

Linear Parks Master Plan

November 2009

C B CATHERINE BERRIS ASSOCIATES INC
A



November 10, 2009

Mr. Terry Barton
City of Kelowna
1455 Water Street
Kelowna, BC, V1Y 1J4

Dear Terry,

Re: City of Kelowna Linear Parks Master Plan

We are very pleased to provide this final report of Kelowna's Linear Parks Master Plan. In addition to this document, the product of the contract includes: GIS data layers, spreadsheets, and the digital version of this report. A CD accompanying the hard copy of this report includes that data.

It has been a pleasure working with you and the community on this important project. We are particularly grateful to the stakeholder groups and the public, who provided valuable input to the project.

We look forward to our future visits to Kelowna, and exploring the ever-increasing linear parks.

Sincerely,
CATHERINE BERRIS ASSOCIATES INC.



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We also thank the many stakeholder group members and the public who attended meetings and provided valuable input into this plan.

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EXECUTIVE SUMMARY

The City of Kelowna's plans for a trail network were first formalized and identified in the 2002 Official Community Plan (OCP). Since that time, the City has been working on the construction of on-road and off-road walkways and bicycle routes. With increasing growth and the fairly conceptual trail network in the OCP, the City decided that a Linear Parks Master Plan was required.



The purpose of the Linear Parks Master Plan is to provide long-term direction for the planning and construction of a well coordinated, sustainable and environmentally responsible trail network spanning the entire City, to provide recreational opportunities and to accommodate alternative transportation for a diverse range of trail users. The consultation portion of the project consisted of meetings with city staff, stakeholders and the public.

"Definitely need more trails for walking, running, and rollerblading so that we have an alternative to driving."

Resident

The vision of the Linear Parks Master Plan is:

- *An interconnected network of outstanding linear parks, serving all forms of non-vehicular movement, linking points of interest throughout the City, and providing healthy and diverse transportation and outdoor recreation opportunities.*



Goals are outlined for recreation, connections, accessibility, ecology, landscape character, and tourism. Identified benefits of linear parks include: environmental awareness, landscape appreciation, fun, increased social connections, tourism, heritage and cultural awareness, decreased use of vehicles, fitness and health.

Standards and guidelines are provided for six classes of trails:

- Class 1: Major Urban Promenade
- Class 2: Major City Wide
- Class 3: Roadside Corridor
- Class 4: Standard Multi Use
- Class 5: Narrow Multi Use
- Class 6: Nature Trails





The first map indicates the location and class of the proposed linear park network. Detailed trail definition sheets (Appendix A) provide information on each existing and proposed linear park.

Design guidelines are provided for: siting and overall design of trails, accessibility, trail heads, signs, viewpoints and rest areas, barriers and fences, and vegetation.

The implementation and phasing plan identifies methods and sources of funding for land acquisition and trail development. The second map identifies the highest priority trails targeted for development within the first 10 years of the plan (2009-2019).

1.0 INTRODUCTION

1.1 BACKGROUND

The City of Kelowna's plans for a trail network were first formalized and identified in the 2002 Official Community Plan (OCP) (Table 14.1 and Map 14.2. in the Kelowna 2020 OCP). Since that time, the City has been working on the construction of on-road and off-road walkways and bicycle routes. In September 2000, the Bicycle Network Master Plan, which identifies on-road bicycle lanes, was completed by the City of Kelowna. That plan set a clear direction for bicycle lanes, however with increasing growth and the fairly conceptual trail network in the OCP, the City decided that a Linear Parks Master Plan was required.



1.2 PURPOSE

The purpose of the Linear Parks Master Plan is to provide long-term direction for the planning and construction of a well coordinated, sustainable and environmentally responsible trail network spanning the entire City, to provide recreational opportunities and to accommodate alternative transportation for a diverse range of trail users.

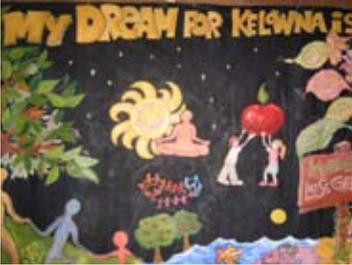


The work consisted of the following components:

- Identification of the vision, goals and benefits of the linear parks system,
- Development of a classification system and trail standards,
- Identification of existing and proposed linear parks,
- Development of an implementation and phasing plan, and
- Provision of information on each trail in a user-friendly format.



1.3 PLANNING PROCESS



*"The city has done a great job with parks and greenspace."
-Resident*



The consultation portion of the project consisted of a variety of meetings with city staff, stakeholders and the public as follows:

- Presentation of the first draft of the classification system and trail standards, and existing and proposed linear parks, to stakeholders including: Regional District staff, neighbourhood associations and trail user groups - Wednesday, Sept 17, 2008,
- Presentation of the first draft of the classification system and trail standards, and existing and proposed linear parks, to Council – March 11, 2009,
- Regular meetings with staff from Planning, Transportation, Environment, Finance, Recreation and Real Estate over approximately two years to discuss the various issues and components of the plan, and
- Public open house displaying a revised classification system and trail standards, and existing and proposed linear parks - Tuesday, April 14, 2009.

The input received from stakeholders and the public was generally positive, with the primary comments indicating interest in accelerating the construction of trails.

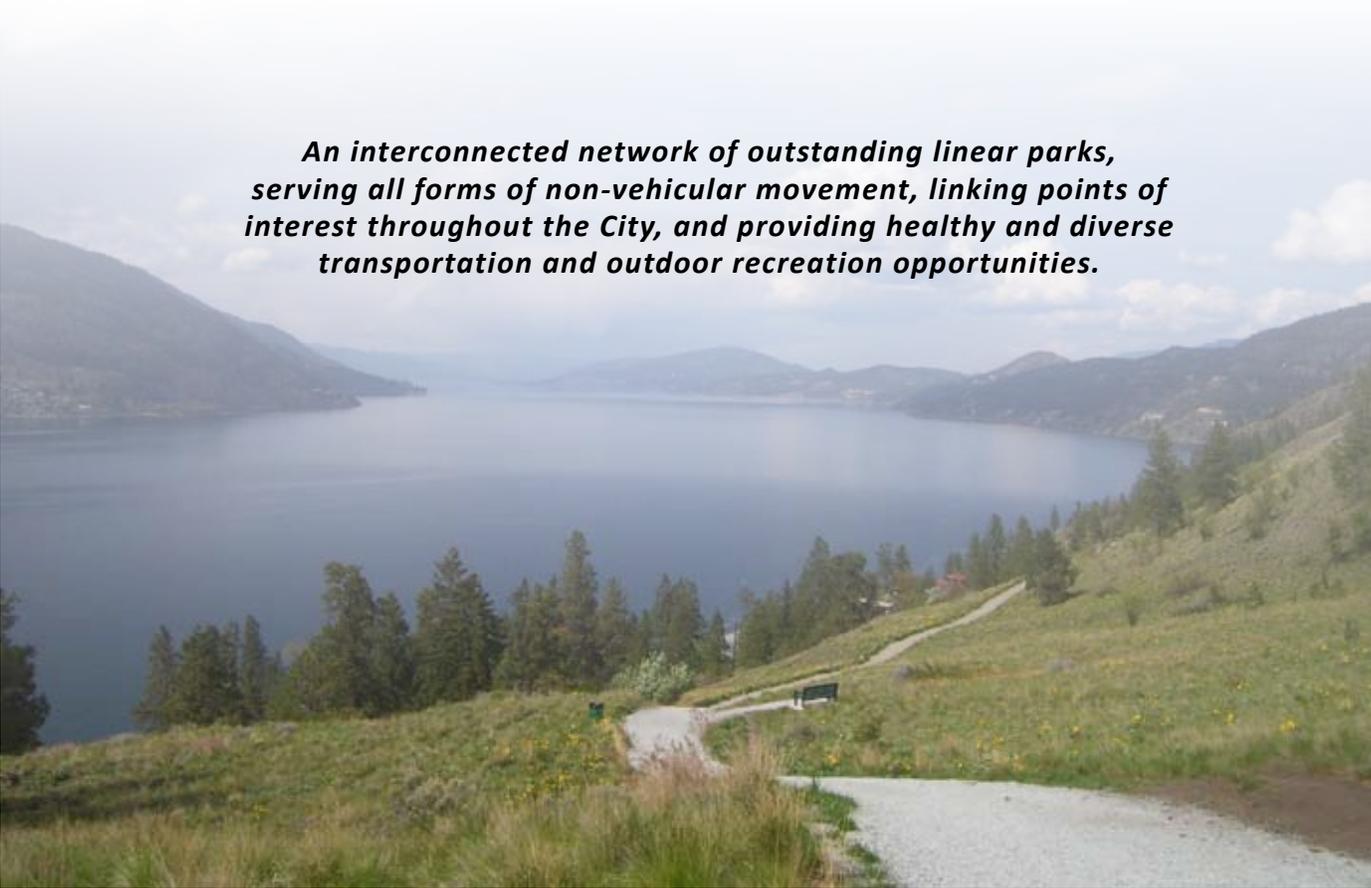
2.0 GUIDING STATEMENTS

The vision, goals and benefits described in this section set the framework for the Linear Parks Master Plan. These were developed with input from city staff, stakeholders and the public, and they are consistent with the OCP and other city policies and strategies.

The City of Kelowna has been working for several years on a Linear Parks Master Plan. This plan refines the trail network identified in the 2002 Official Community Plan, and it complements the plan for on-road bicycle lanes in the City's Bicycle Network Master Plan. This plan has helped to inform the Kelowna 2010 - 2030 OCP update.

2.1 VISION

The vision to be accomplished through implementation of the Linear Parks Master Plan is:



An interconnected network of outstanding linear parks, serving all forms of non-vehicular movement, linking points of interest throughout the City, and providing healthy and diverse transportation and outdoor recreation opportunities.

2.2 GOALS

The goals, described in this section, are based on community input and various City of Kelowna strategy objectives and policies.



Recreation

Provide safe and enjoyable trails and infrastructure that encourage diverse recreational activities, including walking, hiking, biking, jogging, cycling, in-line skating, equestrian, and universal access.



Connections

Provide trail connections that increase city-wide and neighbourhood connectivity, with links to parks, schools, transit nodes, natural areas, waterfronts, urban centres, heritage buildings and landscapes, landmarks, tourism accommodations, cultural and recreational public facilities, and Regional District trails.



Accessibility

Provide equitable access to the degree possible, regardless of physical ability, financial resources, or residence location.



Ecology

Protect and enhance environmentally sensitive areas, providing educational opportunities to understand their values, while balancing the accommodation of public access.

Landscape Character

Locate the trail system so that it offers opportunities to appreciate Kelowna's unique landscape characteristics, e.g. water views, hillside views, mountain tops, creek systems, irrigation flumes, agricultural landscapes, outcrops, bluffs, forests, marshes, small lakes and ponds.



Tourism

Provide a trail system that will be a desirable attraction for tourists, in terms of location, character, quality, and support infrastructure.



2.3 BENEFITS



Trails are highly valued by the public, and they provide many benefits to residents and tourists

Environmental Awareness

Trails provide unlimited opportunities to view and to learn about plants, wildlife, and ecological processes as the environment changes through the seasons.



Landscape Appreciation

Trail users become more aware of their surroundings and more appreciative of the beauty of nature and the city, fostering an increased sense of civic identity and pride.

Fun

People of all ages can participate in the activities supported by trails, and enjoy the wide variety of interesting sights to be seen.



Increased Social Connections

The people who use trails often consider it a social as well as a physical activity, going out with a friend, or meeting and connecting with other trail users.

Increased Tourism

Exceptional trail systems are a tourism draw, providing an attraction that will draw and retain visitors, resulting in positive economic returns, especially in association with special events.



Heritage and Cultural Awareness

Trails lead visitors to places that are rich in history, including sites of past events, heritage structures, and settings of cultural heritage value to First Nations.

Decreased Use of Vehicles

Trails provide support for alternative modes of transportation, resulting in decreased use of motorized vehicles.



Fitness

Trails provide opportunities for vigorous activities including walking, hiking and cycling, enabling users to increase their fitness levels.

Health

The health benefits of trails, in addition to exercise, include the experience of fresh air and the psychological benefits of being out in nature.



3.0 TRAIL CLASS GUIDELINES



The trails of Kelowna vary with their context, level of use, and specific location. To capture the hierarchy, the trails have been classified into six types. The criteria for the classes and design guidelines for each are described in this section.

Class	Name	Width	Level of Use
Class 1	Major Urban Promenade	4.5m or greater	High
Class 2	Major Multi-use	3.0 - 4.5m	High
Class 3	Roadside Corridor	3.0 - 4.5m	High
Class 4	Standard Multi-use	2.0 -3.0m	Moderate
Class 5	Narrow Multi-use	1.2 - 1.5m	Low-moderate
Class 6	Nature Trails	0.5 - 1.2m	Low

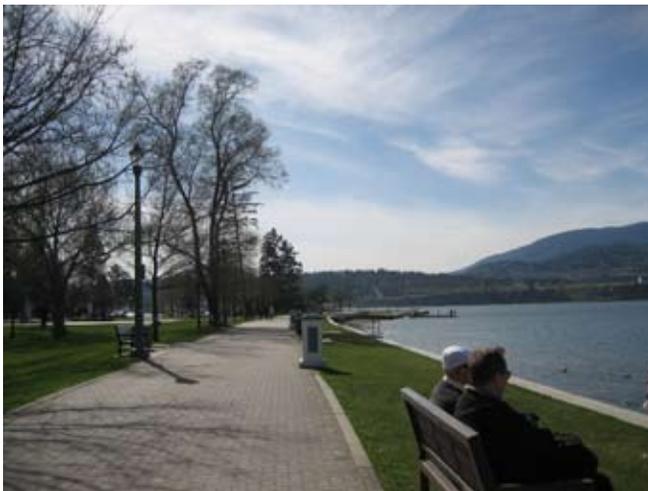


Trail widths and clear zones are indicated on the trail sections.

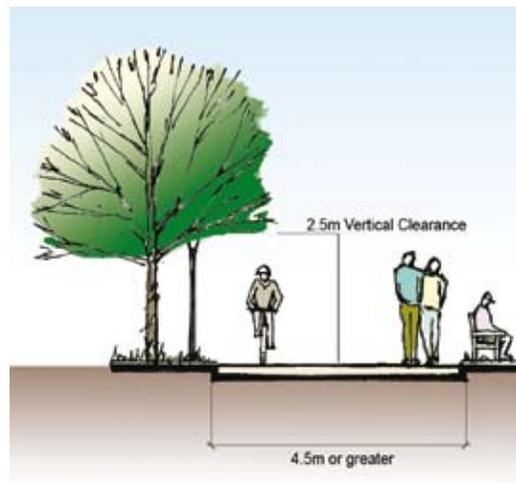
The clear zone is an area on either side of the trail to be kept clear of vegetation over 0.5 metres in height for safety/security reasons, protection against root damage, and limiting vegetation encroachment onto the trail.

3.1 CLASS 1: MAJOR URBAN PROMENADE

- Context:** Urban setting, major City-wide routes between or adjacent to destinations
- Level of Use:** High
- Type of Use:** Walking, jogging, cycling, wheelchairs, roller blades, general passage by all ages, maintenance vehicles
- Location:** Town centres, prominent locations, e.g., waterfront



City Park



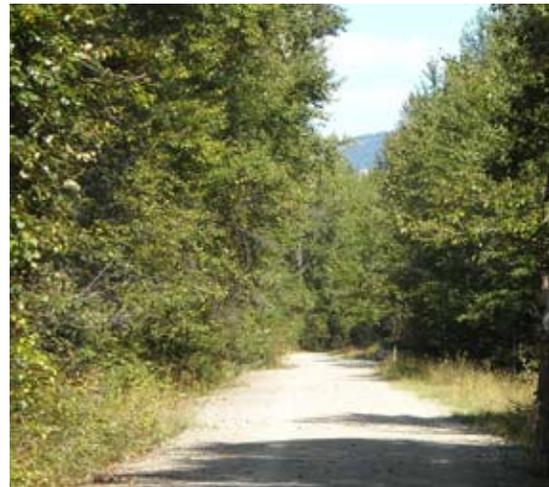
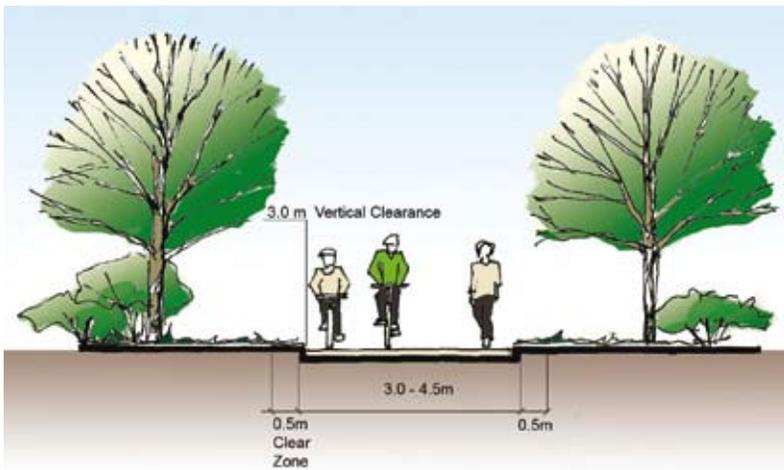
Design Guidelines

- Surface:** Hard surfaced, usually with all or some special paving, e.g., pavers, stamped concrete
- Trail Base:** Solid granular base with full drainage as required
- Longitudinal Slope:** Maximum 5% (1:20) with short ramps up to 8% (1:12), follow Universal Accessibility Guidelines
- Accessibility:** Universal accessibility throughout, including access points and urban braille*, wheelchair preference is a 2 m wide smooth surface, e.g., asphalt, saw-cut concrete
- Infrastructure:** Pedestrian lighting, benches, points of interest, staging areas with parking, kiosks, signage, waste receptacles, bollards

**Urban Braille is a leading edge, user driven approach to the planning and design of public spaces. It is a system of tactile information serving the needs of the visually impaired. Using color and textures contrasts, it provides warning signals and clues related to orientation.*

3.2 CLASS 2: MAJOR MULTI-USE

Context:	Major City-wide routes
Level of Use:	High
Type of Use:	Walking, jogging, cycling, wheelchairs where possible, roller blades, equestrian, general passage by all ages, maintenance vehicles
Location:	Parks, creek corridors (beyond the Riparian Management Area – where possible), irrigation flumes



Mission Creek Greenway

Design Guidelines

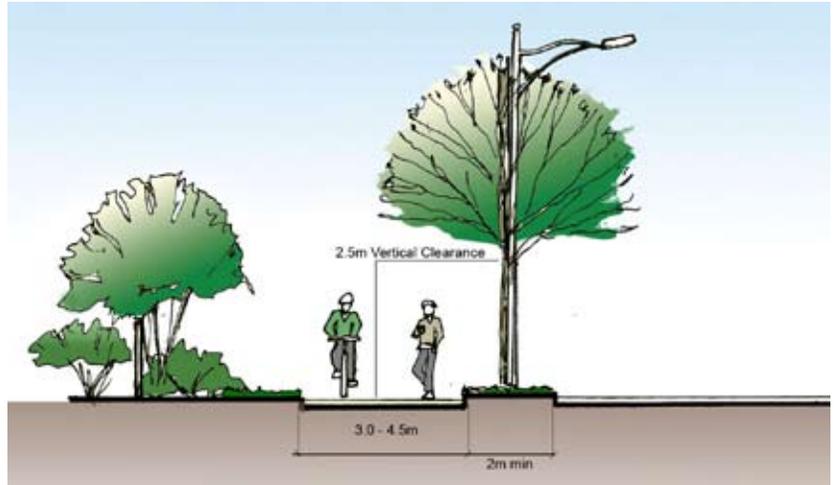
Surface:	Hard surfaced or well compacted aggregate, e.g., decomposed granite or recycled asphalt grindings
Trail Base:	Solid granular base
Longitudinal Slope:	Typical maximum 8% (1:12) with maximum 12% (1:8) for short sections
Accessibility:	Universal accessibility where possible, including access points to accessible portions
Infrastructure:	Benches, occasional points of interest, staging areas with parking, kiosks, signage, pedestrian lighting where appropriate, waste receptacles, bollards

3.3 CLASS 3: ROADSIDE CORRIDOR

Context:	Major routes through the City
Level of Use:	High
Type of Use:	Walking, jogging, cycling, wheelchairs where possible, general passage by all ages, maintenance vehicles
Location:	Road corridors



Black Mountain Recreation Corridor

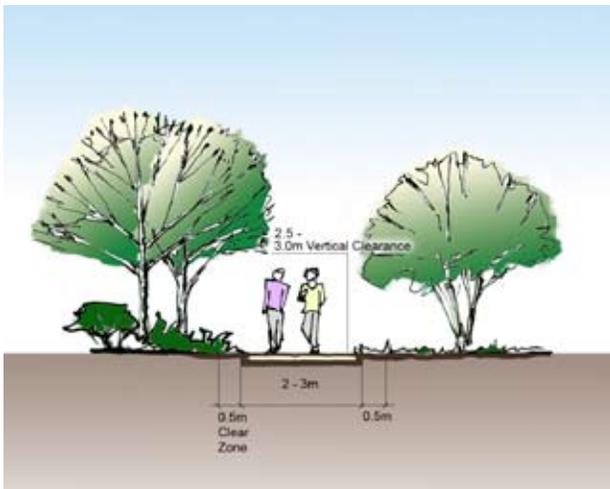


Design Guidelines

Surface:	Hard surfaced wheel path, with hard surfaced or well compacted aggregate pedestrian path. Wheel and pedestrian paths can be separated (e.g., Abbott Street) or combined
Trail Base:	Solid granular base with full drainage as required
Longitudinal Slope:	Typical maximum 8% (1:12) with maximum 12% (1:8) for short sections
Accessibility:	Universal accessibility where possible, including access points to accessible portions
Infrastructure:	Benches, occasional points of interest, kiosks, signage, pedestrian lighting where appropriate, waste receptacles, bollards

3.4 CLASS 4: STANDARD MULTI-USE

Context:	Significant routes through neighbourhoods, secondary routes
Level of Use:	Moderate
Type of Use:	Walking, jogging, cycling, wheelchairs where possible, maintenance vehicles, equestrians
Location:	Parks, creek corridors, irrigation flumes



Belmont Park

Design Guidelines

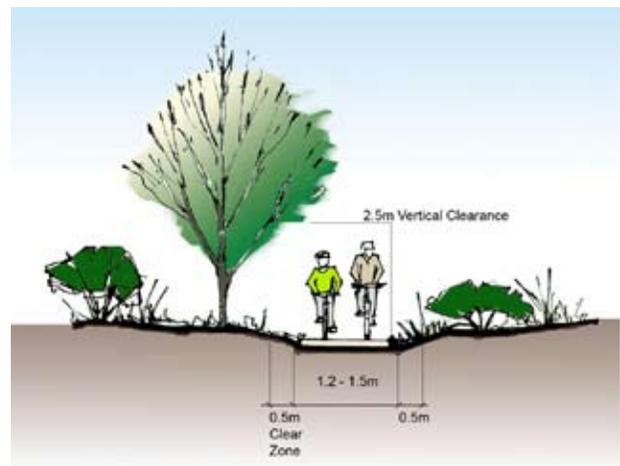
Surface:	Hard surfaced or well compacted aggregate
Trail Base:	Granular base
Longitudinal Slope:	Maximum 8% (1:12) where possible, otherwise maximum 15% (1:7)
Accessibility:	Universal accessibility where possible, including access points to accessible portions
Infrastructure:	Benches, small staging areas with parking, kiosks, signage, pedestrian lighting where appropriate, waste receptacles, bollards
Standard:	Need 2.4 m minimum width Require 3.0 m vertical clearance for equestrians and 2.5 m for others

3.5 CLASS 5: NARROW MULTI-USE

- Context:** Connections to major routes
- Level of Use:** Low - Moderate
- Type of Use:** Walking, jogging, mountain biking
- Location:** Parks, creek corridors, natural areas, ponds, irrigation flumes; locations with space limitations



Chichester Wetland

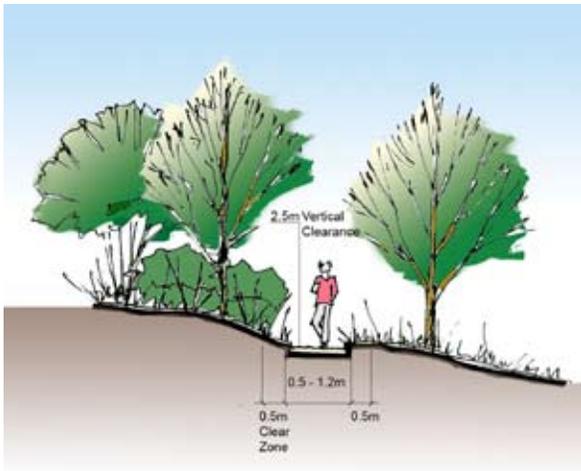


Design Guidelines

- Surface:** Aggregate, hard surfaced
- Trail Base:** Granular base
- Longitudinal Slope:** Maximum 8% (1:12) where possible, otherwise maximum 15% (1:7)
- Accessibility:** Universal accessibility where possible, including access points to accessible portions
- Infrastructure:** Occasional benches, occasional staging areas, kiosks, signage, waste receptacles, bollards

3.6 CLASS 6: NATURE TRAILS

Context:	Lower use locations
Level of Use:	Low
Type of Use:	Walking, mountain biking, hiking (usually 1 or 2 uses designated)
Location:	Natural and rural areas, creek corridors



Knox Mountain Park

Design Guidelines

Surface:	Natural ground, aggregate where needed
Trail Base:	Native material
Longitudinal Slope:	Maximum 20% (1:5) for hiking/walking only without infrastructure (see below); if used for mountain biking, maximum 15% (1:7)
Accessibility:	Limited
Infrastructure:	Kiosks, signage, waste receptacles, structures for slopes over 20%, e.g., steps/ramps, landings, railings

4.0 DESIGN GUIDELINES

Trails need to be sited and designed carefully in order to meet the goals and achieve the desired benefits. This section contains principles and guidelines for trail siting and design.

4.1 SITING AND OVERALL DESIGN

Trails need to be sited in the field to be responsive to a variety of specific conditions. The following are some guidelines for siting of new trails:

- Protect riparian management areas (RMA) by siting trails outside the designated RMA, unless there are no other alternatives. (Trails within an RMA will require assessment and approval by the City and Province.)
- Protect as much vegetation as possible in riparian and environmentally sensitive areas, and obtain necessary permits for riparian crossings and boardwalks from the City and appropriate senior government agencies. Trails within and crossing riparian areas require an environmental assessment, design recommendations, and monitoring during construction by a qualified environmental professional.
- Protect important existing vegetation by siting trails around such features.
- Provide focal points of scenic and cultural features.
- Avoid long straight segments. Provide enough meander to make the trail interesting, but avoid excessive weaving.
- Locate riparian crossings at the narrowest point of the creek or gully if possible.
- Construct riparian crossings as close as possible to a right angle with the creek.
- As soon as possible after construction, restore disturbed areas with growing medium if possible, and use seed/sod and/or native plants for stabilization. Select native plants that reflect the habitat, e.g., riparian, hillside.





- Develop a palette of design elements to be used in the trail system, and apply these throughout. The palette will include some items that never vary, e.g., signs, garbage receptacles; and other elements that may vary with the setting, e.g., benches, bollards.

Special Paving

The majority of the trail system will be surfaced with asphalt, gravel or native soil based on the trail class guidelines. However, in special nodes, urban areas, zones of conflict, or places with separated pedestrian and bike trails, a different paving material may be used to provide the user with a visual and tactile cue to the change in use.



Ensure that trails with special paving provide a surface suitable for wheels, such as wheelchairs, strollers, and rollerblades. This could be a strip of smooth paving, narrow bands of smooth paving, or pavers that do not provide a bumpy experience.

Experiential Component



The trail system passes through a wide range of settings, including: urban, suburban, rural, waterfront, naturalized and active parks, all types of residential areas, and industrial and commercial areas. Each of these areas has its own character. Nodes should be oriented to take advantage of the various experiences available along the trail. These experiences include excellent views of the surroundings, people watching at the waterfront, interactions with nature, watching boats come and go, and discovering how industry works.

Bridges and Boardwalks

Bridges and boardwalks can help to traverse challenging terrain and they also provide unique viewing and experiential opportunities:

- Consider boardwalks in very specialized locations where a nature-viewing opportunity can be provided without undue damage to environmental resources.
- Keep bridge abutments as small as possible and screen with planted riparian vegetation.
- Provide curb and railing designs that consider safety for wheelchair users.

- Extend the railings of major bridges and boardwalks approximately 5 m from the ends of each structure where needed as a safety transition (to avoid protrusions of railings onto trails at the ends of structures).



Safety

The safety aspects of the trail system are of the utmost importance. Many of the guidelines contained in other sections of this document are intended to promote safety. The following are some specific guidelines related to design, construction and maintenance practices that support safety:

- Apply the principles of CPTED (Crime Prevention through Environmental Design) to all trail planning and design work.
- Locate at-grade trail crossings of arterial roads only at intersections with traffic signals, or if mid-block, install pedestrian-activated crossing signals.
- Use pathway design, public education and signs as some of the methods to control speed.
- For pathways next to steep slopes, provide vegetation and/or a railing between the trail surface and the slope, depending on the proximity and steepness of the grade.
- Adopt a code of conduct (etiquette) for use of the trail system and post this at major trail heads. The code is to include: speed, keep right, “wheels yield to heels”, cyclists- sound warning, etc.
- Post the modes of transport permitted on each type of trail at trail heads.
- Request a review of the design and management of the entire trail system or specific trails from the police when appropriate.
- Acquire the greatest width of land possible along the linear park corridor to minimize conflicts with adjacent land uses and to allow for sightlines for user safety and security.



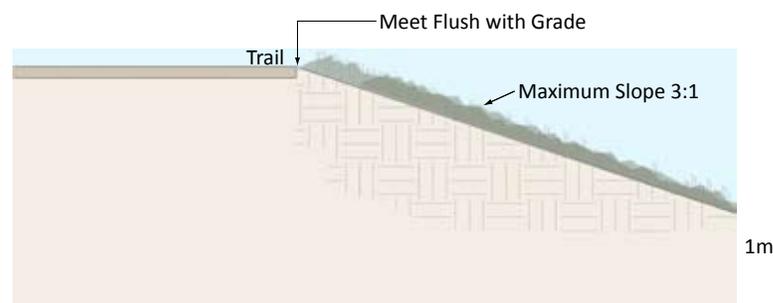
4.2 ACCESSIBILITY



The Class 1- Major Urban Promenades are to be designed for universal accessibility, and to urban braille standards where possible. Class 2 - Major multi-use, Class 3 - Roadside Corridor, Class 4 - Standard Multi-use, and Class 5 - Narrow Multi-use should be universally accessible where possible. Class 6 - Nature Trails will have limited opportunities for accessibility, but accessibility should be provided where possible.

Typical Maximum Slopes: Grade no greater than 12% (1:8) with a rest area every 100m for 6% grade, every 20m for 10% grade and every 8m for 8.3% grade.

Slopes near Path: Ensure that the path surface meets flush with the surrounding grade immediately adjacent to the trail, maximum slope within 1 m of trail 3:1 where possible (may not be possible on trails along steep terrain).

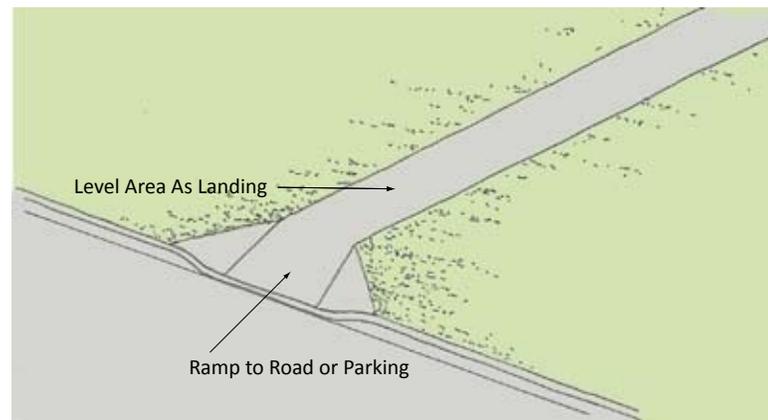


Trail Section



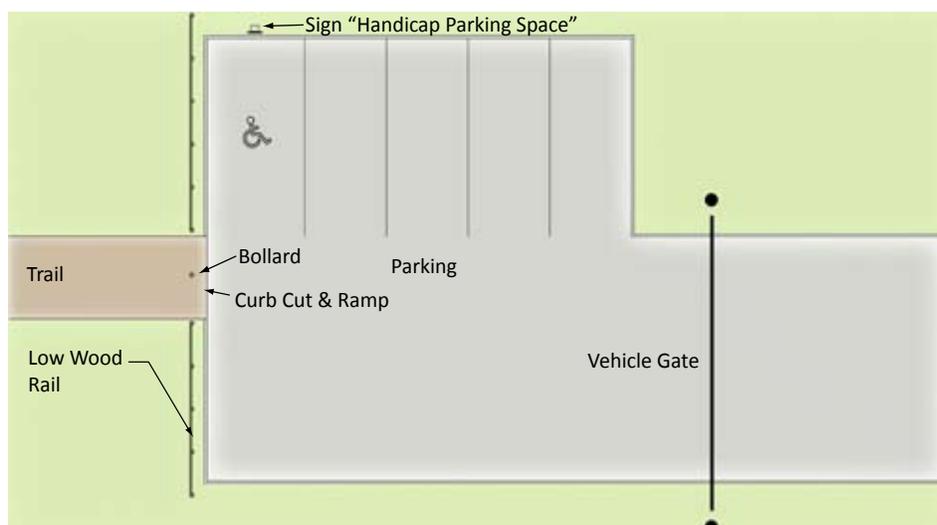
Surfacing: Ensure uniform consistent surface (well compacted for aggregate trails) without puddles or depressions and free of obstructions.

Curb Cuts: Provide curb cuts where path crosses roads and from parking to trail.



Drainage Grates: Ensure there are none within the trail surface.

Trail Heads and Parking: At trail heads of universally accessible trails, provide designated handicap parking stall(s) per relevant City bylaws. Provide access from these parking spots directly to the accessible entry of the trail and ensure there are no speed bumps that wheelchair users need to cross. Provide accessible paths to information and interpretive signs and to major park features and use areas.

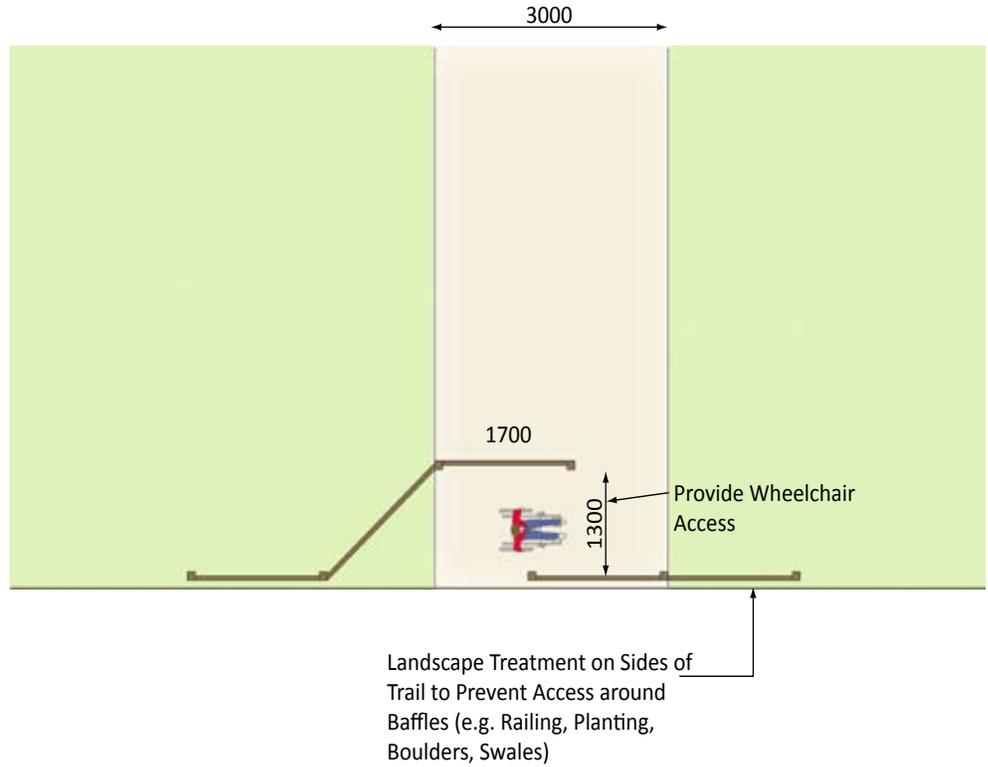


Sample Parking Layout at Trail Head

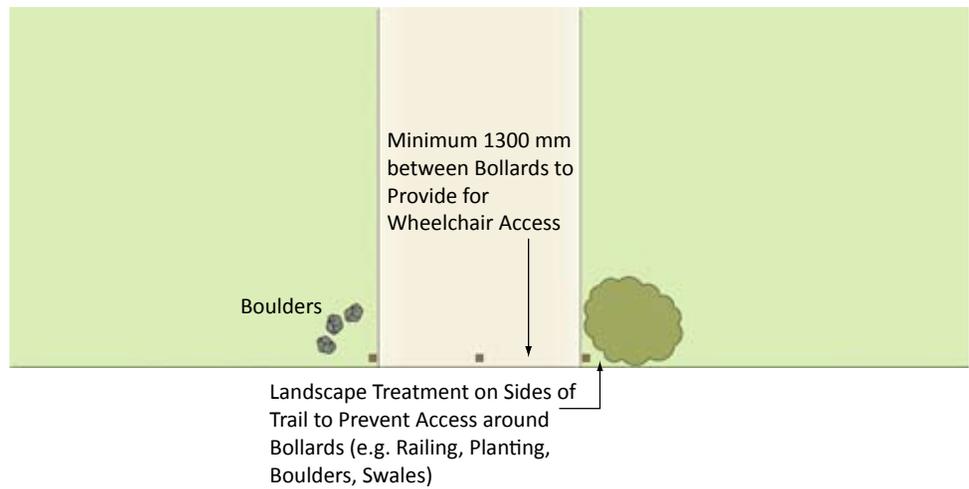
Washrooms: At major trail heads of universally accessible trails, provide permanent or portable washrooms with wheelchair-accessible stall(s) where possible.

Bollards, Baffles and other Barriers: Ensure that spaces between bollards, baffles and other barriers are sufficient to allow passage by wheelchairs on universally accessible trails. Ensure that motorized vehicles are prevented from entering the trail.





Baffles

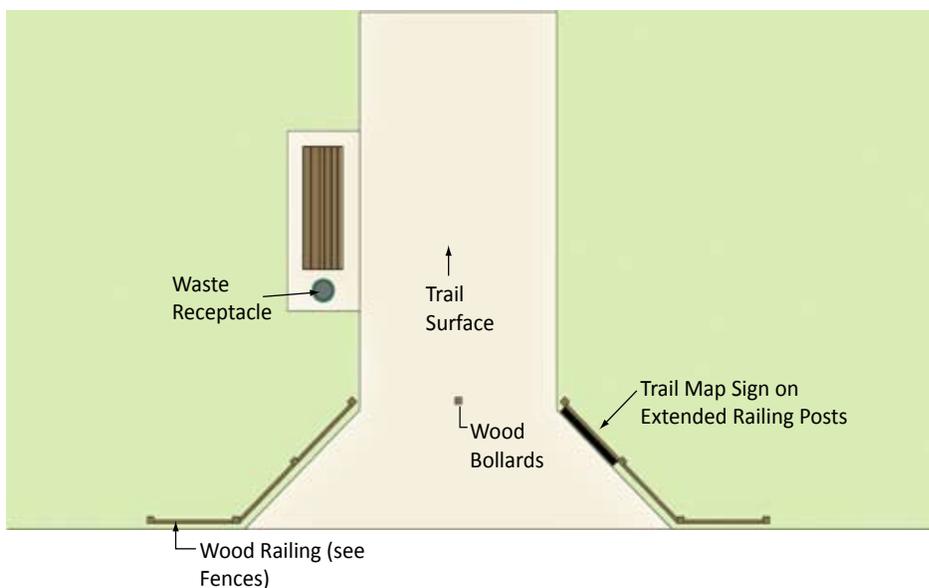


Bollards

4.3 TRAIL HEADS

Trail heads are the major access points to trails. They typically occur at roads, or parking lots within parks. Consistency in the design of trail heads can help to establish an identity for the City's trail system and help in way-finding.

There are two primary levels of trail heads (see sketches and guidelines below). These are examples only, as trail head designs will vary based on site-specific conditions such as soils, slopes, views, vegetation, interpretive opportunities, and adjacent land uses and features.



Sample Minor Trail Head

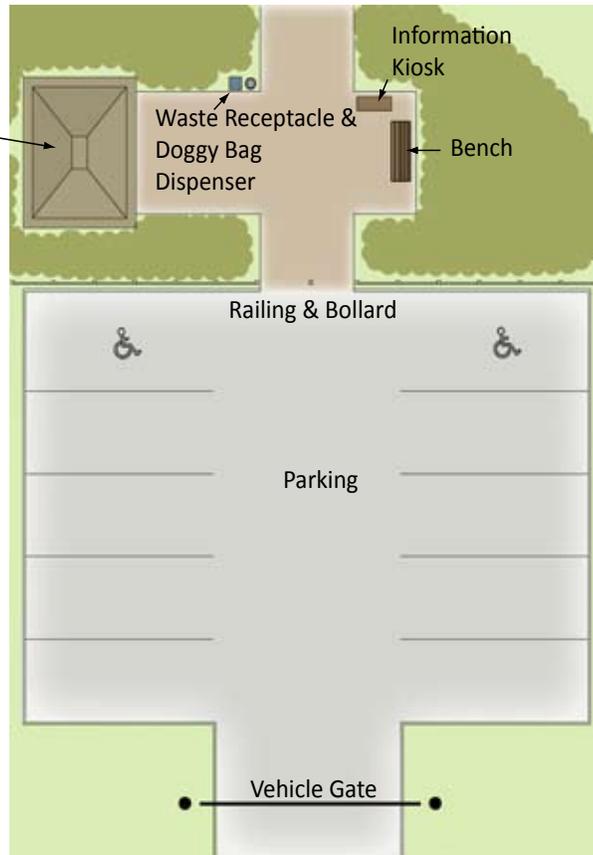
Minor trail heads typically include minimal facilities such as three bollards, trail identifier sign, waste receptacle, and sometimes a railing.

Major trail heads typically have parking, sign kiosk, waste receptacle, and railing or continuous bollards. Additional facilities may include a larger area of the trail surface material, bench(es) washroom building, and drinking fountain. Trail heads are an excellent opportunity to incorporate public art.





Washrooms
w/Outdoor
Drinking Fountain



Sample Major Trail Head

Locate parking for bicycles in easily accessible, highly visible areas, and next to places where people might choose to stop. Provide bike racks that support the frame of the bike, consistent with bike racks used elsewhere in the city.

Site garbage receptacles in convenient locations to reduce the amount of litter in the city and along the trail. Receptacles are to conform to city standards and be easily accessible to maintenance staff.



Landmarks help to locate oneself in the landscape. They can take on many physical forms including landforms, public art, bridges, architecture, etc. At principal trail heads, make efforts to provide interesting and identifiable landmarks. They provide trail users with an easily identifiable place to meet and promote the city to visitors.

4.4 SIGNS

A way-finding strategy will help users to navigate the trail and provide identity for the trail. This identity will be important in raising the profile of the trail system and increasing tourism opportunities. The way-finding pieces are to be simple, clear, and integrated into the fabric of the trail as much as possible.

There are four types of signs that will be located along the trail system as follows:

- Regulatory signs indicate traffic regulations, e.g. stop, yield to pedestrians,
- Warning signs advise users of potential hazards, e.g. railway crossing ahead,
- Educational, or interpretive, signs provide information about the surroundings, e.g. description of natural history, vegetation, fish and wildlife, landmarks.
- Way-finding, or directional, signs indicate routes and facilities, e.g. trail name, bicycle route, bicycle parking, distance to specific destinations, map of trail system indicating current location.

Options for mounting signs include:

- On an information kiosk,
- On a post, possibly on a post already used for lighting or another purpose,
- On a bollard or railing,
- As a pavement marking.



4.5 VIEWPOINTS AND REST AREAS



Viewpoints and rest areas are locations along trails that provide opportunities for sitting, socializing, resting, and viewing. More elaborate viewpoints may also provide opportunities for viewing scenery, viewing wildlife, or learning about either of those.

The sketches on the next page provide examples of a typical viewpoint and a typical rest area. The design of viewpoints and rest areas will vary based on site-specific conditions such as soils, slope, views, vegetation, interpretive opportunities, and adjacent land uses and features.



Edges

People love to be on edges, especially strong and distinct edges. Common types of edges are between meadow and forest, land and water, valley wall and valley floor, and cliffs.

Location Criteria

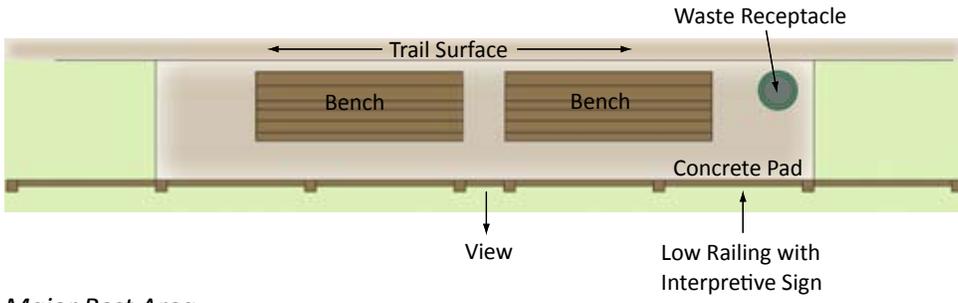
Locate rest areas a maximum of 500 m apart if possible.

Locate major rest areas at natural viewpoints, major use areas, primary trail heads, or other nodes based on site-specific opportunities.

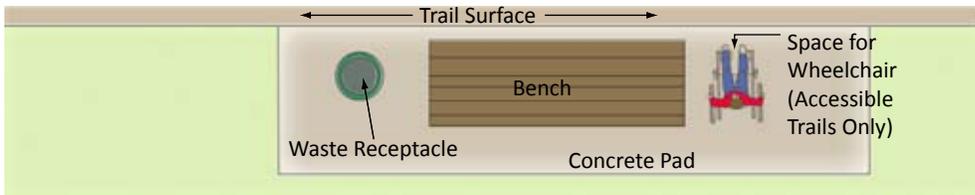


Seating

Seating is best when it can be flexible to accommodate the diversity of the trail users, allowing people options to sit and enjoy the view or to sit in groups in busy locations. Choose seating to reflect the character of the trail.



Major Rest Area



Minor Rest Area



4.6 BARRIERS AND FENCES



Bollards and Baffles

Design and site bollards and baffles to permit wheelchair passage and to prohibit vehicular passage. Some bollards and baffles are to be removable to allow for service vehicle or equipment access. The next level up would add a low railing to the sides of each trail, either where more protection is required or where there is a need to make the trail head more visible.

Generally, use metal bollards in more urban environments, and wood bollards in more natural settings or where a wood fence or railing is used at a trail head.



Baffles are to be used instead of bollards on nature trails where bicycle use is not permitted, and at major road crossings or other locations where cyclists are encouraged to dismount. Baffles are to be constructed of metal in more urban areas, and of wood only in more natural areas, in keeping with the surroundings.

Chains between bollards are not preferred. They are difficult to detect for the visually impaired, they can be dangerous for cyclists, and aesthetically they don't have the same enduring quality of the other options.

Fences



Many different types of fences or barriers will be required along the trail system, and the specific applications will need to be determined in consultation with the City. The following are some types of fences and their potential locations:

- **Low wood rail 0.6 m (2 feet) high:** This railing functions as a visual barrier. It may be used to identify a property line between public and private realm, or a particular use (e.g. no dogs allowed, environmentally sensitive area, top of slope at a viewpoint, edge of parking area) where restricting access is not a major issue and aesthetic quality is of some concern. A potential variation on this railing is wire mesh on the back side in locations where access by dogs or wildlife under the railing needs to be curtailed.

- **Higher wood rail fence 1.1 m (3.5 feet) high:** This railing may be used as part of an identifying marker for the trail system where visibility of the railing is important and the height will not affect views (e.g. at trail heads, road crossings).
- **Black vinyl-coated galvanized chain link fence 1.2 to 1.8 m (4 to 6 feet) high:** This fence may be used adjacent to single family back yards, where there are major safety or access issues, or along environmentally sensitive areas that have the most sensitive resources, where any access by humans could negatively affect the resources. The purpose of the fence is to serve as a barrier. Black is proposed because it blends better with the surroundings. The purpose of galvanizing is durability.



Gates

Typically, there will be no need for gates along the low and higher wood rail fences. Locking gates can be located within the black chain link fence as required to satisfy monitoring and maintenance requirements. Locking gates can be made available to each private property owner with a chain link fence where appropriate to allow passage from their property to the public land, with permission from the City.



4.7 VEGETATION

Tree Protection

Trees are important resources that add aesthetic and environmental value to the areas surrounding the trail system. Take care to protect trees wherever possible in the planning, design, construction and maintenance of the trail system.

The following are guidelines for each phase of work:

Planning and Design Guidelines

- Route trails around the drip line of existing significant trees where possible.
- In densely forested areas, route trails through major gaps between trees where possible.
- Stake and adjust trail alignment on site with City prior to finalizing the alignment in order to avoid trees.
- A report by a certified arborist is required for trails proposed within the drip line of significant trees and/or where there is a risk to life or property.
- Trim hazard trees to create snags for wildlife instead of removing the entire tree where possible and appropriate.

Construction Guidelines

- Where trails pass close to trees, take measures to protect the tree as outlined in the arborist's report, e.g. protective fencing, clean cuts on any roots that must be cut, minimize use of heavy equipment, hand digging, restricting material storage or any other form of compaction over tree roots.
- Minimize excavation in areas with dense trees, especially for trails that are not to be paved. Instead consider the use of geotextile with granular material placed above existing grade, boardwalks, or decking over drain rock.



“Retain natural vegetation and vistas as much as possible. Expand access to lake and shoreline.” Resident



- For paved trails, remove all roots below the path surface in preparing the subgrade. Where there are tree roots likely to extend under the path, use a commercial root barrier to prevent this.
- Avoid cuts to tree bark by construction equipment.
- Consider windthrow hazard if clearing clumps of trees, especially in densely forested areas.
- Do not change the drainage pattern around existing trees unless approved by the City arborist or landscape architect.
- Do not attach signs to trees.



Landscape Guidelines

The landscape treatment adjacent to trails will depend on the trail type as well as the surrounding area. The following are general guidelines for the landscape in different types of areas.

All Areas

- All landscape installation and maintenance practices are to conform with the latest edition of the B.C. Landscape Standard.
- Avoid planting masses of tall shrubs near the trail where they will impede visibility along the trail, or the view from parking lots, washrooms or other use areas, in accordance with CPTED guidelines.
- Native plants are preferred over exotic species, particularly in natural or naturalizing areas.
- Minimize changes to the existing or natural drainage pattern. Do not add or remove excess amounts of water.
- Ensure that adequate silt control measures and other best management practices are used during construction.
- Increase environmental performance of landscapes along the trail by including native trees and shrubs.





- Add innovative rain gardens and bioswales that infiltrate, clean, and slow urban run-off.
- Use low impact materials and construction methods.
- Develop plans for management of invasive species including removal of invasive species from natural areas and replacement with native varieties where possible.
- Create small scale social spaces for people to stop and appreciate nature and wildlife. Where options for plants are limited, use design details or public art to connect people with nature.

Park Areas



- Integrate the trail with the surrounding landscape and park design.
- Plant large trees at least 2 m from the edge of Class 1- Major Urban Promenades, and at least 1.5m from the edge of other trails, unless the trail is passing through an urban plaza, in which case trees could be planted with tree grates or in planters.

Natural Areas



- No new planting will generally be required in natural areas. If planting is required for restoration or screening, use only native species. Protection of existing vegetation and brushing within the clear zone will be the primary management methods.
- Minimize disturbance to the soil surface and existing vegetation adjacent to trails.
- Where areas adjacent to trails are disturbed, restore growing medium (with imported material if necessary) and revegetate with grass and/or native plants as appropriate.
- Use bioengineering for erosion control along steep slopes where erosion is a risk or has occurred.

Utility Corridors

- Along utility corridors, comply with the specific guidelines of the utility regarding planting.

- Along hydro corridors, refer to Planting Near Power Lines by B.C.Hydro (or any updated brochures). B.C. Hydro requires that plants within 5 m of power lines have a maximum mature height of 6 m. Beyond this zone and up to 20 m from the power line, the maximum mature height of trees should be 12 m.



Residential Areas

- Where trails are close to residential property, provide adequate screening with plant material for privacy and to enhance the quality of the trail, but avoid tall dense thickets to address safety and security.
- Reduce the visual impact of hard edges such as fences, retaining walls or extensive paved areas with tree and shrub planting.
- Encourage development of multi-family housing rather than single family housing adjacent to linear parks, without fences or other barriers between the open space and the new trail.



5.0 LINEAR PARK NETWORK



The existing and proposed linear parks are illustrated on the Trail Classes map, and they are described on the trail definition sheets in Appendix A. The format for the trail definition sheets is as follows:

- **Date:** date sheet was last revised (date changes automatically)
- **Linear Park Number:** assigned in the GIS
- **Linear Park Name:** determined by the City based on location and landmarks
- **Trail Classification:** Class 1 through 6 with name of trail class, and length of trail in each class
- **Neighbourhood Sector:** determined by overlay with Official Community Plan (OCP) neighbourhood map
- **Priority:** assigned priority consisting of: existing trail, high priority (to be constructed within the next ten years), or low priority (beyond ten years). The criteria for identifying high priority trails are described in section 6.0.
- **Linear Park Scope**
 - **Start Point:** description of the location
 - **End Point:** description of the location
 - **Secondary Connections:** description of other connection points along the trail
- **Length and Status**
 - **Total Length:** calculated using GIS
 - **Existing Trail:** identified by the city and calculated using GIS
 - **Proposed Trail:** calculated using GIS
 - **City Owned Corridor:** to be determined by the City
 - **Required Corridor:** to be determined by the City



- **User Groups:** determined by the trail classifications 1 through 6. If the trail has more than one classification, the user groups have been identified for both.



- **Land Acquisition Strategy**

- **Primary:** The potential means of acquisition are identified, including: dedication through subdivision or rezoning; within a park or road right-of-way; acquisition (purchase); or other.
- **Secondary:** secondary means of acquisition (see above)
- **Other:** other means of acquisition

- **Existing Utilities:** trails were overlaid with City GIS data which maps sanitary sewers, storm sewers, water lines, and easement locations. Where these services cross or connect with the trail, a check mark is indicated. If there are no services which cross or connect with the trail, an “X” is marked.



- **Environmental Requirements:** trails were overlaid with City GIS maps of OCP development permit (DP) areas. Depending on whether or not the trail enters into a DP area, a check mark or an “X” is indicated, respectively.

- **The DP areas include:**

- **DP Environment:** the riparian setback for creeks and shorelines, wetland buffers rated high or moderate, and top of bank area at Mill and Bellevue Creeks; as well as terrestrial ecosystems, i.e., steep slopes, rocky outcroppings, grasslands, etc.,
- **DP Urban:** commercial and industrial sites, urban centres, village centres, and general intensive residential and multiple unit areas where there are form and character guidelines,
- **DP Wildfire:** wildland fire hazard areas,
- **DP Hazard:** identified hazardous areas and locations with a slope over 30%.





- **Environmental Considerations:** identifies the riparian management area setbacks listed in the Kelowna 2020 OCP.
- **Project Description:** outlines the status of the trail and general topography of the area
- **Trail Opportunities/Challenges:** outlines opportunities and challenges such as views, amenities, slopes, and services such as powerlines. Identifies the existing and potential connections between residential neighbourhoods, parks, schools, commercial, industrial, rural, and agricultural areas. Identifies connections with other trails.

6.0 IMPLEMENTATION AND PHASING

There are two aspects involved in implementation of the Linear Parks Master Plan; acquiring the land, and developing the trail.

Land Acquisition

Most of the trails require the acquisition of linear parkland. The exceptions are Class 3 - Roadside Corridor trails, which typically occur within the rights-of-way of roads; and trails located within established parks.

There are two key methods for linear parkland acquisitions:

- City acquisition of properties or portions of properties from land owners (funds are allocated for linear park acquisition in the City's annual budget); and
- Linear park dedication as a requirement of subdivision and rezoning approvals.

When the City is purchasing land, it may be necessary to decide which properties to acquire along a linear park. The following are some evaluation criteria:

- Willing property owner,
- High level of connectivity with other portions of the trail,
- Anticipated level of use is significant,
- Property has features of interest, e.g., cultural or heritage resources, environmentally sensitive areas, good views, or other unique characteristics,
- Property has opportunity to support related infrastructure, e.g., trail head, viewpoint, park facilities,
- Public supports the acquisition (if known),
- Potential for a funding partnership is available, e.g., regional district, developer, community group, bequest,





- Cost is low compared to the property value,
- Property has a high potential to be sold for development making it unlikely to be available in the future.

The existing method for acquiring land for linear parks through the development process is outlined in the following policy:

- “Kelowna 2020 OCP 14.33 Linear Park Dedications. At subdivision for all development types and at rezoning for multiple unit housing, commercial, industrial and institutional developments, secure a 10.0 metre linear park corridor where trails are included in Table 14.1 and/or are shown on Map 14.2 [maps and tables will be replaced with the information in this Master Plan]. The 10.0 metre access corridor may be in addition to, and outside any riparian management areas that are requirements imposed through the Environment Chapter of the OCP.”



The proposed draft policy for the Kelowna 2030 OCP is as follows:

- “Linear Park Dedications.” Secure a 10-metre (20 metres along Mission Creek) statutory right-of-way for public access where trails are included in Table 5-1 and Map X.X at subdivision and rezoning for all development types. The 10-metre access corridor may be in addition to, and outside, any Riparian Management Area requirements imposed in this OCP. On the private property side of the public access corridor, the city may, as necessary, consider stipulating additional “no disturb” zones. Lot line adjustments or other subdivision applications not resulting in the creation of new lots suitable for the construction of buildings permitted under the applicable zoning will be considered exempt from this policy. Where a linear park corridor is to be established, it may also be necessary to pursue: a) dedication as road—for public route of access; b) rezoning as a protected area, park, or reserve status; or c) registration as a statutory right-of-way.

The policies above were reviewed by the City’s solicitor, Young, Anderson, to ensure the correct understanding of the City’s legal authority to regulate linear parks through subdivision and rezoning approvals. The following is a summary of the key points from the legal analysis:

- The City’s approving officer may implement the linear park plan by requiring the dedication of either parkland or highways without compensation, for both fee simple and bare land strata subdivisions;
- Council may make it a condition of rezoning for all types of development, including single family residential, that required trail corridors be dedicated to the City without compensation;
- Parkland and public access dedication requirements may be imposed over and above any requirements for environmental setbacks; and
- The development permit approval process offers no opportunity to require the dedication of land for parks or public access without compensation.



Trail Development Priorities

Once the land is available, trail construction can occur. Given the significant extent of the proposed linear parks system, the primary focus of trail development planning is on identifying trail priorities, which in turn determine the phasing of construction.

The phasing of trail development will depend on a variety of factors including, but not limited to: timing of land acquisition, cost of trail construction, existence of a developer willing to support the work, availability of grants, capital budget, and neighbourhood response. The following were the main criteria used to rank the priorities of linear parks:

- Proximity to urban centres,
- Connectivity between major destinations,
- Availability of funding partnership (e.g., Province, developer, community association), and
- High anticipated level of use.





The highest priority trails targeted for development within the first 10 years of the plan are identified on the Trail Priorities map. These include:

- The most important trails according to City criteria, e.g., cross-city connectors, locations with high demand and potential for high use, land already available, and
- Trails likely be achieved through subdivision and development approvals by 2020, where the developer will be responsible for providing the land and building the trail.

An additional map identifies all Proposed On-Road Trails.

The top six linear park priorities for acquisition and development are as follows:



- **Waterfront Walkway** - a) Strathcona Park to Kinsmen Park, and b) Rotary Beach Park to Mission Creek,
- **Mill Creek Linear Park** - Parkinson Recreation Park to Okanagan Lake,
- **Rails with Trails** - UBCO to Downtown,
- **Bellevue Creek Linear Park,**
- **Gopher Creek Linear Park,**
- **Mission Creek Greenway** - from Lakeshore Road to Okanagan Lake.



Consideration was given to identifying linear parks for the second phase of development, i.e., 10 to 20 year time frame. Since it is so difficult to predict that far ahead, it was considered preferable to update the phasing plan every five years. Should opportunities arise to acquire land through development, grants, or other economical means, the City will proceed with those acquisitions.

Funding for Class 3: Roadside Corridors is from a different source than all other trail types, as they are built as part of road construction projects. The priorities for these will be determined through the Active Transportation Project. Map 3 identifies the Roadside Corridors.

Financing the Plan

The sources of funds for land acquisition and trail development are many and varied, as described above. The Linear Parks Master Plan is too high level to determine accurate land acquisition and development costs. Individual master plans have been or will soon be prepared for each of the five priority trails to identify land acquisition, trail alignment, phasing, and costing.

The following are estimated 2009 construction costs for the various trail types. These costs include: clearing and grubbing, base preparation, trail surface, and the following infrastructure, where applicable - trash and recycling containers, pathway lighting, benches, bollards, and signage. The estimates do not include: demolition and removal, difficult terrain, geotechnical or environmental concerns, curbs, staging areas, parking, plazas, public art, water features, drinking fountains, bike racks, root barrier, trees, planting, seeding or sodding, irrigation, water or electrical service connections, catch basins or underground drainage, retaining walls, railings, ramps, stairs, boardwalks, bridges, access control gates, or off-site costs:

Trail Type	Cost per 100 linear metres (to nearest 100)
<i>Class 1: Major Urban Promenade</i>	\$173,900
<i>Class 2: Major Multi-Use</i>	\$46,900
<i>Class 3: Roadside Corridor (2 paths)</i>	\$49,300
<i>Class 4: Standard Multi Use</i>	\$20,600
<i>Class 5: Narrow Multi Use</i>	\$5,000
<i>Class 6: Nature Trails</i>	\$2,000

In order to achieve the priority linear parks within the next 10 years, the City will need to allocate an appropriate level of funding to land acquisition and trail development. This amount will need to be determined each year by staff, with consideration for other priority civic projects.



Next Steps



The Linear Parks Master Plan outlines a long-term vision for the City. The following is a summary of the next steps required in the implementation process:

- Update the OCP with the new linear parks maps and update the wording of the OCP linear parks policies.
- Place emphasis on land acquisitions in the next few years, in order to acquire land for the priority linear parks.
- Adopt the trail classification system and trail design guidelines for all new linear parks.
- Coordinate the linear parks with the Active Transportation Plan and sidewalk improvement program.
- Work with developers in new subdivisions on appropriately locating and developing linear parks.
- Continue planning and design work on the priority linear parks, including: preliminary design layouts, detailed design, specific property acquisition plans, construction cost estimates, phasing, and any necessary environmental work.

Summary



Implementing the Linear Parks Master Plan will require significant resources and the ongoing commitment of the City. It must continually be stressed that there is very high public interest and support for linear parks. In the random survey conducted for Kelowna's Parks, Recreation and Culture Master Plan, walking was the primary recreation activity of participants, and trails were the top facility desired in the city.

Linear parks meet all of the primary criteria of the multi-bottom line approach. Their environmental benefits include a role in protecting environmentally sensitive areas and education about natural resources. Their social and cultural benefits include enjoyment, social interaction, heritage and cultural awareness, and fitness and health. Their economical benefits include tourism opportunities and reduced use of vehicles, contributing in turn to better air and water quality for people and ecosystems.