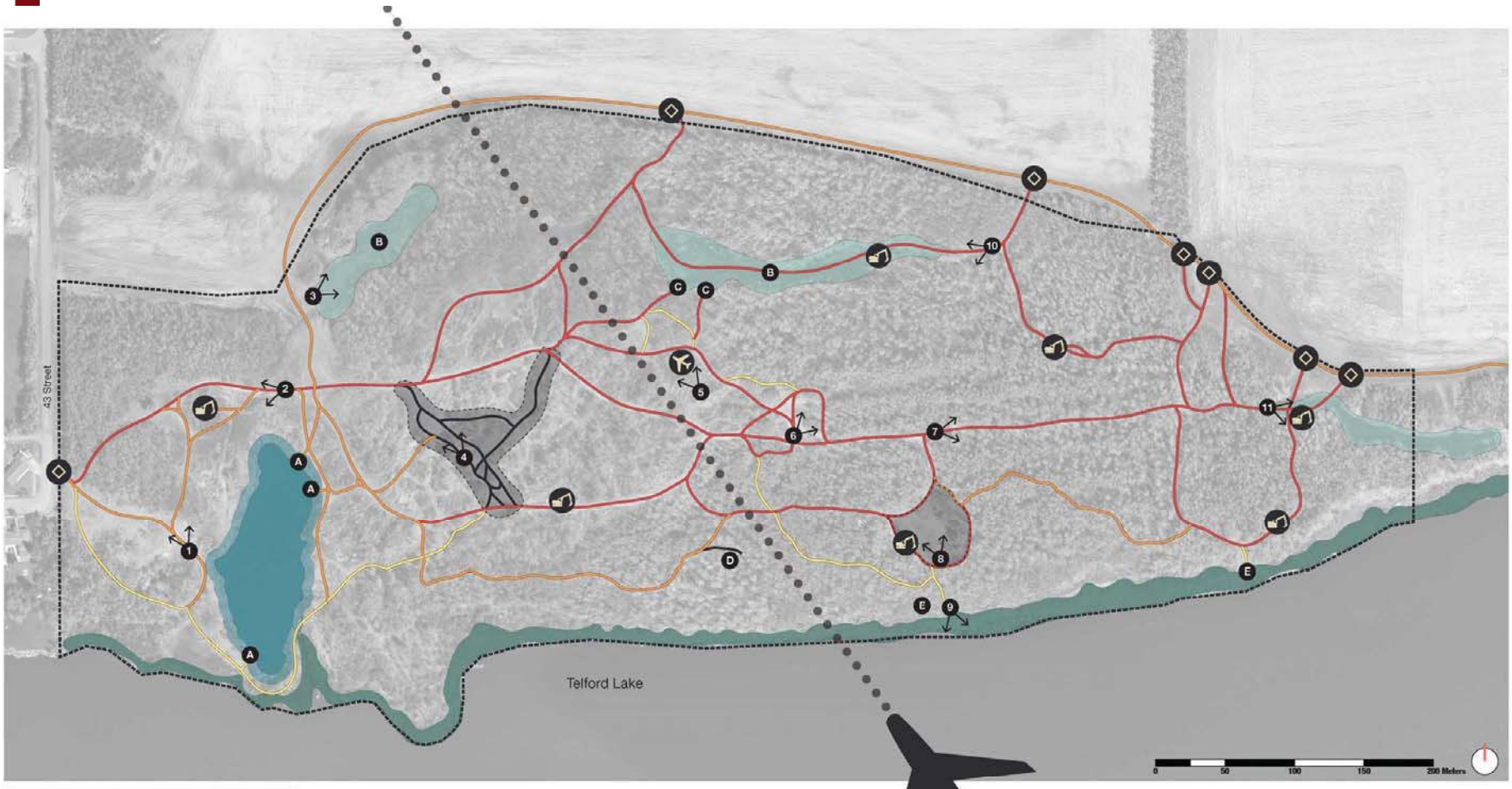
Legend

- Sawridge Business Park Boundary
- Harvest Industrial Park Boundary
- Proposed Municipal Reserve Boundary
- Existing Primary Multiway
- Roadway
- Train Tracks
- P Proposed Parking Lot
- Project Boundary

NOTE: SUBDIVISION LOT LAYOUTS ARE CONCEPTUAL AND SHOWN FOR INFORMATION ONLY

Site Analysis – Trails / Amenities



Sawridge Lands Park Development

EXISTING CONDITIONS

Trail Conditions + Amenities

Legend

- Wetland - Class I
- Wetland - Class II
- Wetland - Fringe
- Access Point
- Major Debris/Structure
- 1973 Plane Crash Debris
- Project Boundary
- Informal Trail - Good Condition
- Informal Trail - Moderate Condition
- Informal Trail - Poor Condition
- Informal Mountain Biking Trail
- Existing Informal Bike Park
- Right path

Notes

A. Existing wetland access for trail users and off-leash dogs. Wetland access should be minimized to allow for habitat regeneration and protection of rare plant species.

B. Trails through seasonal wetland (Class II) should be removed and appropriate buffer zone created.

C. Incomplete trails do not connect to larger network. Trail reclamation required.

D. Bike jump exists as an offshoot of minor informal trail. Bike activity should be concentrated in designated areas to allow for habitat regeneration and protection.

E. Break in vegetation allows for unobstructed views of Telford Lake.

Site Analysis – Trail Condition

Trail Condition Criteria

POOR CONDITION

- severe rutting due to vehicular use
- saturated soil
- repair/reclamation work extensive
- extreme slope

MODERATE CONDITION

- minor rutting due to vehicular use
- minimal soil saturation
- path overgrown
- repair/reclamation work minimal
- pathway alignment visible
- gradual slope

GOOD CONDITION

- no rutting
- pathway alignment clearly visible
- gradual slope

Major Findings

1. Vehicular use of informal trails has resulted in major rutting of primary trails through Telford Park. This has caused many trails to become unusable.

2. Two major informal trails bisect Class II Wetlands. Wetlands should be protected and trails reclaimed.

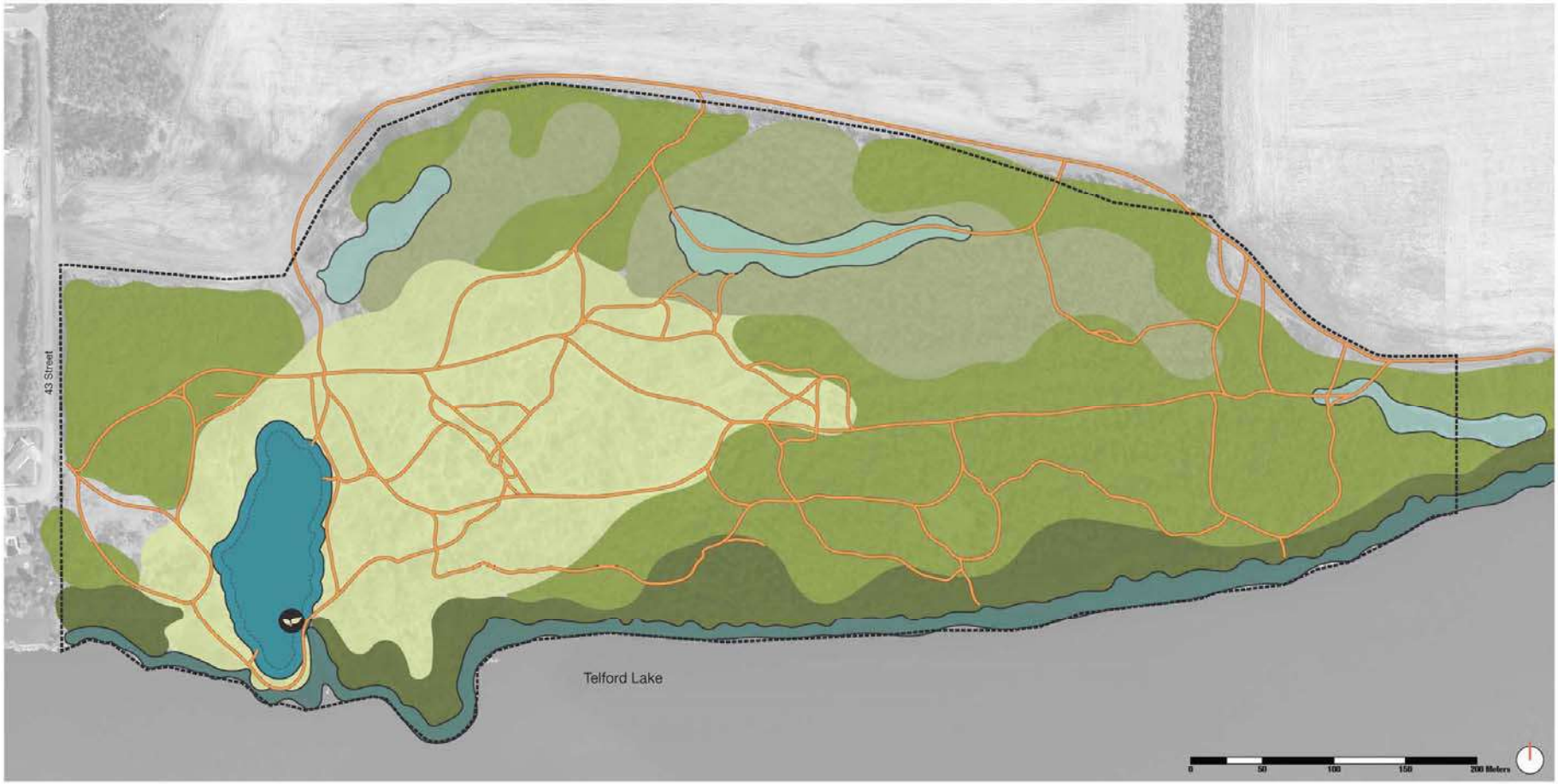
3. Vehicular access along the north edge of the site has resulted in extensive trail and habitat degradation.

4. Large-scale debris is scattered throughout the site and will need to be removed. There is opportunity to integrate abandoned cars and other debris into bike park infrastructure.

5. Plane debris is scattered through site, although the majority is located in the centre of the park. Interpretive opportunities exist.

6. The common weed, Tansy, has spread over majority of the site. This is classified as a noxious weed under the Alberta Weed Act and must be controlled. Prior to planting of native species, a removal plan will need to be developed to allow native species to flourish.

Site Analysis - Vegetation



Sawridge Lands Park Development

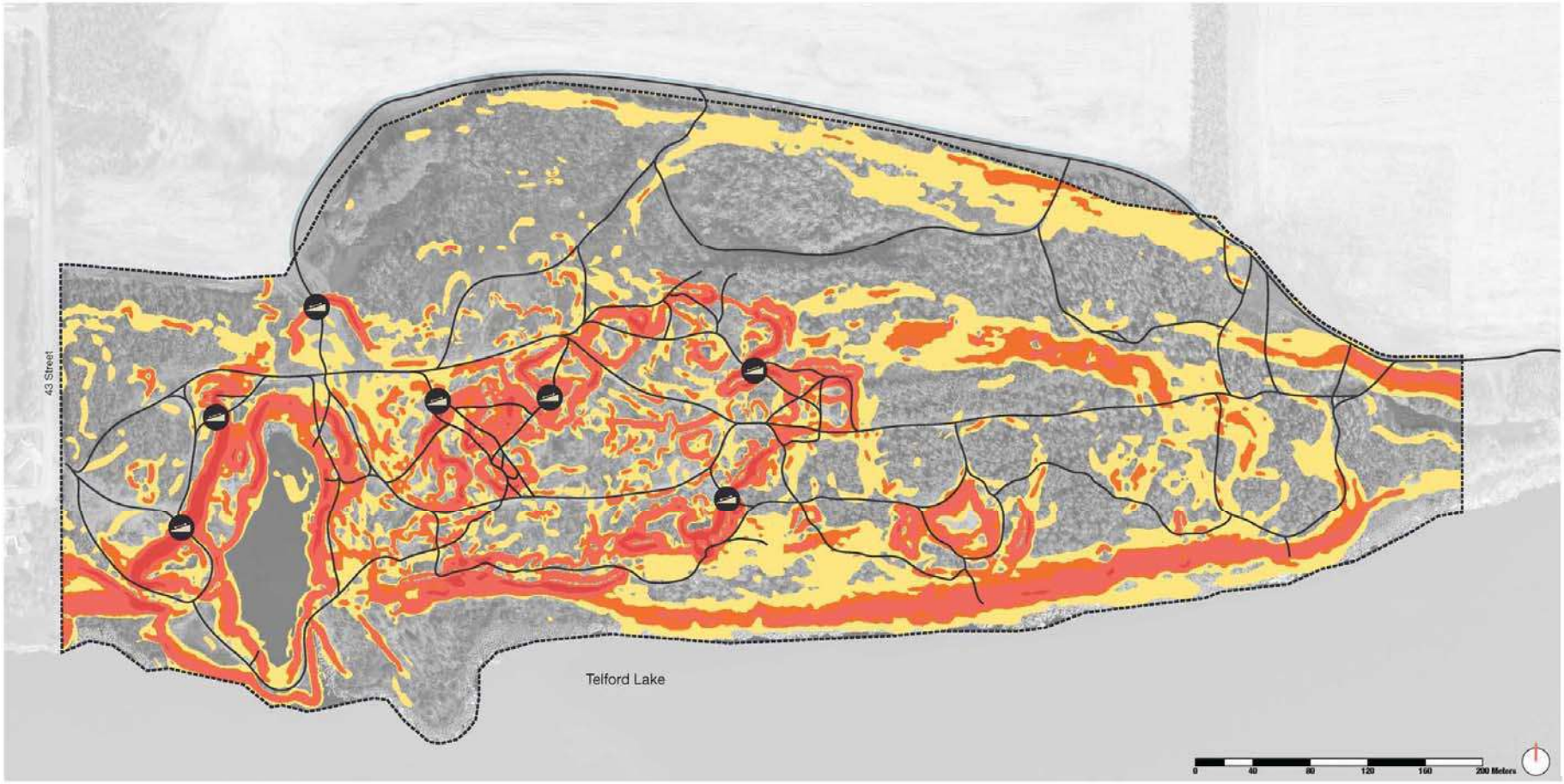
EXISTING CONDITIONS

Vegetation Classification

Legend

- Wetland - Class I
- Wetland - Class II
- Wetland - Fringe
- Early Seral Aspen
- Late Seral Aspen
- Riparian vegetation
- Balsam Poplar
- Informal Trail
- Project Boundary
- Rare Species

Site Analysis - Slope



Sawridge Lands Park Development

EXISTING CONDITIONS

Slope Analysis

Legend

- Slope Gradient 5 - 10%
- Slope Gradient 10-15%
- Slope Gradient 15-40%
- Slope Gradient 40% and steeper
- Informal Trail
- Major Slope Gradient on Informal Trail
- Project Boundary

Trail Considerations

Informal trail overlap with steep slopes will need to be analyzed for either regrading or integration into mountain bike terrain park. Appropriateness of regrading will need to consider habitat disturbance, soil saturation and overall trail connectivity.

40% AND GREATER SLOPE EXAMPLES

Site Analysis - Drainage

Sawridge Lands Park Development

EXISTING CONDITIONS

Site Drainage

Legend

- Drainage basin
- Informal trail
- Drainage Flow
- Drainage Direction
- Project Boundary

Trail Considerations

Informal trail overlap with drainage basins will need to be analyzed for either repair or reclamation. In areas of soil saturation and poor trail conditions, reclamation rather than repair should be prioritized. Where existing primary trails overlap with drainage basins, trail design should mitigate degradation due to freeze-thaw cycles and allow for appropriate bearing loads.

- Potentially saturated informal trail
- Connection between saturated and unsaturated informal trail

Discussion

- What concerns do you have (if any) regarding the development / use of the lands?
  - Will there be any negative consequences of this?
- What types of uses do you think should be on the site?
  - Where would these activities occur?
- What types of amenities are needed?
  - Where would these amenities go?
- Are there amenities or uses that are not appropriate?

Discussion

- What is the value of having this park developed?
- What is your opinion about protecting natural habitat (even if it means restricting access to portions of the site)?
  - How do we balance some development with the preservation aspects?
- Is this a city resource or a regional resource?

Next Steps

- Host several discussion groups including:
  - Service clubs
  - Nearby residents
  - Schools / students
  - City staff
  - City boards (Parks, Recreation and Culture Board & Leduc Environmental Advisory Board)
- Public Input Open House
  - Tuesday November 19th; LRC; 6:30 p.m. to 8:30 p.m.
- Draft Concept Plan
- Review
- Finalize

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Detailed Engagement Session Feedback

Black Gold Outreach School (November 13, 2013)

- Great resource for learning
  - Biology, pond life
- Interpretive centre at north west near parking along with picnic sites and fire pits
- Maintain natural areas and access along northern edge should be prevented
- Would like to see permanent washroom buildings not porta-potties
- Some concerns were expressed about run off from the industrial site north of the North Telford Recreation Lands
- Regional resource

Christ the King School, Recreation Leadership class (November 14, 2013)

- Non motorized use – maybe the installation of bollards would help prevent motorized access
- Natural areas with signage that interprets nature. Maps would be good as well.
- Trails are good as is a terrain park and BMX track
- Could use the large open area on west side for gatherings
- No off leash in certain areas
- Recognition that the noise from construction could be a nuisance for neighbours
- This park is considered a regional resource.
- Used to run and bike.
- Include hiking paths, fire pits, terrain park, large open area for banquets
- Bathrooms, group use area
- Concerns about what will happen in the area of developed
- What will happen to space behind the LRC
- Interpretive signs with nature theme, maps as well

Community Groups / Service Clubs (November 14, 2013)

What concerns do you have (if any) regarding the development / use of the lands?

- OHV group- that they will not be allowed to use it because preference will be on non-motorized activities.
- Why do OHV groups never get accommodated in any open space/trail development?
- Concern from other groups about potential OHV use, and preference to keep area natural and as undeveloped as possible.
- Lots of partying / bad behaviour going on their right now, concern would be continuing to let this stuff happen.
- Concerns about impact of adjacent business park.
- What impact will it have on Sawridge recreational development
- Word “development” implies massive change to land when in reality minimal development and management as a natural area might be best.

- Lack of truly “natural” spaces in the area
- Need to ensure that resources are in place for ongoing maintenance and management. The site needs to include only sustainable uses – in other words the uses allowed in the park should not cause deterioration of the site.
- Concerns expressed that too much of the site will be developed. There needs to be natural space in Leduc. This could be like the Strathcona Wilderness Centre, offering a wild experience in the city. A concerted effort to leave some portions undeveloped should occur. While people may explore that portion of the park there will not be developed trails to fully enable it.

What types of uses do you think should be on the site?

- Minimal usage
- Nature viewing and enjoyment
- OHV users- machines are using lake and Sawridge lands anyway, why not allow but control their access.
- Depends on site conditions and cost.
- Do we know about condition of site? Clean-up that may be required? Etc.
- Trails already exist on site, natural to reinforce some of these for walking, running, hiking, etc.
- Gravel pit area provides opportunities for biking and maybe other activities.
- Paddling centre on south portion of lake could use a staging/docking area on north side. These lands could provide opportunities.

What types of amenities are needed?

- Depends on uses
- Parking and traffic flow needs to be respectful of neighborhoods and efficient
- Parking lot / staging area should have basic amenities (e.g. toilets, garbage cans) but doesn’t need to be too extravagant. Parking needs to reflect the entire site’s usage
- A natural playground might be a good idea.
- If docking area and/or picnic space on shoreline, will need some basic amenities.
- Bank of lake is steep- might need to elevate any dock that is built
- Interpretive signage would be great, especially if it highlights certain facts and features about the site (e.g. plane crash).
- Popularity of geocaching could be built on by creating more locations on the site.
- Some interest was expressed from snowmobile club about having access to the site
- If OHV allowed need staging area for trailers, sleds, etc.

Are there amenities or uses that are not appropriate?

- Any use of the site by masses/groups should be discouraged (as per previous comments best use is as natural area).
- Vehicle access has destroyed many trails (many large ruts). If these trails are remediated need to ensure they are protected.
- Complaints about motorized vehicle use in the park
- Commercial businesses don’t really belong

What is the value of having this park developed?

- Leduc needs natural areas and purposing it for that use would benefit the community.
- People in the community (especially youth) need to be exposed to nature.
- Would cut down on deviant behaviour.
- Provide new activities and resources for the community (e.g. natural playground, nature trails, mountain bike course, etc).

What is your opinion about protecting natural habitat (even if it means restricting access to portions of the site)?

- As per previous comments….think this notion is great and much needed (Leduc is becoming very urban and developed).
- As for balancing uses on site:
- City should identify portions of the site that have already been disturbed (e.g. gravel pit) and use those for purposed activities, while restricting access to undisturbed areas.

Is this a city resource or a regional resource?

- Depends on types of use. It will serve the neighbourhood and the city. With few areas like this around it can be considered regional
- If more purposed activities (e.g. OHV use, cross-country running meets, mountain biking) probably some regional potential.
- If natural area probably more of a local asset/resource (maybe not even Citywide but neighborhood)
- However people in southern part of capital region looking for natural areas. Maybe this could attract some people from outside Leduc.

North Telford Residents (November 18, 2013)

What concerns do you have (if any) regarding the development / use of the lands?

- Many concerns by local residents (for years).
- This past summer was the first year that the fire department hadn't been out there multiple times.
  - City putting up a fence has helped with this.
- Regarding future development:
  - People are concerned over traffic flow and parking.
  - Some development might help control bad behaviour.
  - No way any OHV use should be permitted.
- Best scenario would be no or very minimal development and better control / management of the site (restricting access to partyers, motor vehicle).
  - However believes City will develop site and that there is little chance there won't be some development on the site.
- Traffic flow is a major concern regarding development.
- There were questions raised about the monitoring of the water. This was partially seen as important due to the run-off from the north of the site (soon to be developed industrial park).

What types of uses do you think should be on the site?

- Some minimal use would be ok
- Would prefer more passive activities such as nature watching, hiking and walking as opposed to more group or organized activities. A lookout over the lake would be good
- Whatever the use is on the site, neighborhood needs to be consulted and traffic flow / parking made a priority.
- Needs to be wheelchair accessible

What types of amenities are needed?

- Additional fencing/access control
  - Current fence has helped
- Trash cans
- Washrooms
- Sufficient parking, but a small lot as not to encourage mass use.
- Some interpretive and directive signage would be good.
  - Many in the neighborhood have connections to that land and wouldn't mind seeing a few stories/facts shared.
- Incorporate a memorial element

Are there amenities or uses that are not appropriate?

- OHV use
- Large retail businesses or operations (e.g. rental)
- Vehicle access within the site
- Anything that will negatively impact the community
- Lighting isn't required and might be issue for some residents directly adjacent to park

What is the value of having this park developed?

- Controlling access
- Preventing bad behaviour
- Activities for all ages in natural environment

What is your opinion about protecting natural habitat (even if it means restricting access to portions of the site)?

- Protecting natural areas is important (and not always done well in Leduc).
- Should be a priority.
- Parts of site have already been destroyed and never properly reclaimed.
  - This is an opportunity to do this.
  - Limit development to northwest corner

Is this a city resource or a regional resource?

- Should be more neighborhood focused (development should be minimal)

- Maybe could attract people to community (as residents)
- If City access there needs to be proper amenities

City Administration (November 19, 2013)

- Secure from motorized vehicles but needs access for emergency vehicles
- ER / MR east of site is still to be negotiated / finalized
- Current use has defined the need
- Mix of trail types, ensure universal access to viewpoint
- Integrate with City way-finding strategy
- Discussion about the need to close 43 Street still to be resolved
- Fire risk should be considered in design (e.g. trail alignment)
- Lighting is desirable from a safety perspective, motion activated lights along main multiway were discussed
- Amenities within the park need to be accessible by vehicle for maintenance
- Maybe a place to park the weed harvester that has to be towed from public works yard to the southside
- In the ASP on the east side, the ER / MR is not as significant as shown on the mapping. There is consideration for putting a storm water pond in the ER / MR east of the park site
- There will be competing interests on the site
  - There may be weddings on site which could create parking issues, booking issues
  - There could be multiple events on the site as well
    - Who is allowed to book activities? If booking is allowed then the place needs to be policed and maintained
- Activities onsite: BMX, mountain bike terrain park
  - The users have defined the use already
  - Natural play area with terrain challenge, climbing wall, ropes
    - Next to multiway
    - Issues with security however, maybe with some lighting – needs to be visible
- Interpretive signage – recognize the plane
- Ensure trails align with ASP
- The site could be used to host portions of provincial games – maybe have a BMX track

Parks Recreation Culture Committee / Leduc Environmental Advisory Board (November 21, 2013)

- Multiway through centre of the site makes sense and is central
  - Would minimize erosion by having the trail on a steep slope
- Development on north west is a good spot as close to road and no impact on canopy
- Issues of conservation vs. development
- Allows for different groups and abilities to use the site
- The gravel moguls in the northwest part of the site could serve as a good source of gravel needed for trails
- There are a lot of thistles that would need to be addressed in northwest corner

- The wetland in northwest portion has frogs
- Develop tables and picnic shelter where the right of way enters the site along the west side – there is no tree canopy to disturb
- Could have a platform for rowing on outcropping along shore
- Not a paved multiway but a shale one and retained by logs
- Make the area healthy again by taking out trails in some areas
- Connect multiway to Telford house, there is parking there already.
  - It is a long walk and would mean the development of a boardwalk
- Discussion between conservation and development
- Consider a natural playground

Leduc City Council – Committee of the Whole (December 9, 2013)

- No through traffic on 43 Street but a small parking lot around the 53 Avenue with a turn around
  - Where it is cleared
  - Not a big parking lot, the main development would occur on the northwest portion of the site
  - Need signage directing people to the larger site
- Maybe use speed bumps to help slow traffic if we don't block traffic
- Build a bigger parking lot on the northside of the site
- Put a turn around on 43 Street near the back alley
- Don't have the multiway going through the alley – people don't want people going by their backyards
- Put parking on the east side with access through the industrial park
- Like the shelter near the parking lot, bathrooms too
- No lighting in the park
- Can we preserve the "Whiskey Hill" name, we don't want it fading away

Public Open House (November 19, 2013)

Please list any other features you think should be considered for the North Telford Recreation Lands.

- bird feeding area
- boardwalk in the water
- boardwalks to access wetlands for birdwatching
- CCTV to protect the new facility from vandalism, or at least deter, or at the very least assist to investigate any crime perpetrated.
- extension of the multiway up to and through the new area on both the east and west sides, to link the south side of Telford Lake to the north side and provide a destination/circuit for walking, biking, cross country skiing etc.
- Festival grounds. To hold an outdoor music festival. Possibly in future an amphitheater. Plenty of playgrounds in Leduc. Not necessary
- Hahaha, you spelled think wrong

- I would say if you are doing cross country skiing then another winter type activity area (skating/hill) might be good and then a warm up shelter would be valuable but otherwise a warm up shelter is probably not necessary. And playground for little kids only if parking is very close by.
- Leave as much of the land in its natural state should be more of an interpretive sight.
- Lighted parking perhaps video surveillance to keep us all safe
- maintained skating rink
- maybe a small convience stand serving drinks and small snacks
- natural playground, interpretive programming
- observation area and bird watching decks; boat ramp
- Off leash area for dogs.
- off leash dog runs
- Outdoor BBQ pits, outdoor skating
- pontoon bridge connecting multiway on south of telford to planned trails
- purchase all land around lake for lake protection and complete trail around lake
- Reclamation http://en.wikipedia.org/wiki/Land_reclamation Can we bring Back Telford Lake back when I lived there in the Sixties ?
- resting benches
- Security/emergency phones and lighting at security phones as well as cameras
- the north boundary could have commercial and retail space available and a road (scenic drive) that accesses retail, parking and picnic areas

What concerns do you have (if any) regarding the development of a park on the North Telford Recreation Lands?

- making it too artificial with signs and signs, poured concrete and asphalt and every corner a picnic table rather than creating a natural refuge for people, plants and animals
- No commercial development
- No concerns but wish that we in the Bridgeport area could look forward to something built here. There is nothing really for us without having to drive to the East end of Leduc for recreation.
- people not respecting the facilities provided
- Policing and safety
- Rehab the land as much as possible, and stabilize what we have without disturbing the forest canopy too much (it took years to establish the cover we have now- let's not blow it).
- security / safety for lone walkers, etc
- supervision and patrol after hours; don't overdevelop, leave as much natural area as is reasonable
- terrain park - ambulance / police / city accessibility becomes a spot for gathering and groups there should have proetective services available. Maintenance is ahuge concer for me / multiway clearance costs, signage (interpretive) is an issue due to continual upkeep in teh situation of vandalism
- That it be held environmentally responsible
- That some pinhead will somehow be able to turn a fantastic idea - (mountain bike park & xcountry paths) into something completely stupid (spray park extension or toddler park)
- the clean up of old trees and dead bush

- the integrity of north telford residents; keepin the area as natural as possible
- too much natural beauty being destroyed for trails
- vandalism and illegal participation such as drug use, the park would offer shelter for illegal activities
- vandalism if not patrolled
- Youths hanging around without supervision, litter.

Please use the following space to provide any other comments regarding the development of a concept plan for the North Telford Recreation Lands.

- a broader vision of buffering the industrial with light commercial would provide better utilization and access to different parts of the park
- About time, this could be amazing.
- bridge to connect north and south rec areas
- Continue to look at opportunities to host provincial athletic activities just as on the water
- garbage areas
- I don't think the whole area needs to be developed at the same time - keep the back areas natural and only enhance the "trail areas"
- I love our walking trails, thank you for doing this
- I think it is important to look into possible events it could attract e.g. mud runs or mountain bike races and ensure that those would work with the design
- I think it's a great idea and I love Telfor Lake
- I think Telford is very beautiful which is why I would like to see trails so everyone gets the chance to experience it
- I think that whoever setup this plan did a very good job. I also like the idea of asking the people who will use the Recreation Lands what their suggestions are.
- I would like to see this space as a place where adults and children can be in contact with nature to whatever degree they are comfortable. Whether it is walking a multiway path or playing on a natural playground or getting off the beat and path and immersing yourself in the natural surroundings. I would really like to see interpretive programming offered for adults, children/students and families.
- I would prefer to see the boating facility done first
- It would be nice to have an off leash area where the dogs can go to the water, however I know the park is across the lake, and this likely won't happen. Thanks!
- leave it as natural as possible; no paved trails; no motor vehicles; host long distance run (half marathon)
- none
- please keep it as natural as possible I appreciate our green space and the good job our park planners have done
- remove the old buildings on south side of lake wehre the municipal shop used to be
- Should leave the plane crash site intact as a learning tool.
- speed bumps on 53 ave to slow traffic to site
- staging zones for larger user groups ie mountain biking, hiking groups. New archery range? Possibly even a gun range
- thank you! For keeping it semi-natural as opposed to converting it to residential
- the sooner the better

- there should be small park control offering safety to people who use the park
- This area is a Gem and we should use it to its full potential!
- this is a great opportunity to add a unique park and activity area to the City of Leduc with links to the other already fabulous park areas.
- We have such a beautiful resource right here in our city. We need to take good care of it and make sure we are keeping it clean for us and the animals to enjoy!!! Thanks for making more space for people to enjoy the beautiful lake.
- You can Extend BlackGold Drive East to the Lions Park and construct an Over pass to cross Telford Lake and establish our first inner Ring Road. BlackGold Drive by moving the East/West Rail Line outside Corporate Limits.

Appendix B

Cost Estimates and Phasing Plans

Detailed Preliminary Opinion of Probable Construction Cost

NORTH TELFORD RECREATIONAL LANDS DEVELOPMENT
CONCEPTUAL DESIGN
Preliminary Opinion of Probable Cost

SUMMARY OF COSTS BY STAGE 5/16/2014

STAGE 1		
A. SITE CLEAN-UP		
A1	CONSTRUCTION SUBTOTAL	**$84,400**
A2	Contingency (20% of Line A1)	**$16,880**
A3	Mobilization / Demobilization (10% of Line A1)	**$8,440**
	SUBTOTAL PHASE A	**$109,720**
B. ROAD CLOSURE (43RD ST.) + PARKING LOT		
B1	CONSTRUCTION SUBTOTAL	**$529,760**
B2	Contingency (20% of Line B1)	**$105,952**
B3	Mobilization / Demobilization (10% of Line B1)	**$52,976**
	SUBTOTAL PHASE B	**$688,688**
E. WASHROOM BUILDING		
E1	CONSTRUCTION SUBTOTAL	**$357,150**
E2	Contingency (20% of Line E1)	**$71,430**
E3	Mobilization / Demobilization (10% of Line E1)	**$35,715**
	SUBTOTAL PHASE E	**$464,295**
H. PICNIC AREA AND SHELTER		
H1	CONSTRUCTION SUBTOTAL	**$193,850**
H2	Contingency (20% of Line H1)	**$38,770**
H3	Mobilization / Demobilization (10% of Line H1)	**$19,385**
	SUBTOTAL PHASE H	**$252,005**
I. RUSTIC PICNIC AREAS, BENCHES, GARBAGE RECEPTACLES		
I1	CONSTRUCTION SUBTOTAL	**$132,100**
I2	Contingency (20% of Line I1)	**$26,420**
I3	Mobilization / Demobilization (10% of Line I1)	**$13,210**
	SUBTOTAL PHASE I	**$171,730**
ESTIMATED TOTAL STAGE 1		
1	SUBTOTAL (Line A1 + B1 + E1 + H1 + I1)	**$1,297,260**
2	Contingency (20% of Line 1)	**$259,452**
3	Mobilization / Demobilization (10% of Line 1)	**$129,726**
	TOTAL STAGE 1	**$1,686,438**

STAGE 2		
C. MULTIWAY TO TERRAIN PARK		
C1	CONSTRUCTION SUBTOTAL	**$338,260**
C2	Contingency (20% of Line C1)	**$67,652**
C3	Mobilization / Demobilization (10% of Line C1)	**$33,826**
	SUBTOTAL PHASE C	**$439,738**

D. TERRAIN PARK		
D1	CONSTRUCTION SUBTOTAL	**$433,375**
D2	Contingency (20% of Line D1)	**$86,675**
D3	Mobilization / Demobilization (10% of Line D1)	**$43,338**
	SUBTOTAL PHASE D	**$563,388**

F. PERIMETER LOOP TRAIL + INSIDE LOOP		
F1	CONSTRUCTION SUBTOTAL	**$453,440**
F2	Contingency (20% of Line F1)	**$90,688**
F3	Mobilization / Demobilization (10% of Line F1)	**$45,344**
	SUBTOTAL PHASE F	**$589,472**

G. CHILDREN'S PLAY AREA		
G1	CONSTRUCTION SUBTOTAL	**$157,425**
G2	Contingency (20% of Line G1)	**$31,485**
G3	Mobilization / Demobilization (10% of Line G1)	**$15,743**
	SUBTOTAL PHASE G	**$204,653**

O. COMPLETION OF MULTIWAY		
O1	CONSTRUCTION SUBTOTAL	**$193,355**
O2	Contingency (20% of Line O1)	**$38,671**
O3	Mobilization / Demobilization (10% of Line O1)	**$19,336**
	SUBTOTAL PHASE O	**$251,362**

R. NATURAL TRAILS + STAIRS		
R1	CONSTRUCTION SUBTOTAL	**$42,860**
R2	Contingency (20% of Line R1)	**$8,572**
R3	Mobilization / Demobilization (10% of Line R1)	**$4,286**
	SUBTOTAL PHASE R	**$55,718**

ESTIMATED TOTAL STAGE 2		
1	SUBTOTAL (C1 + D1 + F1 + G1 + O1 + R1)	**$1,618,715**
2	Contingency (20% of Line 1)	**$323,743**
3	Mobilization / Demobilization (10% of Line 1)	**$161,872**
	TOTAL STAGE 2	**$2,104,330**

STAGE 3		
J. CHALLENGE ZONE(S)		
J1	CONSTRUCTION SUBTOTAL	**$155,100**
J2	Contingency (20% of Line J1)	**$31,020**
J3	Mobilization / Demobilization (10% of Line J1)	**$15,510**
	SUBTOTAL PHASE J	**$201,630**

L. RECLAMATION + RESTORATION		
L1	CONSTRUCTION SUBTOTAL	**$217,800**
L2	Contingency (20% of Line L1)	**$43,560**
L3	Mobilization / Demobilization (10% of Line L1)	**$21,780**
	SUBTOTAL PHASE L	**$283,140**

M. PLANE SPOTTING / CRASH VIEWING AREA		
M1	CONSTRUCTION SUBTOTAL	**$53,550**
M2	Contingency (20% of Line M1)	**$10,710**
M3	Mobilization / Demobilization (10% of Line M1)	**$5,355**
	SUBTOTAL PHASE M	**$69,615**

N. CANOE LANDING(S)		
N1	CONSTRUCTION SUBTOTAL	**$19,500**
N2	Contingency (20% of Line N1)	**$3,900**
N3	Mobilization / Demobilization (10% of Line N1)	**$1,950**
	SUBTOTAL PHASE N	**$25,350**

P. RARE PLANT SPECIES / SIGNAGE		
P1	CONSTRUCTION SUBTOTAL	**$19,900**
P2	Contingency (20% of Line P1)	**$3,980**
P3	Mobilization / Demobilization (10% of Line P1)	**$1,990**
	SUBTOTAL PHASE P	**$25,870**

Q. LOOKOUTS (3)		
Q1	CONSTRUCTION SUBTOTAL	**$113,555**
Q2	Contingency (20% of Line Q1)	**$22,711**
Q3	Mobilization / Demobilization (10% of Line Q1)	**$11,356**
	SUBTOTAL PHASE Q	**$147,622**

ESTIMATED TOTAL STAGE 3		
1	SUBTOTAL (Line J1 + L1 + M1 + N1 + P1 + Q1)	**$579,405**
2	Contingency (20% of Line 1)	**$115,881**
3	Mobilization / Demobilization (10% of Line 1)	**$57,941**
	TOTAL STAGE 3	**$753,227**

ONGOING WORK		
S. WEED CONTROL		
S1	CONSTRUCTION SUBTOTAL	**$10,000**
S2	Contingency (20% of Line S1)	**$2,000**
S3	Mobilization / Demobilization (10% of Line S1)	**$1,000**
	SUBTOTAL PHASE S	**$13,000**

K. WAY FINDING		
K1	CONSTRUCTION SUBTOTAL	**$90,000**
K2	Contingency (20% of Line K1)	**$18,000**
K3	Mobilization / Demobilization (10% of Line K1)	**$9,000**
	SUBTOTAL PHASE K	**$117,000**

ESTIMATED TOTAL ONGOING WORK		
1	SUBTOTAL (Line S1 + K1)	**$100,000**
2	Contingency (20% of Line 1)	**$20,000**
3	Mobilization / Demobilization (10% of Line 1)	**$10,000**
	TOTAL ONGOING WORK	**$130,000**

TOTAL FOR ALL STAGES		
1	Stage 1	**$1,686,438**
2	Stage 2	**$2,104,330**
3	Stage 3	**$753,227**
4	Ongoing Work	**$130,000**
	TOTAL FOR ALL STAGES	**$4,673,994**

Notes:

1. This is a preliminary opinion of probable costs, not a guaranteed cost figure. Due to the conceptual nature of the concept plans these figures may not reflect actual final costs.
2. This cost estimate is based on concept plans dated Apr. 16, 2014.
3. Cost estimate does not include; haulage, maintenance (including landscape maintenance by contractor), unforeseen site conditions, and other costs associated with construction phasing and staging.
4. All costs include supply and installation unless otherwise noted.
5. All costs are exclusive of GST.

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
A. SITE CLEAN-UP						
1.01	Replace Existing Barbwire Fence	Remove existing barbwire fence at 53 Ave. entrance and replace with post + cable fence	40	LM	$85.00	$ 3,400.00
1.02	Demolish Subgrade Loading Bay	Remove steel, wood and concrete structure (approx. 3 x 4 x 3m high). Fill and re-grade excavation.	1	LSUM	$5,000.00	$ 5,000.00
1.03	Prepare Existing Trails for Temporary Construction Access	Fill ruts with crushed gravel and remove fallen trees and branches blocking trails. Approx. 2000m of trail work. Estimated 600m3 of gravel required.	1	ALLOW	$50,000.00	$ 50,000.00
1.04	Remove Debris - Vehicles	Load and haul abandoned vehicles and remove to approved junk yard facility. Approximately 5 vehicles to be removed. Work to be done under dry conditions only.	1	ALLOW	$10,000.00	$ 10,000.00
1.05	Remove Debris - Large Trash	Load, haul and dispose of abandoned applicances, remaining debris from crashed airplane, bicycles and other large trash items. Work to be done under dry conditions.	1	ALLOW	$5,000.00	$ 5,000.00
1.06	Temporary Construction Fencing + Signage	Allowance to install temporary chain link fencing and construction signage as required to maintain public saftey.	1	ALLOW	$5,000.00	$ 5,000.00
1.07	Install Silt Fence Around Wetland	Install temporary silt fencing around Class V wetland.	400	LM	$15.00	$ 6,000.00
					SUBTOTAL, CONSTRUCTION	**$ 84,400.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 8,440.00
		Contingency (20% of Construction Subtotal)				$ 16,880.00
					TOTAL	**$ 109,720.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
B. ROAD CLOSURE (43RD ST.) + PARKING LOT						
1.08	New Cul-de-Sac - Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Area includes additional turning radius and ditch re-grading.	500	SQ.M.	$20.00	$ 10,000.00
1.09	New Cul-de-Sac - Grading	Grade new cul-de-sac and drainage ditch to tie into existing ditches on 43 St.	500	SQ.M.	$12.00	$ 6,000.00
1.10	New Cul-de-Sac - Asphalt Paving	Includes excavation, pitrun subbase, gravel base, and asphalt paving suitable for heavy vehicles.	170	SQ.M.	$65.00	$ 11,050.00
1.11	New Cul-de-Sac - Breakaway Barrier	Breakaway vehicle gate or bollards to restrict traffic on 43 St.	1	ALLOW	$5,000.00	$ 5,000.00
1.12	New Cul-de-Sac - Landscape Rehab	Placement of topsoil and seeding of disturbed area.	330	SQ.M.	$12.00	$ 3,960.00
1.13	43 St. Parking - Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil.	150	SQ.M.	$20.00	$ 3,000.00
1.14	43 St. Parking - Grading	Grade new parking area	150	SQ.M.	$12.00	$ 1,800.00
1.15	43 St. Parking - Gravel Paving	Includes excavation, pitrun subbase and crushed gravel paving suitable for heavy vehicles.	150	SQ.M.	$55.00	$ 8,250.00
1.16	43 St. Parking - Post + Cable Fence	Includes excavation, pitrun subbase and crushed gravel paving suitable for heavy vehicles.	40	LM	$75.00	$ 3,000.00
1.17	43 St. Parking - New Garbage Bin	Supply and install small double-door Hid-A-Bag garbage bin, including concrete pad.	1	EA	$2,000.00	$ 2,000.00
1.18	Main Parking Lot - Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Includes tree clearing.	5,700	SQ.M.	$25.00	$ 142,500.00
1.19	Main Parking Lot - Grading	Grade new parking area	5,700	SQ.M.	$12.00	$ 68,400.00
1.20	Main Parking Lot - New Culvert at 43 St.	New culvert where driveway crosses existing ditch	1	LSUM	$5,000.00	$ 5,000.00

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
1.21	Main Parking Lot - Gate at 43 St.	Steel road control gate to close parking lot	1	EA	$5,000.00	$ 5,000.00
1.22	Main Parking Lot - Asphalt Paving	Includes excavation, pitrun subbase, gravel base, and asphalt paving suitable for heavy vehicles.	2,200	SQ.M.	$65.00	$ 143,000.00
1.23	Main Parking Lot - Curb + Gutter	Cast-in-place concrete curb + gutter	360	LM	$95.00	$ 34,200.00
1.24	Main Parking Lot - Concrete Wheelstops		16	EA	$200.00	$ 3,200.00
1.25	Main Parking Lot - Line Painting		1	LSUM	$3,000.00	$ 3,000.00
1.26	Main Parking Lot - Gravel Collector Trail (3m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	210	SQ.M.	$40.00	$ 8,400.00
1.27	Main Parking Lot - New Garbage Bin	Supply and install small double-door Hid-A-Bag garbage bin, including concrete pad.	1	EA	$2,000.00	$ 2,000.00
1.28	Main Parking Lot - Landscape Rehab	Placement of topsoil and seeding of disturbed area.	3,500	SQ.M.	$12.00	$ 42,000.00
1.29	Main Parking Lot - Tree Planting	Estimated number of trees required. Assumes 60mm caliper deciduous.	20	EA	$450.00	$ 9,000.00
1.30	Miscellaneous Signage	Signage associated with road closure, parking lot entrances, park maps, and bylaw postings.	1	ALLOW	$10,000.00	$ 10,000.00
					SUBTOTAL, CONSTRUCTION	**$ 529,760.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 52,976.00
		Contingency (20% of Construction Subtotal)				$ 105,952.00
					TOTAL	**$ 688,688.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
C. MULTIWAY TO TERRAIN PARK						
1.31	Multiway + Ski Trail - Existing Trail Alignments - Trail Clearing	Clear and grub trees and shrubs. Area includes 3m trail width, 1m for snow clearing, 2m for skiing, and 1m clear width each side (total 8m wide). Assumes 3m already cleared due to previous use.	600	LM	$85.00	$ 51,000.00
1.32	Multiway- New Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 3m trail width and 1m clear width each side (total 5m wide). Stripping required for trail bed only (3m).	120	LM	$110.00	$ 13,200.00
1.33	Multiway - Asphalt Trail (3m Wide)	Includes excavation, gravel base, weed barrier fabric and asphalt paving.	720	LM	$238.00	$ 171,360.00
1.34	Multiway - Geogrid Stabilizer	Geogrid underlay in wet areas to stabilize trail base.	310	SQ.M.	$8.00	$ 2,480.00
1.35	Multiway + Ski Trail - Landscape Rehab	Rototilling and seeding along ski trail (2m width and trail verges (1m each side).	600	LM	$60.00	$ 36,000.00
1.36	Multiway - Landscape Rehab	Replace stripped topsoil and seed along trail verges (1m each side).	120	LM	$25.00	$ 3,000.00
1.37	Gravel Trail - Existing Trail Alignment (2m Wide)	Gravel access trail to north side of terrain park. Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	350	LM	$80.00	$ 28,000.00
1.38	Gravel Trail - Geogrid Stabilizer	Geogrid underlay in wet areas to stabilize trail base.	215	SQ.M.	$8.00	$ 1,720.00
1.39	Gravel Trail - Landscape Rehab	Rototill, place stripped topsoil and seed along disturbed trail verges (2m each side).	350	LM	$90.00	$ 31,500.00
					SUBTOTAL, CONSTRUCTION	**$ 338,260.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 33,826.00
		Contingency (20% of Construction Subtotal)				$ 67,652.00
					TOTAL	**$ 439,738.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
D. TERRAIN PARK						
1.40	Rough Grading	Overall bike park site grading	18,750	CU.M.	$8.00	$ 150,000.00
1.41	Dirt Jump Zone - Dirt Trail	Built with mineral soil	425	SQ.M.	$25.00	$ 10,625.00
1.42	Dirt Jump Zone - Rollers	Built with mineral soil	3	EA	$250.00	$ 750.00
1.43	Dirt Jump Zone - Berms	Built with mineral soil & SoilTac hardener	3	EA	$1,500.00	$ 4,500.00
1.44	Dirt Jump Zone - Table Top Jumps - Small	Built with mineral soil & SoilTac hardener	7	EA	$500.00	$ 3,500.00
1.45	Dirt Jump Zone - Table Top Jumps - Medium	Built with mineral soil & SoilTac hardener	5	EA	$750.00	$ 3,750.00
1.46	Dirt Jump Zone - Dirt Transitions - Jumps - Large	Built with mineral soil & SoilTac hardener	6	EA	$750.00	$ 4,500.00
1.47	Dirt Jump Zone - Engineered Trail Features	FlowForm LaunchPads & FlowForm Cannons	8	EA	$4,500.00	$ 36,000.00
1.48	Flow Trails - Dirt Trail	Built with mineral soil	375	SQ.M.	$35.00	$ 13,125.00
1.49	Flow Trails - Rollers	Built with mineral soil	40	EA	$75.00	$ 3,000.00
1.50	Flow Trails - Berms	Built with mineral soil & SoilTac hardener	12	EA	$1,500.00	$ 18,000.00
1.51	Flow Trails - Table Top Jumps - Small	Built with mineral soil & SoilTac hardener	5	EA	$500.00	$ 2,500.00
1.52	Flow Trails - Table Top Jumps - Medium	Built with mineral soil & SoilTac hardener	3	EA	$750.00	$ 2,250.00
1.53	Flow Trails - Dirt Lip Jumps - Large	Built with mineral soil & SoilTac hardener	4	EA	$750.00	$ 3,000.00
1.54	Flow Trails - Engineered Trail Features	FlowForm LaunchPads, FlowForm G-Walls, FlowForm Satellite & FlowForm Rocker	9	EA	$4,500.00	$ 40,500.00

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
1.55	Pumptrack Zone - Beginner Pumptrack	Built with mineral soil & SoilTac hardener	1	EA	$10,000.00	$ 10,000.00
1.56	Pumptrack Zone - Intermediate / Advanced Pumptrack	Built with mineral soil & SoilTac hardener	1	EA	$25,000.00	$ 25,000.00
1.57	Pumptrack Zone - Drainage Systems	Catch basins & pipe to outflow area. Includes bioretention area at pipe outlet.	1	ALLOW	$10,000.00	$ 10,000.00
1.58	Skills + Trials Zone - Dirt Trail	Built with mineral soil & SoilTac hardener	100	LM	$25.00	$ 2,500.00
1.59	Skills + Trials Zone - Rollers	Built with mineral soil & SoilTac hardener	10	LM	$75.00	$ 750.00
1.60	Skills + Trials Zone - Berms	Built with mineral soil & SoilTac hardener	3	EA	$1,500.00	$ 4,500.00
1.61	Skills + Trials Zone - Engineered Trail Features	FlowForm LaunchPads, FlowForm G-Walls, FlowForm Satellite & FlowForm Rocker	6	EA	$3,000.00	$ 18,000.00
1.62	Skills + Trials Zone - Rock & Log Features	Native rock boulders & naturally rot-resistance timber log rides (western red cedar)	4	EA	$500.00	$ 2,000.00
1.63	Safety & Ettiquette Signage (Entrance & Start Hill)	Large format signage covering all codes of conduct, trail etiquette, park rules, and risk management (equipment, etc.)	2	EA	$2,000.00	$ 4,000.00
1.64	Trail Signage	Difficulty level signage at the start of each trail	1	ALLOW	$12,000.00	$ 12,000.00
1.65	Directional Signage in Park	Small signage designating direct of user traffic and 'DO NOT ENTER' signs at bottoms of all singular direction trails	1	ALLOW	$2,500.00	$ 2,500.00
1.66	Site Furnishings	Garbage cans, benches, picnic tables	1	ALLOW	$10,000.00	$ 10,000.00
1.67	Fencing	Split rail fencing (perimeter)	425	LM	$85.00	$ 36,125.00
					SUBTOTAL, CONSTRUCTION	**$ 433,375.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 43,337.50
		Contingency (20% of Construction Subtotal)				$ 86,675.00
					TOTAL	**$ 563,387.50**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
E. WASHROOM BUILDING						
1.68	Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Includes tree clearing.	70	SQ.M.	$25.00	$ 1,750.00
1.69	Concrete Pad	2m wide concrete pad around building. Includes excavation, gravel base and 200mm thick concrete pad.	70	SQ.M.	$120.00	$ 8,400.00
1.70	New Garbage Bin	Supply and install small double-door Hid-A-Bag garbage bin, including concrete pad.	1	EA	$2,000.00	$ 2,000.00
1.71	Self-Cleaning Washroom Units	2 self-cleaning washroom units as manufactured by Sagelec Canada	1	LSUM	$225,000.00	$ 225,000.00
1.72	Utilities - Extend Sanitary Sewer from 53 Ave.	Includes 250mm sewer line, 4 new manholes, and connection to existing manhole.	200	LM	$225.00	$ 45,000.00
1.73	Utilities - Extend Water Service from 53 Ave.	Includes 200mm water line, 1 check valve, 1 hydrant, (4) 45/90 degree elbows, connection to water service, and rehab of existing asphalt.	200	LM	$225.00	$ 45,000.00
1.74	Utilities - Extend Power from 43 St.	Includes new overhead power line and 2 new power poles.	60	LM	$500.00	$ 30,000.00
					SUBTOTAL, CONSTRUCTION	**$ 357,150.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 35,715.00
		Contingency (20% of Construction Subtotal)				$ 71,430.00
					TOTAL	**$ 464,295.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
F. PERIMETER LOOP TRAIL + INSIDE LOOP						
1.75	Perimeter Loop Trail - Future Multiway + Ski Trail - Trail Clearing	Clear and grub trees and shrubs. Area includes 3m trail width, 1m for snow clearing, 2m for skiing, and 1m clear width each side (total 8m wide). Assumes 3m already cleared due to previous use.	75	LM	$85.00	$ 6,375.00
1.76	Perimeter Loop Trail - Future Multiway - Trail Bed Preparation (3m Wide)	Includes excavation, gravel base and weed barrier fabric. Asphalt paving to be installed in a separate phase.	75	LM	$119.00	$ 8,925.00
1.77	Perimeter Loop Trail - Future Multiway - Trail Bed Preparation (2m Wide)	Includes excavation, gravel base and weed barrier fabric. Asphalt paving to be installed in a separate phase.	193	LM	$80.00	$ 15,440.00
1.78	Perimeter Loop Trail - Future Multiway + Ski Trail - Landscape Rehab	Rototilling and seeding along ski trail (2m width and trail verges (1m each side).	75	LM	$60.00	$ 4,500.00
1.79	Perimeter Loop Gravel Trails - Existing Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Assumes 1m already cleared due to previous use. Stripping required for 1m width of trail bed only.	1,179	LM	$60.00	$ 70,740.00
1.80	Perimeter Loop Gravel Trails - New Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	810	LM	$85.00	$ 68,850.00
1.81	Perimeter Loop Gravel Trails (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	1,796	LM	$80.00	$ 143,680.00
1.82	Perimeter Loop Gravel Trails - Geogrid Stabilizer	Geogrid underlay in wet areas to stabilize trail base.	280	SQ.M.	$8.00	$ 2,240.00
1.83	Perimeter Loop Gravel Trails - Landscape Rehab	Rototilling and seeding along trail verges (1m each side).	1989	LM	$30.00	$ 59,670.00
1.84	Perimeter Loop Gravel Trails - New Footbridge at Wetland Outlet	New 3m wide x 6m long wood bridge with kick rail where trail crosses wetland outlet.	1	LSUM	$7,200.00	$ 7,200.00

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
1.85	Perimeter Loop Natural Trails - Existing Trail Alignments - Trail Clearing	Selective clearing of trees and shrubs within 1m each side of existing trail.	231	LM	$10.00	$ 2,310.00
1.86	Perimeter Loop Natural Trails (1m Wide)	Placement of 100mm of bark mulch on existing trail alignment.	231	LM	$10.00	$ 2,310.00
1.87	Inside Loop Gravel Trails - Existing Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Assumes 1m already cleared due to previous use. Stripping required for 1m width of trail bed only.	110	LM	$60.00	$ 6,600.00
1.88	Inside Loop Gravel Trails - New Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	180	LM	$85.00	$ 15,300.00
1.89	Inside Loop Gravel Trails (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	290	LM	$80.00	$ 23,200.00
1.90	Inside Loop Gravel Trails - Landscape Rehab	Rototilling and seeding along trail verges (1m each side).	290	LM	$30.00	$ 8,700.00
1.91	Inside Loop Natural Trails - Existing Trail Alignments - Trail Clearing	Selective clearing of trees and shrubs within 1m each side of existing trail.	190	LM	$10.00	$ 1,900.00
1.92	Inside Loop Natural Trails - New Trail Alignments - Trail Clearing	Clear and grub organic material. Area includes 1m trail width and 1m clear width each side (total 3m wide). No stripping required for trail bed.	60	LM	$50.00	$ 3,000.00
1.92	Inside Loop Natural Trails (1m Wide)	Placement of 100mm of bark mulch on trail alignment.	250	LM	$10.00	$ 2,500.00
					SUBTOTAL, CONSTRUCTION	**$ 453,440.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 45,344.00
		Contingency (20% of Construction Subtotal)				$ 90,688.00
					TOTAL	**$ 589,472.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
G. CHILDREN'S PLAY AREA						
1.93	Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Play area to be constructed around existing trees where possible.	410	SQ.M.	$20.00	$ 8,200.00
1.94	Engineered Wood Fibre Play Surface	Engineered wood fibre such as Fibar, c/w geotextile fabric and drainage strips.	260	SQ.M.	$65.00	$ 16,900.00
1.95	Concrete Curb	Cast-in-place containment curb around play area.	65	LM	$90.00	$ 5,850.00
1.96	Concrete Curb Ramp	Standard City of Calgary curb ramp	3	EA	$1,000.00	$ 3,000.00
1.97	Gravel Trail Around Play Area (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	150	SQ.M.	$40.00	$ 6,000.00
1.98	New Gravel Trail to Washrooms - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	15	LM	$85.00	$ 1,275.00
1.99	New Gravel Trail to Washrooms (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	15	LM	$80.00	$ 1,200.00
2.00	Picnic Table Seating	Includes 4m diameter gravel pad and in-ground mounted fixed picnic table. Steel frame with wood top and seat.	4	EA	$3,500.00	$ 14,000.00
2.01	New Garbage Bin	Supply and install small double-door Hid-A-Bag garbage bin, including concrete pad.	1	EA	$2,000.00	$ 2,000.00
2.02	Wood Climbing Platform	Natural material climbing platform with integrated climbing and sliding activities.	1	LSUM	$30,000.00	$ 30,000.00
2.03	Individual Active Play Equipment	Such as rockers, spinners, swings or hammocks.	8	EA	$8,000.00	$ 64,000.00
2.04	Imaginative Play Opportunities	Such as wood fort-building materials, balance beam, jumping logs or boulders.	1	LSUM	$5,000.00	$ 5,000.00
					SUBTOTAL, CONSTRUCTION	**$ 157,425.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 15,742.50
		Contingency (20% of Construction Subtotal)				$ 31,485.00
					TOTAL	**$ 204,652.50**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
H. PICNIC AREA AND SHELTER						
2.05	Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Includes tree clearing.	300	SQ.M.	$25.00	$ 7,500.00
2.06	Concrete Pad	2m wide concrete pad around building. Includes excavation, gravel base and 200mm thick concrete pad.	255	SQ.M.	$120.00	$ 30,600.00
2.07	Pre-Manufactured Picnic Shelter Building	30' x 50' steel frame shelter with metal roof	1	LSUM	$70,000.00	$ 70,000.00
2.08	Stone Column Bases	Built-up stone column bases mortared around steel columns	6	EA	$2,500.00	$ 15,000.00
2.09	Picnic Tables	Surface-mounted fixed picnic table. Steel frame with wood top and seat.	10	EA	$2,500.00	$ 25,000.00
2.10	Picnic Table Nodes in Landscape	Includes 4m diameter gravel pad and in-ground mounted fixed picnic table. Steel frame with wood top and seat.	9	EA	$3,500.00	$ 31,500.00
2.11	New Garbage Bins	Supply and install small double-door Hid-A-Bag garbage bin, including concrete pad.	3	EA	$2,000.00	$ 6,000.00
2.12	New Gravel Trail to Picnic Nodes - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	30	LM	$85.00	$ 2,550.00
2.13	New Gravel Trail to Picnic Nodes (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	30	LM	$80.00	$ 2,400.00
2.14	New Natural Trail to Picnic Nodes - Trail Clearing	Clear and grub organic material. Area includes 1m trail width and 1m clear width each side (total 3m wide). No stripping required for trail bed.	55	LM	$50.00	$ 2,750.00
2.15	New Natural Trail to Picnic Nodes (1m Wide)	Placement of 100mm of bark mulch on trail alignment.	55	LM	$10.00	$ 550.00
					SUBTOTAL, CONSTRUCTION	**$ 193,850.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 19,385.00
		Contingency (20% of Construction Subtotal)				$ 38,770.00
					TOTAL	**$ 252,005.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
I. RUSTIC PICNIC AREAS, BENCHES, GARBAGE RECEPTACLES						
2.16	Picnic Table Nodes in Landscape	Includes 4m diameter gravel pad and in-ground mounted fixed picnic table. Steel frame with wood top and seat.	9	EA	$3,500.00	$ 31,500.00
2.17	New Gravel Trail to Picnic Nodes - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	160	LM	$85.00	$ 13,600.00
2.18	New Gravel Trail to Picnic Nodes (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	160	LM	$80.00	$ 12,800.00
2.19	New Natural Trail to Picnic Nodes - Trail Clearing	Clear and grub organic material. Area includes 1m trail width and 1m clear width each side (total 3m wide). No stripping required for trail bed.	70	LM	$50.00	$ 3,500.00
2.20	New Natural Trail to Picnic Nodes (1m Wide)	Placement of 100mm of bark mulch on trail alignment.	70	LM	$10.00	$ 700.00
2.21	New Garbage Bins	Supply and install small double-door Hid-A-Bag garbage bin, including concrete pad.	10	EA	$2,000.00	$ 20,000.00
2.22	Benches	New bench with concrete mounting pad or salvaged bench from downtown Leduc site furnishings with new concrete mounting pad.	20	EA	$2,500.00	$ 50,000.00
					SUBTOTAL, CONSTRUCTION	**$ 132,100.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 13,210.00
		Contingency (20% of Construction Subtotal)				$ 26,420.00
					TOTAL	**$ 171,730.00**

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
J. CHALLENGE ZONE(S)						
2.23	Engineered Wood Fibre Play Surface	Engineered wood fibre such as Fibar, c/w geotextile fabric and drainage strips.	800	SQ.M.	$65.00	$ 52,000.00
2.24	Individual Fitness Equipment	Such as push-up bars, step benches, pull-up bars, balance ropes, sit-up benches, climbing poles, or balance boards.	12	EA	$4,500.00	$ 54,000.00
2.25	Climbing Wall or Bouldering Wall	Wood climbing wall with attached grips or natural boulder slope	1	ALLOW	$30,000.00	$ 30,000.00
2.26	Gravel Access Trails - Existing Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Assumes 1m already cleared due to previous use. Stripping required for 1m width of trail bed only.	115	LM	$60.00	$ 6,900.00
2.27	Asphalt Access Trail - Future Multiway - Trail Bed Preparation (2m Wide)	Includes excavation, gravel base and weed barrier fabric. Asphalt paving to be installed in a separate phase.	60	LM	$80.00	$ 4,800.00
2.28	Gravel Access Trails (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	55	LM	$80.00	$ 4,400.00
2.29	New Natural Access Trails - Trail Clearing	Clear and grub organic material. Area includes 1m trail width and 1m clear width each side (total 3m wide). No stripping required for trail bed.	50	LM	$50.00	$ 2,500.00
2.30	New Natural Access Trails (1m Wide)	Placement of 100mm of bark mulch on trail alignment.	50	LM	$10.00	$ 500.00
					SUBTOTAL, CONSTRUCTION	**$ 155,100.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 15,510.00
		Contingency (20% of Construction Subtotal)				$ 31,020.00
					TOTAL	**$ 201,630.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
K. WAY FINDING						
2.31	Main Park Entry Sign	Architectural entry feature sign to convey park identity at main driveway entrance.	1	EA	$12,000.00	$ 12,000.00
2.32	Information Kiosk	Covered signage kiosk with bulletin board for posting maps, notices, etc. Includes some permanent signage features. Located at parking lot trailhead and terrain park start mound.	2	EA	$10,000.00	$ 20,000.00
2.33	Interpretive Sign	Low sign with angled panel for providing interpretive information.	6	EA	$3,000.00	$ 18,000.00
2.34	Wayfinding Map	Small (600 x 600mm) signs supporting map panels placed along trails throughout the park.	4	EA	$2,500.00	$ 10,000.00
2.35	Trail Marker	Small trail marker to identify trail route, name o permitted activities.	20	EA	$1,500.00	$ 30,000.00
					SUBTOTAL, CONSTRUCTION	**$ 90,000.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 9,000.00
		Contingency (20% of Construction Subtotal)				$ 18,000.00
					TOTAL	**$ 117,000.00**

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
L. RECLAMATION + RESTORATION						
2.36	Reclaim Existing Informal Trails - 3m Wide Disturbance	Includes rototilling, seeding, (3) #2 container shrubs per 100m2 and 15 plugs per 100m2.	1,080	LM	$50.00	$ 54,000.00
2.37	Reclaim Existing Informal Trails - 1m Wide Disturbance	Includes rototilling, seeding, (3) #2 container shrubs per 100m2 and 15 plugs per 100m2.	990	LM	$20.00	$ 19,800.00
2.38	Restoration Planting	Includes (1) 60mm caliper tree per 100m2, (3) #2 container shrubs per 100m2 and 15 plugs per 100m2.	24,000	SQ.M.	$6.00	$ 144,000.00
2.39	Restoration / Buffer Tree Planting	40mm Caliper deciduous trees	120	EA	$350.00	$ 42,000.00
					SUBTOTAL, CONSTRUCTION	**$ 217,800.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 21,780.00
		Contingency (20% of Construction Subtotal)				$ 43,560.00
					TOTAL	**$ 283,140.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
M. PLANE SPOTTING / CRASH VIEWING AREA						
2.40	Plane Viewing Platform	Wood platform with built-in seating or 2-storey viewing tower. Approx. 5 x 7m.	1	ALLOW	$40,000.00	$ 40,000.00
2.41	Plane Viewing Platform - Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Viewing pad to be constructed around existing trees where possible.	110	SQ.M.	$20.00	$ 2,200.00
2.42	Plane Viewing Platform - Gravel Access Pad	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	110	SQ.M.	$40.00	$ 4,400.00
2.43	Plane Crash Site - New Gravel Trail - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	30	LM	$85.00	$ 2,550.00
2.44	Plane Crash Site - New Gravel Trail (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	30	LM	$80.00	$ 2,400.00
2.45	Complete Natural Trail Loop - Existing Trail Alignments - Trail Clearing	Selective clearing of trees and shrubs within 1m each side of existing trail.	100	LM	$10.00	$ 1,000.00
2.46	Plane Crash Site - Natural Trail Loop (1m Wide)	Placement of 100mm of bark mulch on trail alignment.	100	LM	$10.00	$ 1,000.00
					SUBTOTAL, CONSTRUCTION	**$ 53,550.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 5,355.00
		Contingency (20% of Construction Subtotal)				$ 10,710.00
					TOTAL	**$ 69,615.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
N. CANOE LANDING(S)						
2.47	West Landing - Boat Launching Ramp	Gravel pad with Armtec concrete boat ramp slabs for traction.	55	SQ.M.	$100.00	$ 5,500.00
2.48	West Landing - Gravel Access Pad - Clearing + Stripping	Clear and grub organic material, and strip + stockpile topsoil. Includes tree clearing.	40	EA	$25.00	$ 1,000.00
2.49	West Landing - Gravel Access Pad	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	40	SQ.M.	$40.00	$ 1,600.00
2.50	East Landing - Boat Launching Ramp	Gravel pad with Armtec concrete boat ramp slabs for traction.	55	SQ.M.	$100.00	$ 5,500.00
2.51	East Landing - Gravel Access Pad - Clearing + Stripping	Clear and grub organic material, and strip + stockpile topsoil. Includes tree clearing.	40	EA	$25.00	$ 1,000.00
2.52	East Landing - Gravel Access Pad	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	40	SQ.M.	$40.00	$ 1,600.00
2.53	East Landing - New Gravel Trail - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	20	LM	$85.00	$ 1,700.00
2.54	East Landing - New Gravel Trail (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	20	LM	$80.00	$ 1,600.00
					SUBTOTAL, CONSTRUCTION	**$ 19,500.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 1,950.00
		Contingency (20% of Construction Subtotal)				$ 3,900.00
					TOTAL	**$ 25,350.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
O. COMPLETION OF MULTIWAY						
2.55	Multiway + Ski Trail - Existing Trail Alignments - Trail Clearing	Clear and grub trees and shrubs. Area includes 3m trail width, 1m for snow clearing, 2m for skiing, and 1m clear width each side (total 8m wide). Assumes 3m already cleared due to previous use.	350	LM	$85.00	$ 29,750.00
2.56	Multiway + Ski Trail - New Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 3m trail width, 1m for snow clearing, 2m for skiing, and 1m clear width each side (total 8m wide). Stripping required for trail bed only (3m).	110	LM	$160.00	$ 17,600.00
2.57	Multiway - Asphalt Trail (3m Wide)	Includes excavation, gravel base, weed barrier fabric and asphalt paving.	460	LM	$238.00	$ 109,480.00
2.58	Multiway - Trail Bed Rehab + Asphalt Paving (3m Wide)	Rehab of gravel base installed in Phase F and installation of asphalt paving.	75	LM	$119.00	$ 8,925.00
2.59	Multiway + Ski Trail - Landscape Rehab	Rototilling and seeding along ski trail (2m width and trail verges (1m each side).	460	LM	$60.00	$ 27,600.00
					SUBTOTAL, CONSTRUCTION	**$ 193,355.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 19,335.50
		Contingency (20% of Construction Subtotal)				$ 38,671.00
					TOTAL	**$ 251,361.50**

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
P. RARE PLANT SPECIES / SIGNAGE						
2.60	Clearing and Stripping	Clear and grub organic material, and strip + stockpile topsoil. Deck to be constructed around existing trees where possible.	55	SQ.M.	$20.00	$ 1,100.00
2.61	Gravel Access Pad	Includes excavation, gravel base, weed barrier fabric, and gravel trail mix.	20	SQ.M.	$40.00	$ 800.00
2.62	Wood Deck at Edge of Wetland	Wood platform with built-in seating at edge of wetland (approx. 5 x 7m).	1	ALLOW	$15,000.00	$ 15,000.00
2.63	Interpretive Sign	Low sign with angled panel for providing interpretive information.	1	EA	$3,000.00	$ 3,000.00
					SUBTOTAL, CONSTRUCTION	**$ 19,900.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 1,990.00
		Contingency (20% of Construction Subtotal)				$ 3,980.00
					TOTAL	**$ 25,870.00**

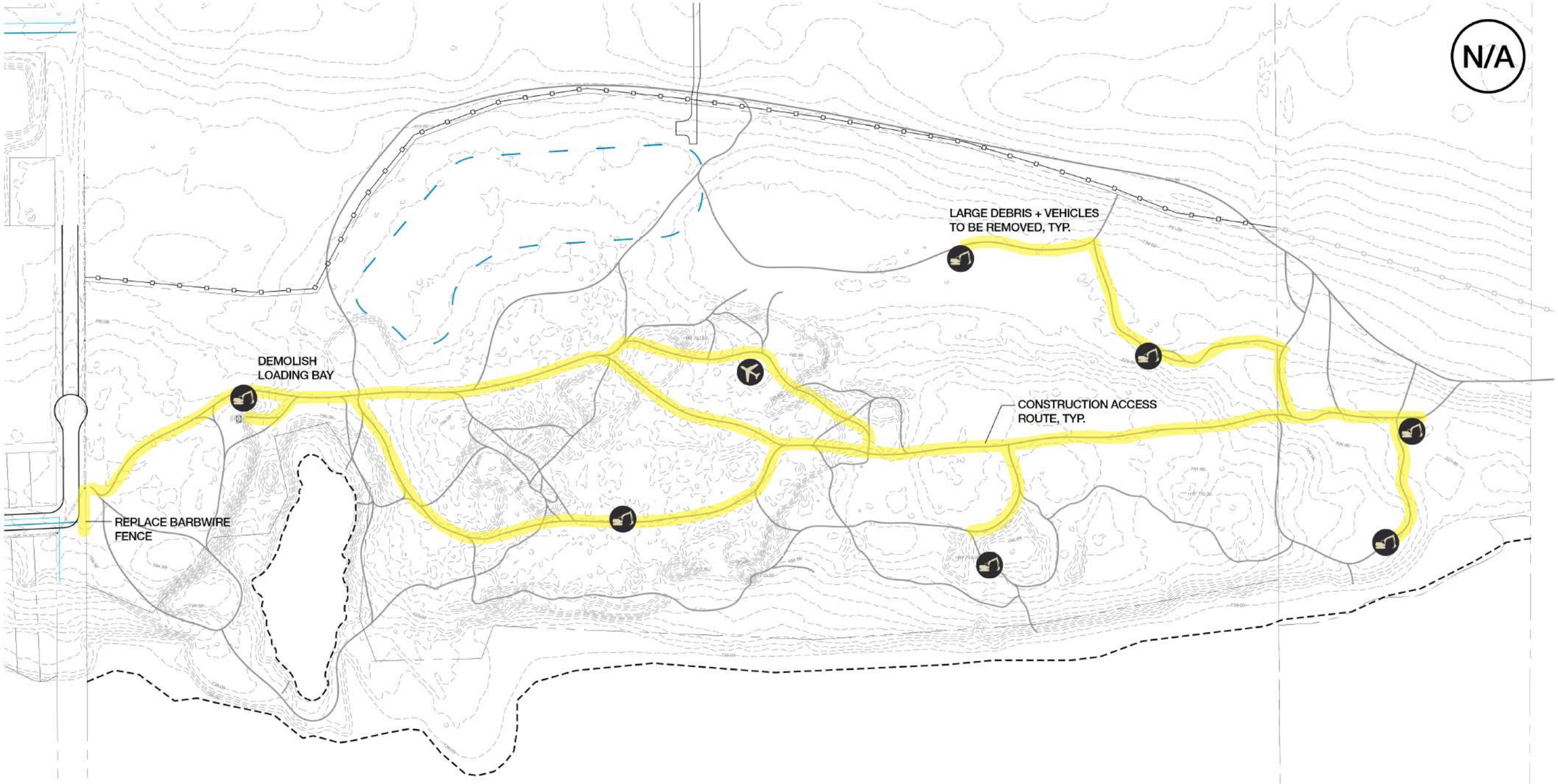
	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
Q. LOOKOUTS (3)						
2.64	Clearing + Grubbing	Clear and grub organic material. Viewing pad to be constructed around existing trees where possible.	105	SQ.M.	$15.00	$ 1,575.00
2.65	Wood Deck with Built-In Seating	Wood platform with built-in seating at edge of slope (approx. 5 x 7m). Portion of platform may cantilever from edge of slope.	3	ALLOW	$20,000.00	$ 60,000.00
2.66	Asphalt Access Trails - Existing Trail Alignments - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Assumes 1m already cleared due to previous use. Stripping required for 1m width of trail bed only.	122	LM	$60.00	$ 7,320.00
2.67	New Asphalt Access Trails - Trail Clearing	Clear and grub organic material, strip + stockpile topsoil. Area includes 2m trail width and 1m clear width each side (total 4m wide). Stripping required for trail bed only (2m).	20	LM	$85.00	$ 1,700.00
2.68	Asphalt Access Trails - Trail Bed Rehab + Asphalt Paving (2m Wide)	Rehab of gravel base installed in Phase F + J and installation of asphalt paving.	253	LM	$80.00	$ 20,240.00
2.69	New Asphalt Access Trails (2m Wide)	Includes excavation, gravel base, weed barrier fabric, and asphalt paving.	142	LM	$160.00	$ 22,720.00
					SUBTOTAL, CONSTRUCTION	**$ 113,555.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 11,355.50
		Contingency (20% of Construction Subtotal)				$ 22,711.00
					TOTAL	**$ 147,621.50**

PRELIMINARY OPINION OF PROBABLE LANDSCAPE CONSTRUCTION COST

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
R. NATURAL TRAILS + STAIRS						
2.70	Natural Trails - Existing Trail Alignments - Trail Clearing	Selective clearing of trees and shrubs within 1m each side of existing trail.	343	LM	$10.00	$ 3,430.00
2.71	Natural Trails - New Trail Alignments Trail Clearing	Clear and grub organic material. Area includes 1m trail width and 1m clear width each side (total 3m wide). No stripping required for trail bed.	210	LM	$50.00	$ 10,500.00
2.72	Natural Trails (1m Wide)	Placement of 100mm of bark mulch on existing trail alignment.	553	LM	$10.00	$ 5,530.00
2.73	New Timber Steps - Cut Into Slope	Timber deadmen stacked with gravel treads. Includes excavation, timber stairs and fasteners, weed barrier fabric, crushed gravel base, gravel trail mix surfacing, and handrail (one side). 2m wide.	8	LM	$425.00	$ 3,400.00
2.74	New Timber Steps - Staircase Built Onto Slope	Timber staircase complete with stringers, treads, risers, handrails and concrete piles. Approx. 13m run, including 30 risers and 1 landing. 2m wide.	1	ALLOW	$20,000.00	$ 20,000.00
					SUBTOTAL, CONSTRUCTION	**$ 42,860.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 4,286.00
		Contingency (20% of Construction Subtotal)				$ 8,572.00
					TOTAL	**$ 55,718.00**

	ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	TOTAL
S. WEED CONTROL						
2.75	Allowance for Weed Control	Allowance as per City of Leduc Public Services.	1	ALLOW	$10,000.00	$ 10,000.00
					SUBTOTAL, CONSTRUCTION	**$ 10,000.00**
		Mobilization / Demobilization (10% of Construction Subtotal)				$ 1,000.00
		Contingency (20% of Construction Subtotal)				$ 2,000.00

Phasing Plans



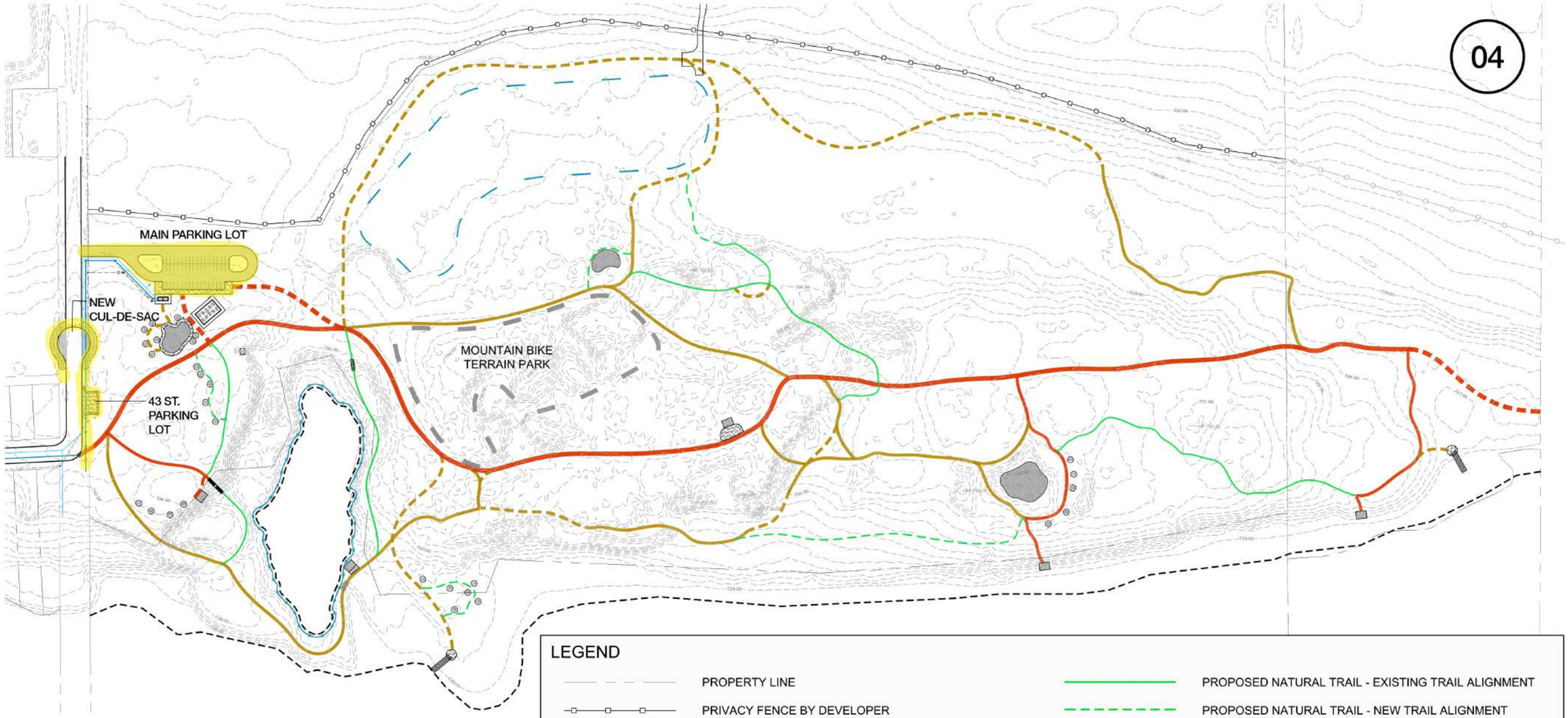
PHASE A - SITE CLEAN-UP
Not Voted On

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- EXISTING INFORMAL TRAIL
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER



PHASE B - ROAD CLOSURE + PARKING LOT
6 Votes

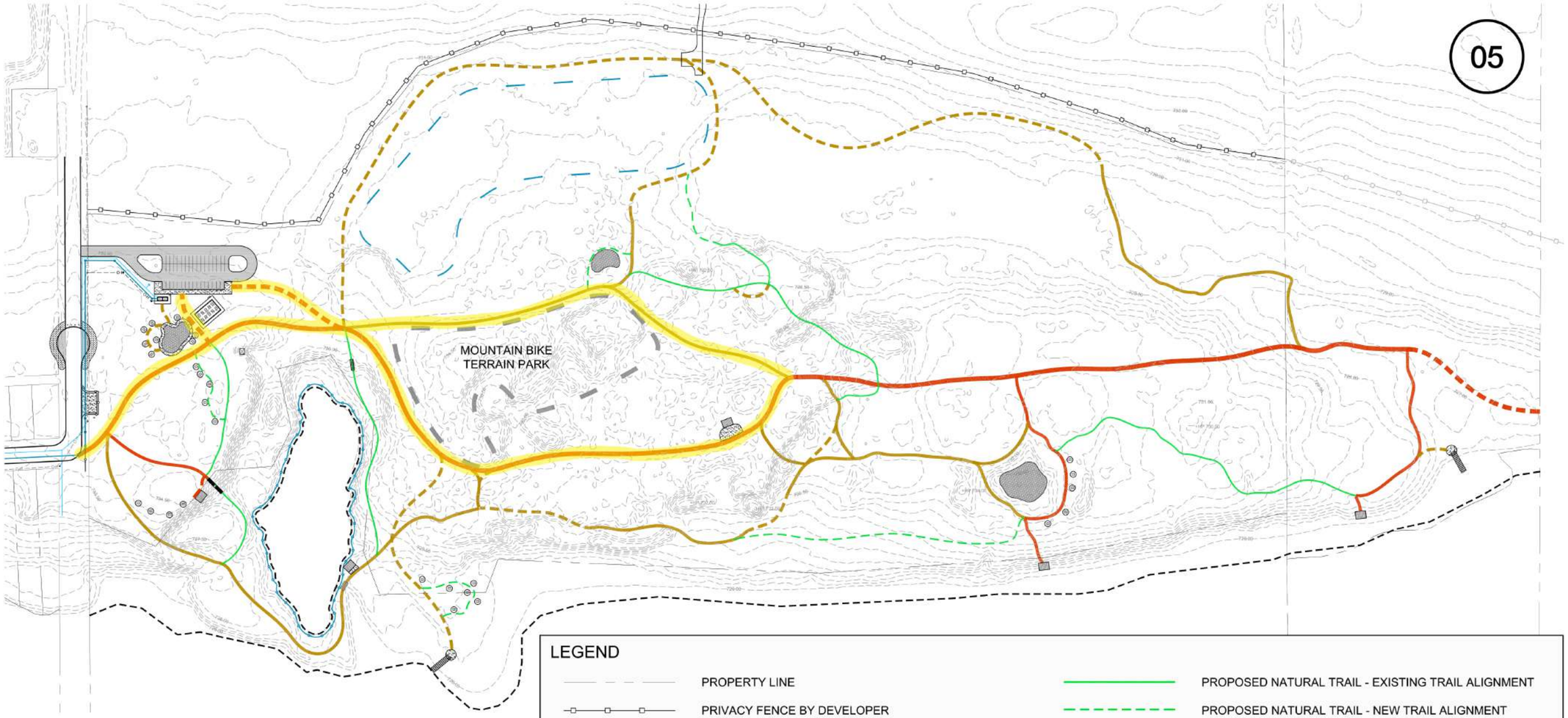
0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

05



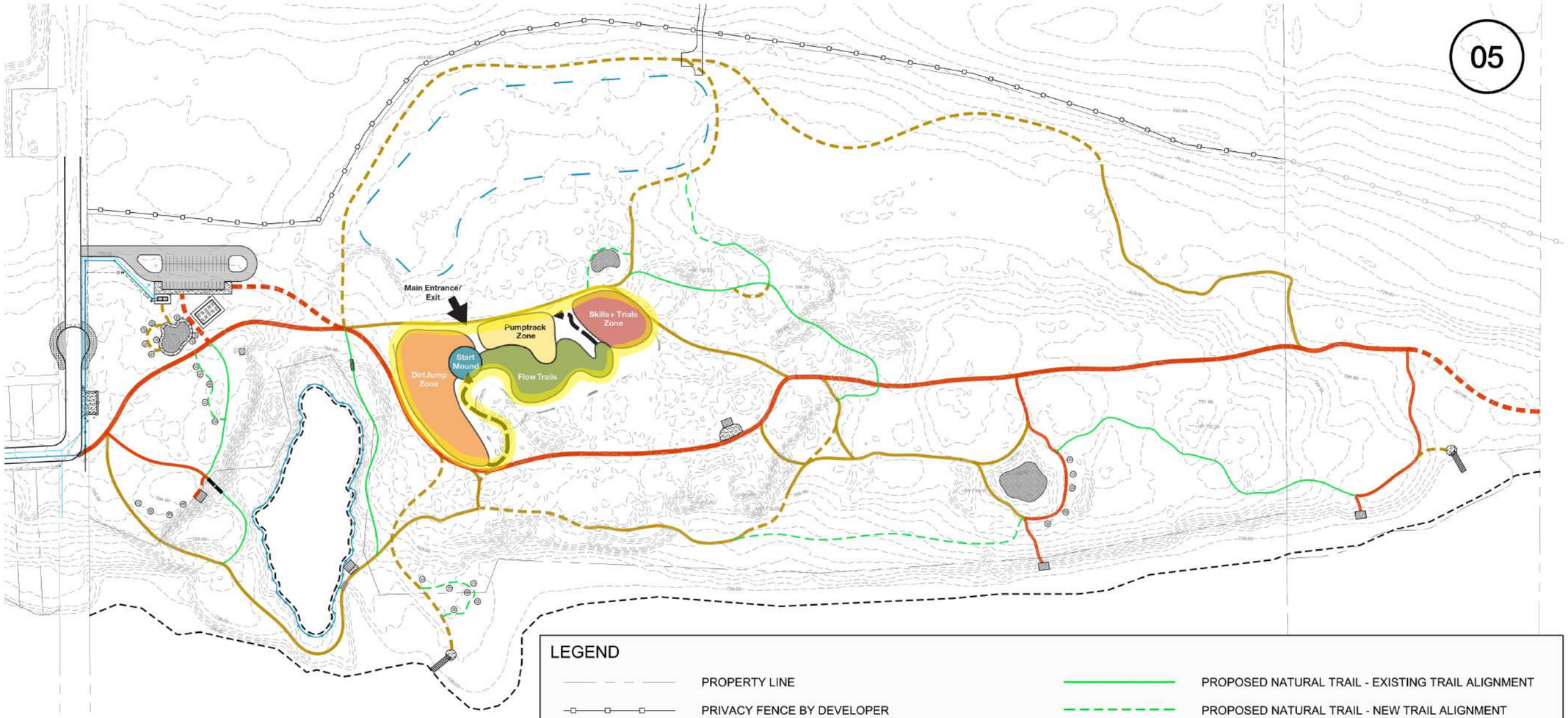
PHASE C - MULTIWAY TO TERRAIN PARK
5 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER (O-H)
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



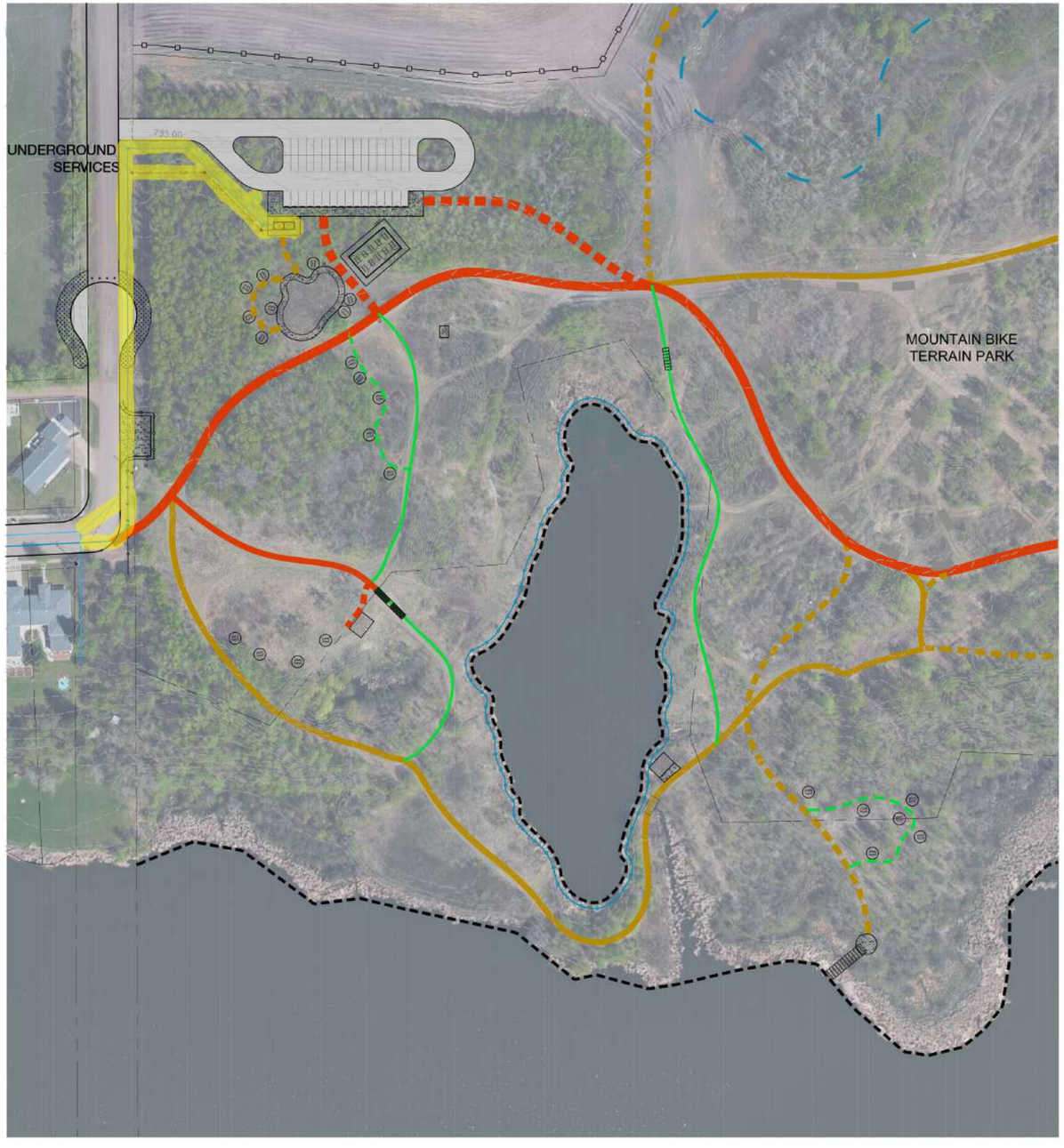
PHASE D - TERRAIN PARK
5 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER (O-H)
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



0 15 45 75 m
SCALE = 1:1500

NORTH

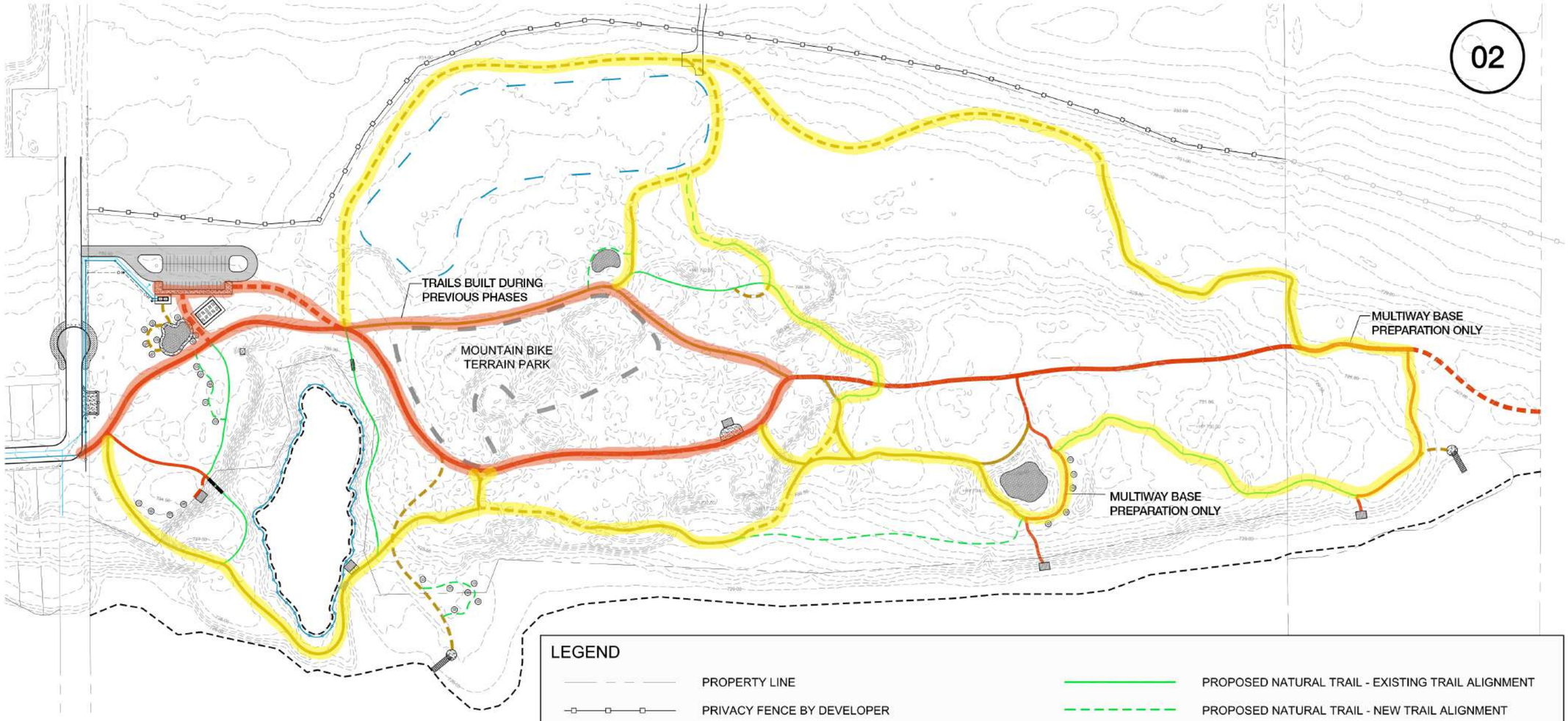
LEGEND

01

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

PHASE E - WASHROOM BUILDING
10 Votes

02



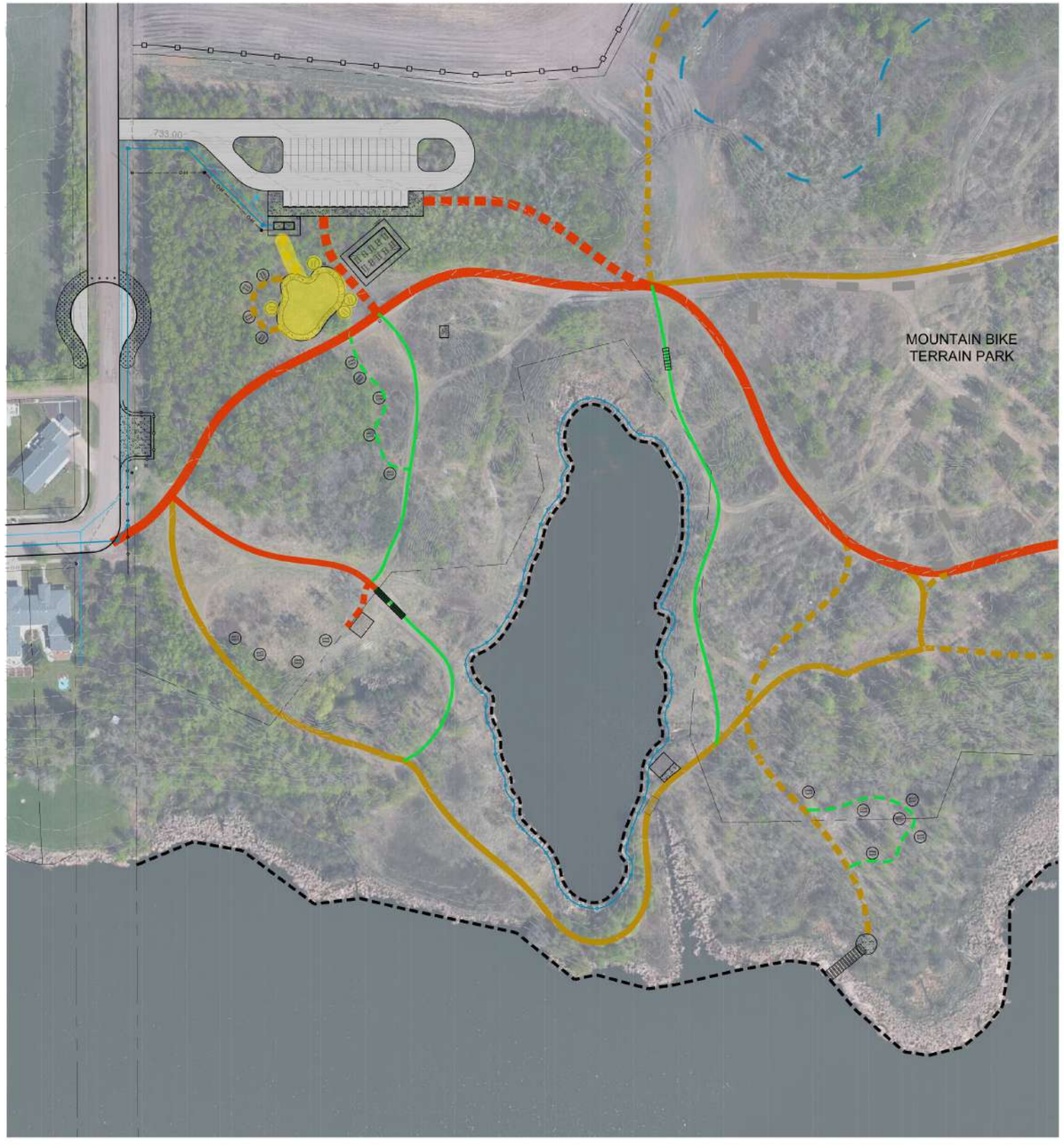
PHASE F - PERIMETER LOOP TRAIL + INSIDE LOOP
9 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- O-H PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



0 15 45 75 m
SCALE = 1:1500

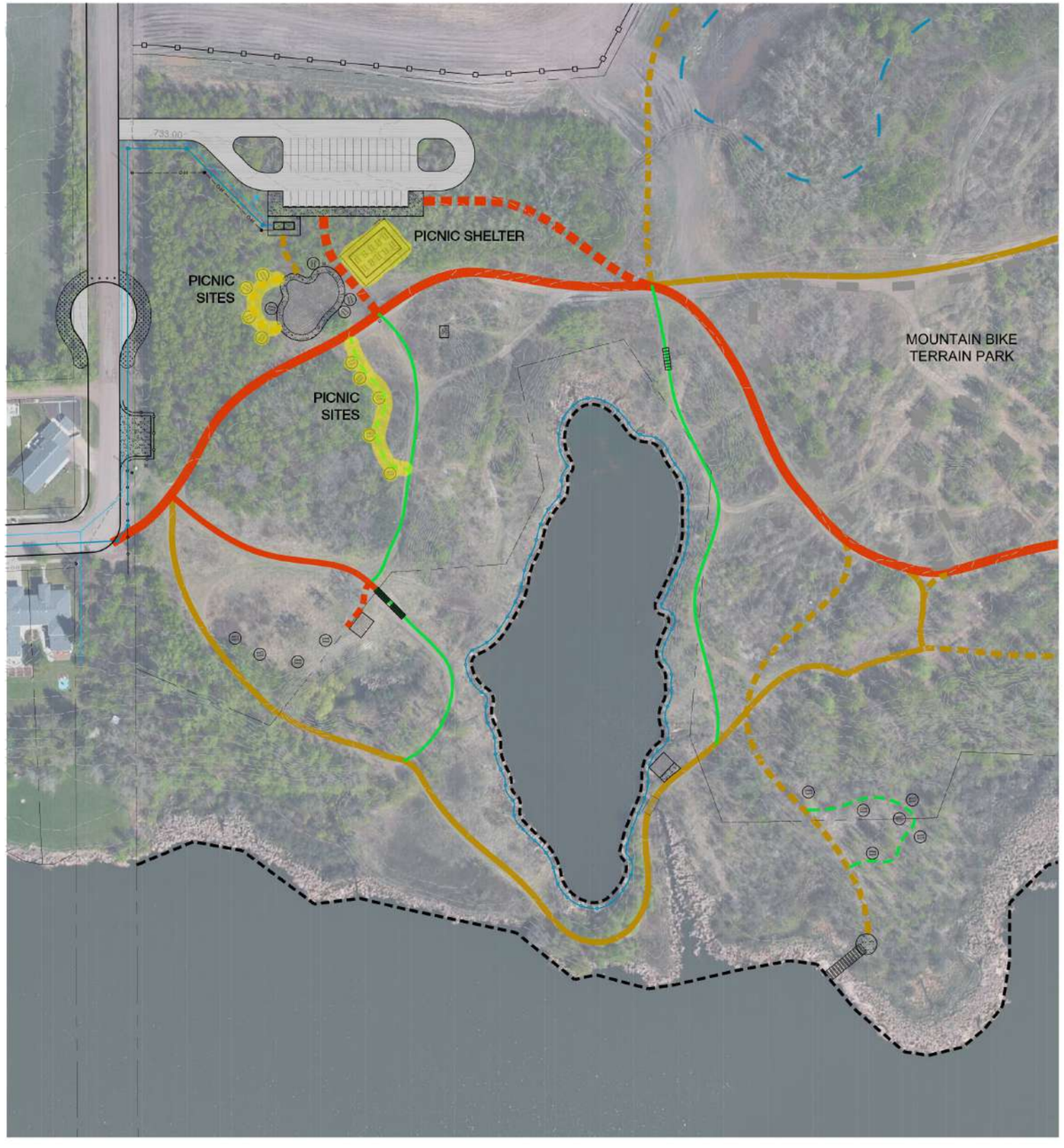
NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

05

PHASE G - CHILDREN'S PLAY AREA
5 Votes



0 15 45 75 m
SCALE = 1:1500

NORTH

LEGEND

01

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

PHASE H - PICNIC AREA + SHELTER
10 Votes

02

MOUNTAIN BIKE
TERRAIN PARK

PHASE I - RUSTIC PICNIC AREAS + SITE FURNISHINGS
9 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- O-H PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

07

MOUNTAIN BIKE
TERRAIN PARK

MULTIWAY BASE
PREPARATION ONLY

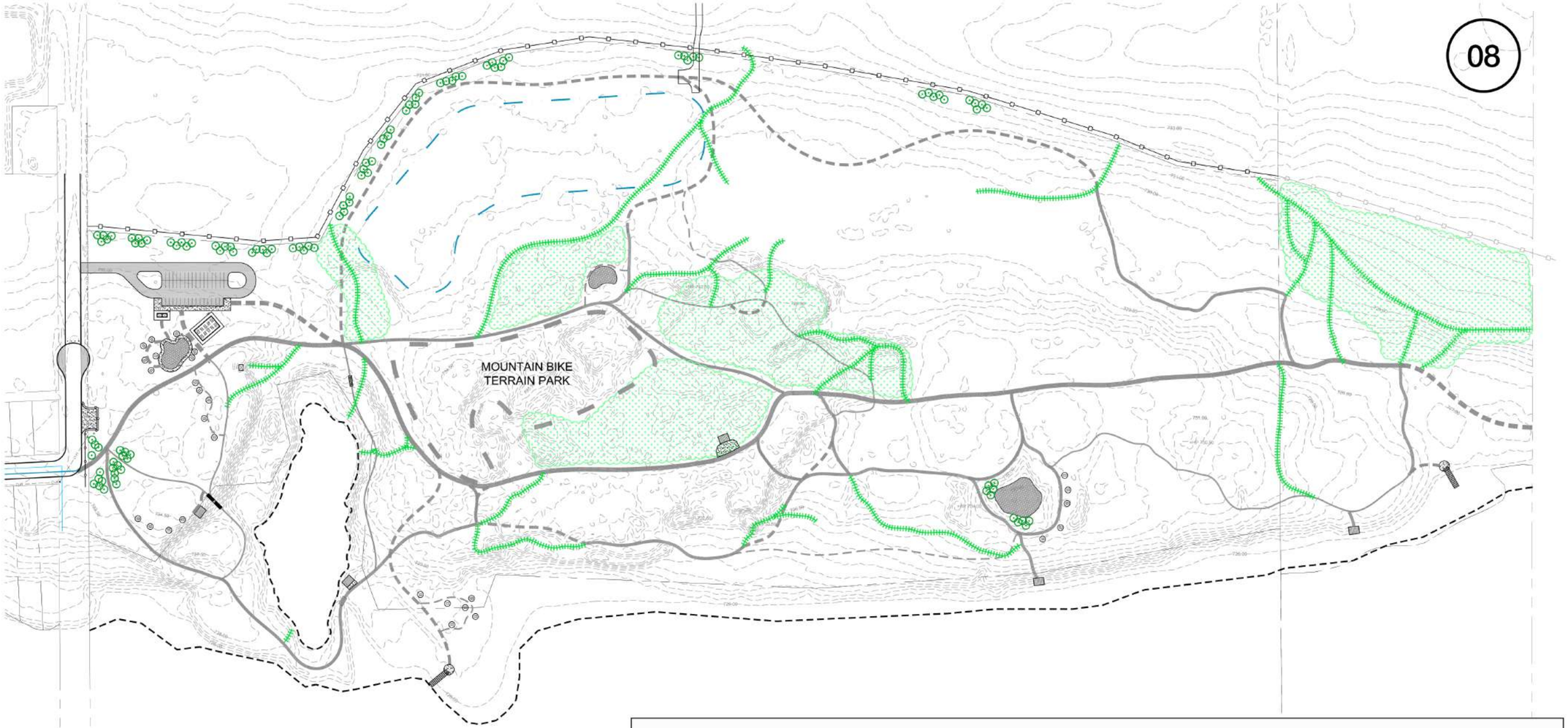
PHASE J - CHALLENGE ZONES
1 Vote

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



PHASE L - RECLAMATION + RESTORATION

0 Votes

0 25 75 125m

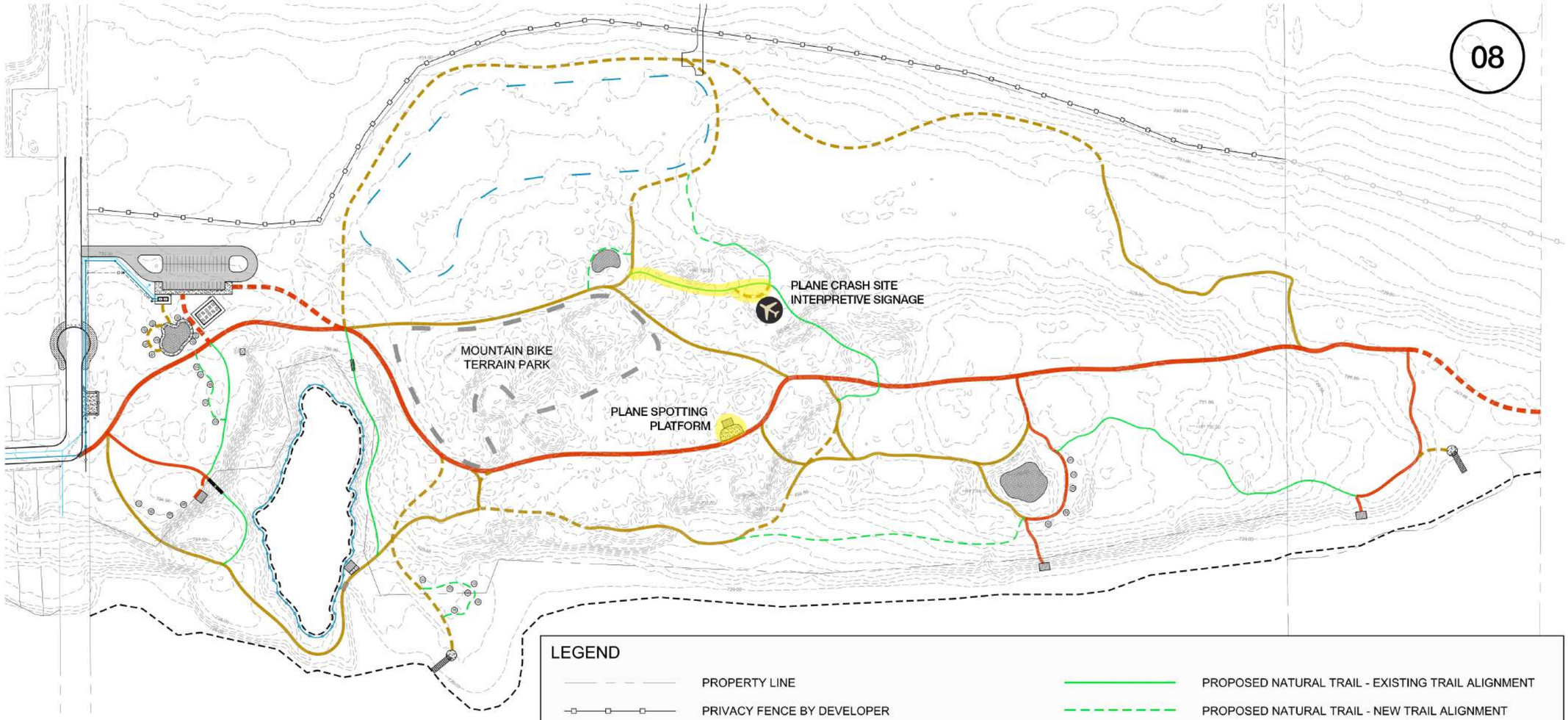
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED TRAIL - NEW TRAIL ALIGNMENT
- EXISTING TRAIL TO BE RECLAIMED
- PROPOSED POST + CABLE FENCE
- PROPOSED TREE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- ENGINEERED WOOD FIBRE PLAY SURFACE
- RESTORATION PLANTING AREA

08



PHASE M - PLANE SPOTTING / CRASH VIEWING AREA
0 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER (O-H)
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

08

MOUNTAIN BIKE
TERRAIN PARK

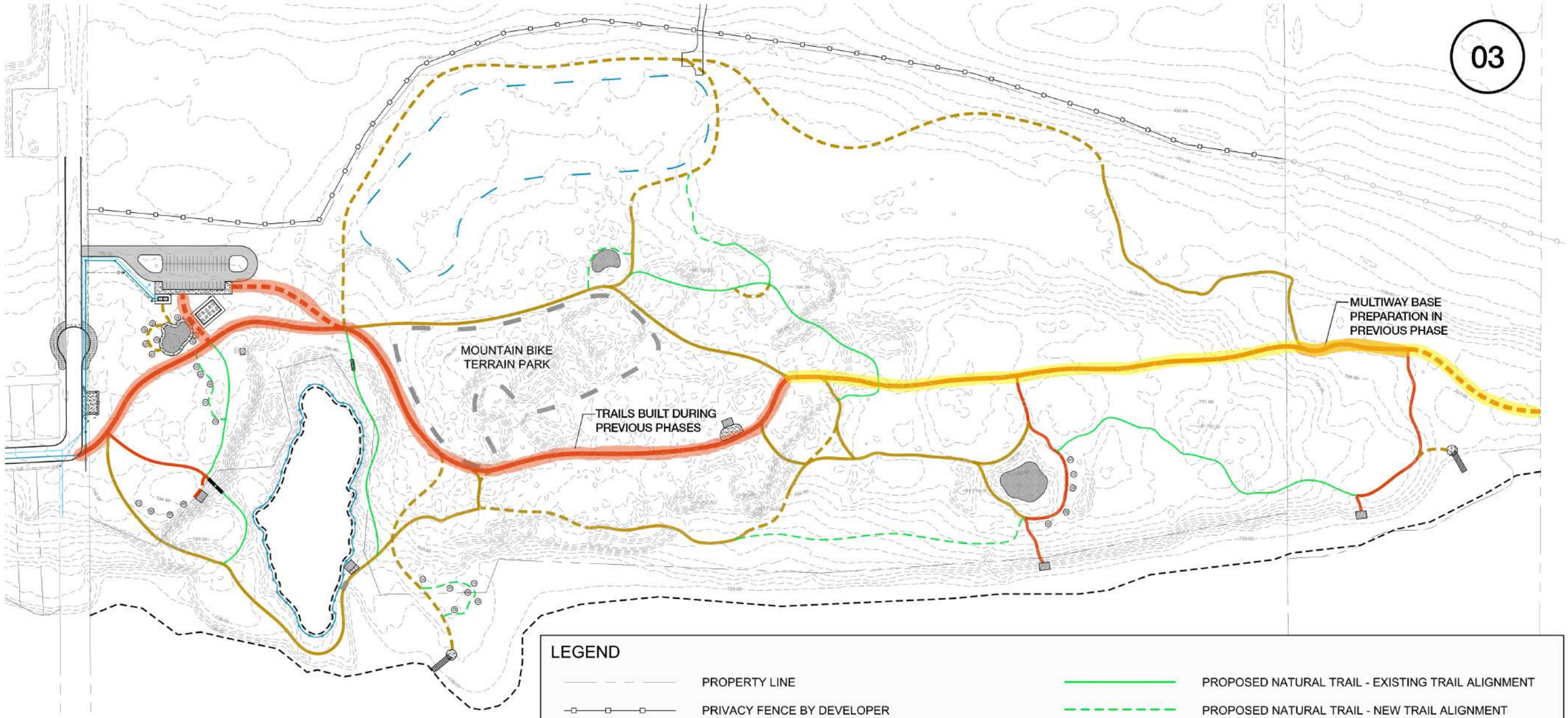
PHASE N - CANOE LANDINGS
0 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



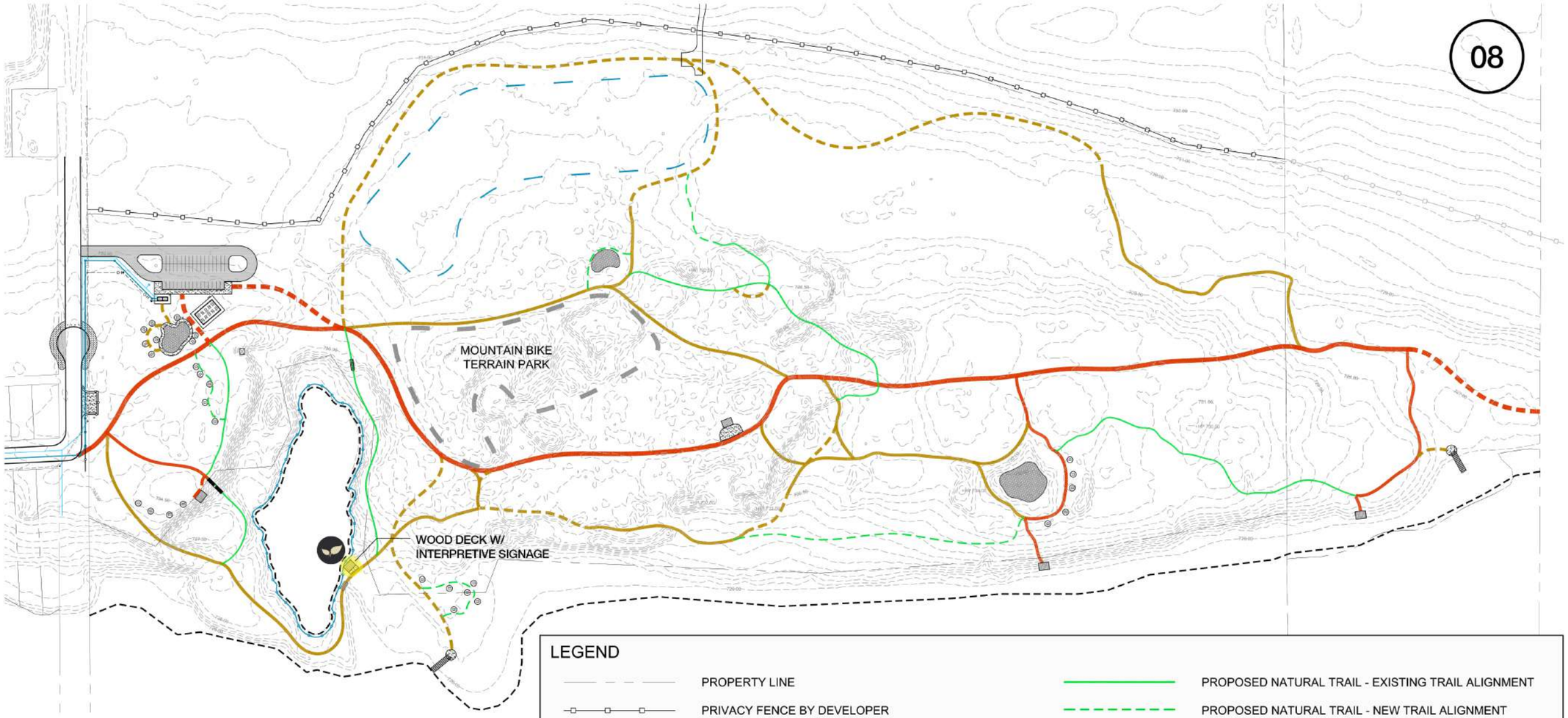
PHASE 0 - COMPLETION OF MULTIWAY
7 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER (O-H)
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



PHASE P - RARE PLANT SPECIES
0 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE

08

MOUNTAIN BIKE TERRAIN PARK

MULTIWAY BASE PREPARATION IN PREVIOUS PHASE

MULTIWAY BASE PREPARATION IN PREVIOUS PHASE

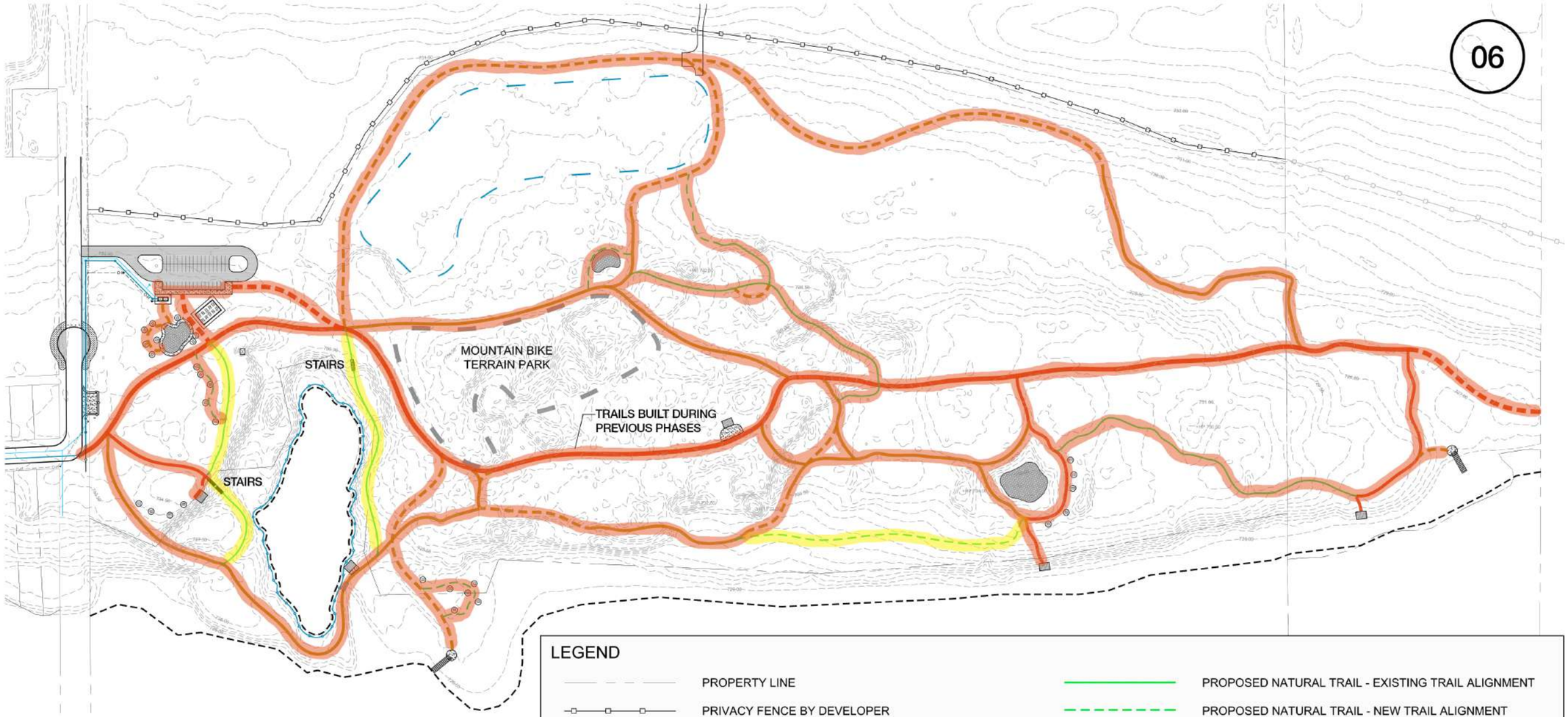
PHASE Q - LOOKOUTS
0 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER (O-H)
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE



PHASE R - NATURAL TRAILS + STAIRS
3 Votes

0 25 75 125m
SCALE = 1:2500

NORTH

LEGEND

- PROPERTY LINE
- PRIVACY FENCE BY DEVELOPER
- FUTURE PRIVACY FENCE BY DEVELOPER (LOCATION TBC)
- STORMWATER RETENTION AREA BY DEVELOPER
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED OVERHEAD POWER (O-H)
- PROPOSED MULTIWAY - EXISTING TRAIL ALIGNMENT
- PROPOSED MULTIWAY - NEW TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED GRAVEL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - EXISTING TRAIL ALIGNMENT
- PROPOSED NATURAL TRAIL - NEW TRAIL ALIGNMENT
- PROPOSED SILT FENCE
- PROPOSED POST + CABLE FENCE
- PROPOSED PICNIC TABLE PAD
- ASPHALT PAVING
- GRAVEL PAD
- EXTENT OF DITCH GRADING (CUL-DE-SAC)
- ENGINEERED WOOD FIBRE PLAY SURFACE