



Heywood Park Master Plan

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EXECUTIVE SUMMARY

Heywood Park is the City of North Vancouver's second largest park and one of its most natural. Its 16 hectares are defined, in large part, by Mackay Creek and its associated ravine. The park includes a diverse collection of recreational opportunities including numerous nature trails that meander through the forest, a playground and open grass fields to the south, and heavily used, all weather soccer fields in the northeast. Equally important, the park is an urban sanctuary for a diverse range of wildlife including song birds and salmon. Heywood Park is, however, not without its challenges. Many walking trails are too close to the creek and are impacting the creek's habitat. The existing washrooms and play equipment are in poor condition. And invasive exotic plants are outcompeting native vegetation throughout the park.

The Heywood Park Master Plan provides a framework for guiding future design and management decisions to address these issues, and establish priorities for phased capital improvements to trails and park infrastructure. A number of trails are realigned to maintain the essential experience of 'nature' in the park while others are permanently closed to reduce environmental impacts. New public washrooms and play structures, including an adventure playground, replace the outdated infrastructure in the southern part of the park. The Master Plan also identifies strategies to improve the accessibility of the park and enhance its 'gateway' location along Marine Drive. **Phase One** is expected to include:

- New Washrooms
- An Adventure Playground
- Phase 1 of Entry plaza (fully accessible) at Marine Drive
- Realignment/regrading of existing trail sections in the southern part of the park to increase the accessibility
- Riparian vegetation restoration in the southern part of the park
- Ethnobotanical Garden in the southern part of the park
- Drainage improvements to the open meadows in the southern part of the park
- New mid park 'Crossover' Bridge to connect the west and east trail
- Trail realignment/closure in central and northern parts of the park.

Subsequent park improvements will occur as funding becomes available.



Gateway 'Pole Forest' along Marine Drive



Adventure Playground

Heywood Park Master Plan

- 1 Upper West Creek Trail
- 2 Constructed Wetlands
- 3 Reconstructed Stairs
- 4 Decommissioned Trail
- 5 New Bridge
- 6 East Creek Trail
- 7 Viewing Platform
- 8 Entry Sign
- 9 New Bridge
- 10 Lower West Creek Trail
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INTRODUCTION

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CHAPTER 1

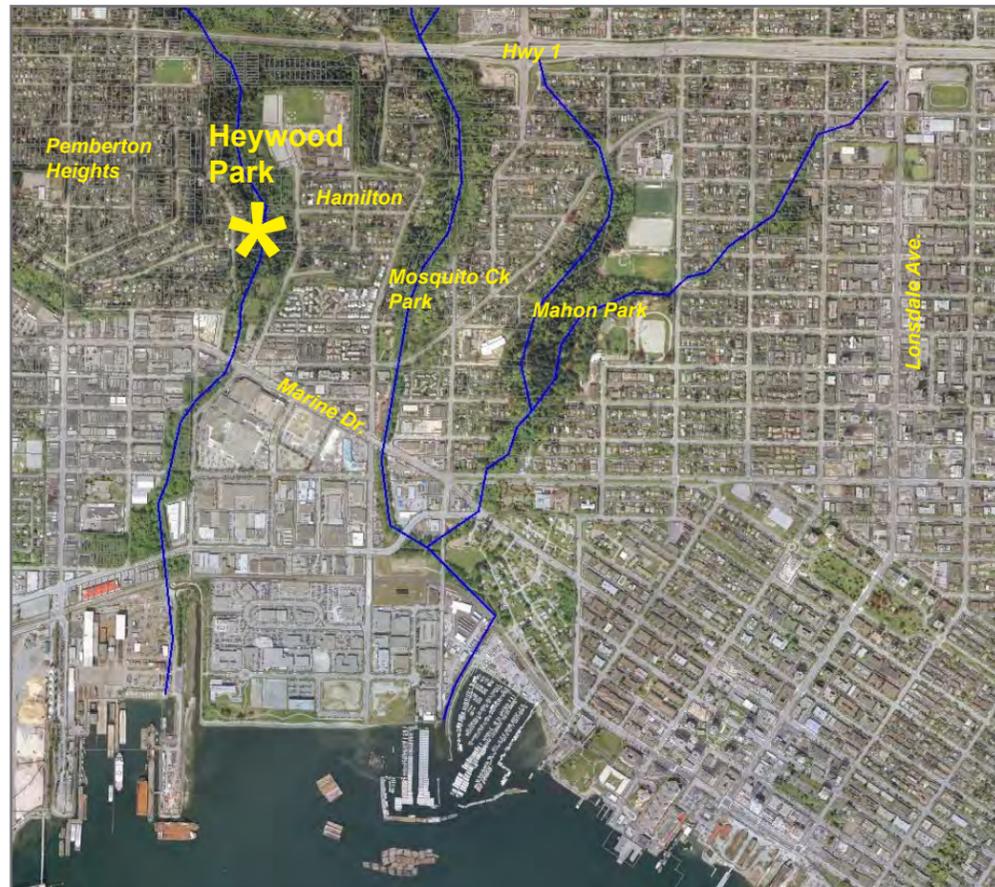
Context

City parks and natural areas play an important role in enhancing the quality of life of our increasingly urbanized society. Empirical evidence

indicates that the presence of green space in cities (i.e. urban parks and forests, green belts, creeks) helps to foster a healthier and happier society through the ecosystem services they support (e.g. air and water purification, wind and noise filtering, microclimate stabilization, habitat), as well as the social and psychological benefits they provide. Considering the numerous benefits they provide, there are few investments a city government can make that are more valuable than those associated with protecting and enhancing greens spaces.

Yet urban parks, particularly ones with remnant indigenous flora and fauna often live a precarious life. The ecological dynamics that lead to their creation have either been significantly altered and fragmented due to urban development or have been lost entirely. Natural areas in the city are vulnerable to inundations of exotic plants and animals that further marginalize native wildlife. And with their relatively small size and modest ecological carrying capacity the environmental health of green spaces is often adversely impacted even from the most well intended visitors.

Heywood Park is one such place, where the sublime beauty of nature intersects with the challenges posed by its enveloping urban context. Its 16 hectares(ha) of forest, fields and creek represent the second largest park in the City of North Vancouver (CNV), and marks the City's boundary with the District of North Vancouver (DNV).

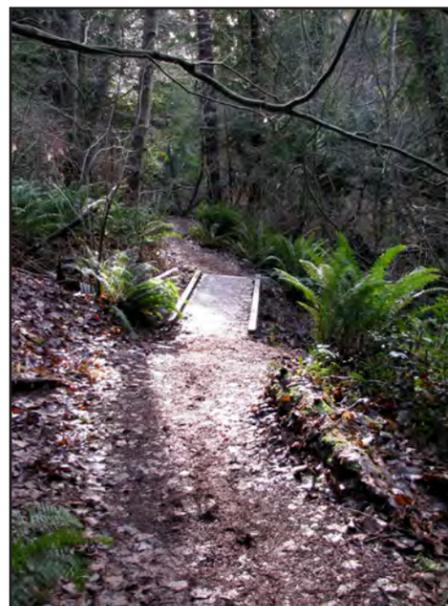


Heywood Park Location

The park's southern edge meets Marine Drive and has the potential to mark the western gateway to the City. To the east and west are the adjacent Hamilton and Pemberton Heights residential neighbourhoods. The northern boundary abuts DNV forested land and Highway One. The park's many trails provide walkers and joggers with a welcome respite from city life, and its creek and adjacent forest supports a diverse range of wildlife including salmon and song birds.

Heywood Park is a beloved natural sanctuary. However it is not free of problems and management challenges. More often than not, trails are in poor condition, located too close to Mackay Creek and provide inadequate access into and throughout the park. Invasive exotic plants have become well established and are, in many locations, outcompeting native plants. The existing washrooms and play equipment are outdated and too close to the creek. And the parking lot is expansive and poorly organized.

Complicating the development of a master plan are the finite resources – both financial and human – available to address the park's key challenges. Prioritisation, phasing and adapting management practices over the next decade will be key to the success of the management plan.



Left: Nature Trail

Above: Creekside Trail

PURPOSE OF THE PLAN

The City of North Vancouver’s vision, as outlined in the 2002 Official Community Plan, is

“to be a vibrant, diverse and highly livable community that strives to balance the social, economic and environmental needs of our community locally”.

The CNV’s parks and open space system plays an instrumental role in fulfilling this vision. Heywood Park, as one of the CNV’s oldest, largest and most ecologically diverse parks is one of the vision’s keystones. Since it was donated to the City of North Vancouver by the Heywood-Lonsdale Estate of England in 1911, Heywood Park has buttressed the City’s western edge. Now, with the park approaching its centennial, the Heywood Park Master Plan provides a clear framework for guiding future design and management decisions, and establishing priorities for phased capital improvements to trails and infrastructure in the years ahead.

PLANNING PROCESS & PUBLIC INVOLVEMENT

The master planning process began in November 2009 with the review of background information related to Heywood Park including reports that have evaluated the park’s current environmental health. Included was a review of the current CNV’s Parks Master Plan initiative and previous CNV planning documents. Meetings with staff commenced to help identify key issues. Base mapping was prepared and site visits conducted to understand the park’s biophysical characteristics and recreational use patterns. The information was synthesised into a number of issues and opportunities that were the basis of discussions with park users.

Two Open Houses were held to give the public an opportunity to shape the master plan. The first was held on February 2nd. The broader neighbourhood was notified by direct mail and the event was advertised in the local print and electronic media. Approximately 40 people attended. Illustrative display boards explaining the park’s existing site conditions, its strengths and weaknesses, the park master goals and planning process were presented. Community preferences and concerns for the park’s future development were gathered through both discussions with attendees, and questionnaires that were completed.

With the community’s comments in mind, design alternatives for the park were developed including options for the southern portion of the park, trail realignment scenarios and phasing strategies. These were presented at a second public open house held on March 24th. Approximately 30 people attended with most submitting questionnaires to share their preferences. In addition to the public’s comments the master plan alternatives were presented to a joint meeting of the Parks and Environment Advisory Committee (PEAC) and the Advisory Committee on Disability Issues (ACDI) for their review and input. Additional meetings were held with community organizations (e.g. North Vancouver Recreation Commission, North Shore Streamkeepers) and representatives from the Department of Fisheries to identify opportunities for community based stewardship. Given the City’s limited resources, such partnerships play a critical role in implementing many of the elements identified within the Heywood Park Master Plan.

The diverse input gained from the public (refer to appendices), staff, and advisory committees helped to establish the framework for the development of the Heywood Park Master Plan. The plan was subsequently presented to PEAC for final review and comments.

RELATED RESEARCH & INFORMATION

In addition to feedback from the public and advisory committees, the following helped to shape the master plan’s issues and opportunities:

Parks Master Plan (2010)

The development of the Park Master Plan is underway and expected to be completed by the end of 2010. It is an update of the 1991 Parks Master Plan and is intended to,

“guide the future planning, design, protection and maintenance of new and existing park infrastructure and amenities in both the natural and built environments. It will identify opportunities to increase the efficiency and coordination of parks planning and design; identify opportunities to acquire strategic pieces of parkland to accommodate increased growth and demand and to improve the protection of environmentally sensitive areas and greenway connections”.



Public Open House #1:
Identifying Opportunities and Concerns

The preliminary work conducted to date and vetted through the public process has identified a number of issues and trends with implications for the Heywood Park Master Plan:

- Use of natural areas is increasing and there is a need for greater management to maintain and protect ecological functions.
- Higher density development is placing more pressure on parks, especially those with natural areas.
- People are more aware of the importance of physical activity/fitness, health, and outdoor experiences.
- Walking, swimming, hiking, jogging, dog walking, soccer and using playgrounds are the top 7 most common park activities.

The Parks Master Plan provides useful survey data that indicates how residents of the CNV feel about their city parks, trails and green space. Such data adds to the public feedback on priorities and preferences provided at the Heywood Park Master Plan Open Houses. In general people signalled a high degree of satisfaction with the amount and condition of natural parkland. However, residents expressed concerns regarding park accessibility, the over all condition of parks, accumulation of garbage, overuse by dogs /overuse and the need to preserve more green space. A Futures Conference provided insight on more specific concerns related to parks, of which the most common included, “Overuse of parks facilities and natural areas by people, and people with dogs”. As the Parks Master Pan points out,

“the issues related to dogs in parks are complex, and include concerns about the impacts of dogs on ecologically sensitive areas and wildlife, the perception of safety for other users, public health conflicts between dogs, and conflicts among dogs and other user groups on sidewalks and trails”.

However the plan also states,

“Dog owners and their pets are a large and important user group and as the general population ages, pet ownership is expected to increase. Pets often provide the impetus for people to visit parks, to exercise, and to socialize with others visiting the park. This in turn improves the health of both the individual pet owners and the community as a whole...”.

The Parks Master Plan notes that residents felt the top funding priorities for parks and recreation, should include:

- Greenways, trails and bike paths,
- Habitat restoration and preservation,
- Improvements to parks buildings and washrooms

Each of these priorities have been identified as key considerations for the Heywood Park Master Plan process.

Marine Drive Task Force (2006)

The Marine Drive Task Force (MDTF) was appointed in 2005 to provide input on the draft Marine Drive Design Guidelines, and to establish a prioritized list of desired community amenities for the area. The MDTF presented its recommendations to City Council in 2006 and included the following vision statement:

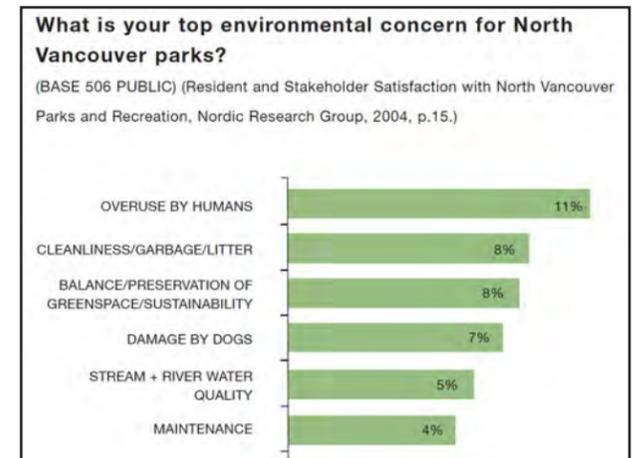
“The Marine Drive community envisions a safe neighbourhood where current and future area residents enjoy appealing places to live, work, and play; a place defined by its creeks, parks and natural areas; a vibrant, pedestrian / bicycle-friendly and diverse commercial centre; and a gateway to the City along a key transportation corridor.”

The following Task Force “development requirements” for the area directly relate to the Heywood Park Master Plan process:

- A place defined by its creeks, parks and natural areas
- A gateway to the City along a key transportation corridor

The MDTF further established several priorities, three of which can be applied to the Heywood Park Master Plan.

- **Priority One Amenities**
 - Improved streetscape and pedestrian / bicycle entrance for Heywood Park from Marine Drive.
 - Use public art, street treatments and other methods to celebrate the creeks where they cross Marine Drive
- **Priority Three Amenities**
 - Educational interpretation signage regarding all wildlife, including the returning salmon in MacKay and Mosquito Creeks.



Survey: Top Environmental Concerns - CNV



Dog Walking in Heywood Park



Marine Drive Streetscape

Senior’s Outdoor Park and Open Space Study (2003)

This study, completed in 2003, was charged with establishing “a set of guiding principles for future park and open space redevelopment and to identify potential sites for seniors’ outdoor activities”. The Guiding Principles included:

- Ensure parks are accessible for all
- Ensure that parks support neighbourhoods and build community
- Provide activities and opportunities for different interests and abilities
- Ensure all parks and open spaces address the needs of seniors

The study elaborated on the principles to develop recommendations, some of which were generally applicable across all of the CNV’s parks and some of which were specific to individual parks. And while Heywood Park was not one of the specific parks addressed, a number of the study’s general recommendations do apply to the Heywood Park Master Plan including:

- Covered Seating & benches with backrests
- Signage and way-finding
- Improved sidewalk access to parks
- Variety of trails & Improved path surfaces

Parks and Greenways Strategic Plan (2002)

The Parks and Greenways Strategic Plan was developed to identify city wide goals, objectives, policies and implementation strategies for parks and greenways in the CNV. Its goals were:

‘To create a linked system of parks and greenways that balances recreational use of parks and streets with sustainable ecological and transportation objectives, and to contribute to community pride during the 2007 Centennial Celebration.’

Among the objectives and actions identified in the plan the following apply directly to the development of the Heywood Park Master Plan:

- To create a comprehensive trails and recreational greenway system that links major parks and public destinations throughout the City.
 - Four trail types have been identified and organized as “interconnecting loops” including the Ravine Trail System which

“recognizes and links the major trails through the ravine parks”.

- To conserve, protect and improve fish & wildlife habitat values in City Parks.
 - Trilside barriers and signage may be installed along heavy use trails that enter sensitive habitats, particularly along ravine edges and creeks. These barriers may vary in design, to include fences, hedges, natural plantings, brush barriers, etc., designed to be as unobtrusive as possible, while still being effective
 - Erosion and riparian area restoration, and/or trail consolidation, will be pursued where prior park use has damaged sensitive habitat,
 - Trails alignments that are causing extensive damage may be closed, e.g. west side of Heywood Park.
- To define an appropriate role for City Parks in stormwater management.

Parks and Recreation Master Plan (1991)

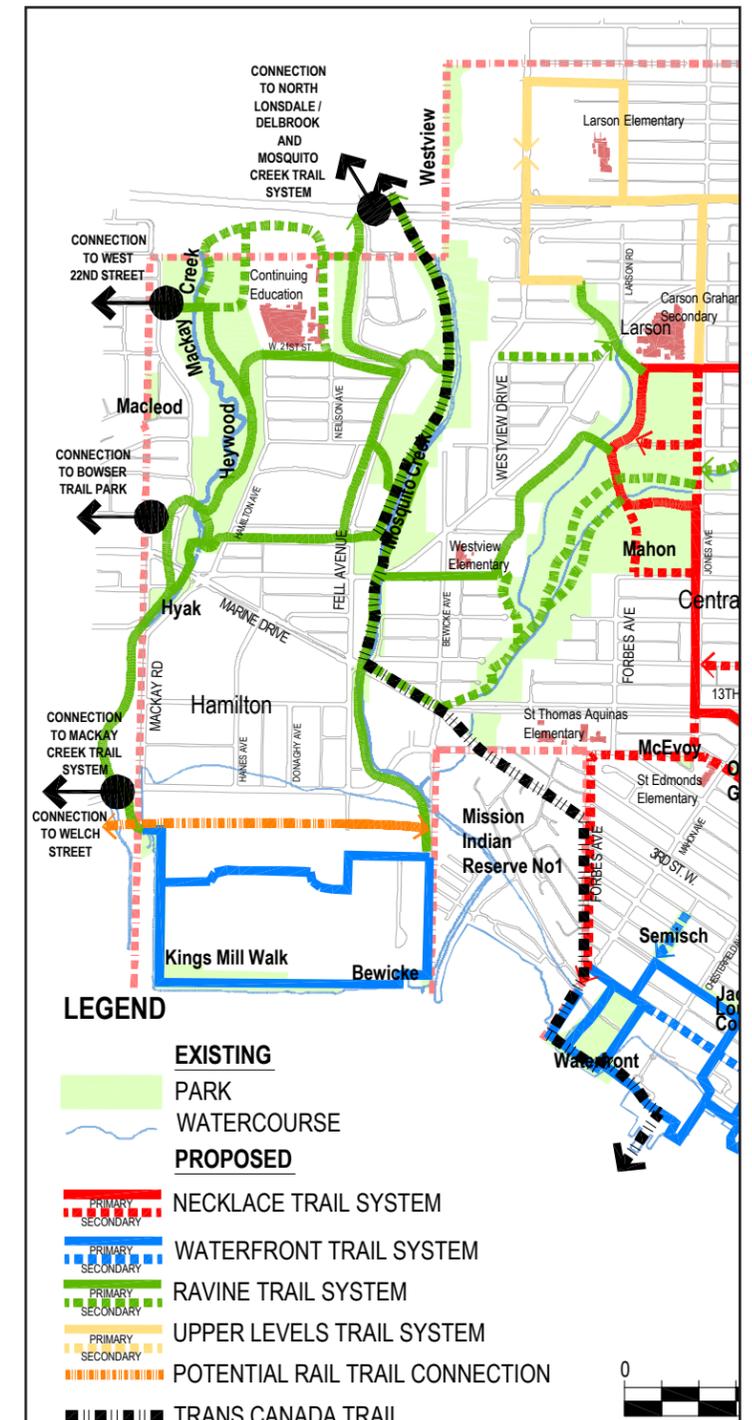
The Parks and Recreation Master Plan made recommendations in several areas for improving the CNV’s parks system that have and continue to apply to Heywood Park. These include:

- Environmentalism – recognizing the demand for nature oriented parks and activities, and the preservation of trees and habitat.
- Trail Development – calling for development of a comprehensive trails system.

North Vancouver City and District Park Accessibility Review (2009)

This review included several recommendations to enhance accessibility throughout the CNV’s park system and specifically within Heywood Park. Recommended improvements include wider, more stable granular trail surfaces, clearer and more accessible entries into the park, accessible picnic tables, and trail regrading.

Collectively these background documents, and the considerable public and professional contributions that underpin them, have played an important role in helping to define the historical and policy context for the Heywood Park Master Plan, as well as several design considerations.



Westside Trail Network:
Parks and Greenways Strategic Plan

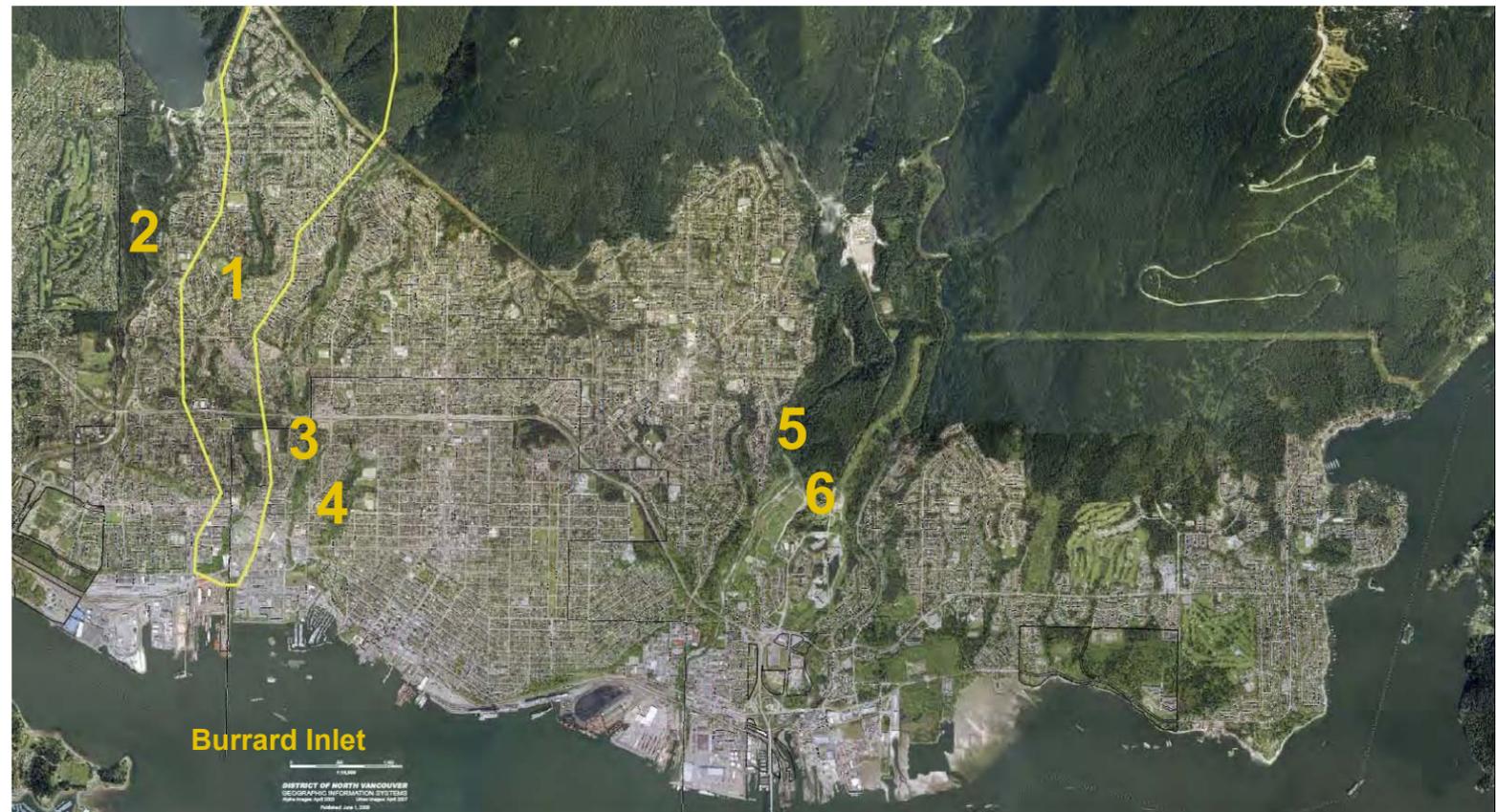
CHAPTER 2

Analysis

Heywood Park is part of the Mackay Creek watershed, a 780 ha catchment that extends from the tidal zones of Burrard Inlet to the slopes of Grouse Mountain. The watershed falls within the traditional territory of the Squamish Nation and provided food, clothing, shelter, and nurtured their spiritual practices. By 1900, colonial interests had come to dominate the region and much of the watershed had been or was soon to be logged.

Realizing the sensitivity of the ravine to development the Heywood-Lonsdale family decided, in 1911, to donate the Heywood Park area to the newly incorporated City of North Vancouver as a park. One year later, the Capilano street car line began service. Its route passed along 20th Street and into the park, where it crossed Mackay Creek before heading north on Mackay Avenue. Remnant piles that supported the street-car trestle can be seen within the creek bed. In 1926 Chick Chamberlain opened the first Tomahawk B.B.Q. along with log cabins for vacation rentals in the park's southern area beside Marine Drive.

Today urban growth throughout the Mackay Creek watershed has further removed forest cover and increased impervious cover, significantly impacting the area's hydrology and ecology. Only a fraction of the watershed's original indigenous flora and fauna remains, most notably within the DNV's Upper Mackay Creek and Murdo Fraser Parks, and the CNV's Heywood Park. These parks, along with nearby Mosquito Creek and Mahon Parks, include the last good examples of ravine ecosystems between the larger Capilano and Lynn Creek watersheds.



The relative rarity of Heywood Park's ecology is one of the reasons the CNV's current Park Master Plan process has identified it as an area with high environmental sensitivity. For park visitors the forest trails offers the most rugged experience of nature within the various CNV parks. For wildlife Heywood Park provides a sanctuary amongst a growing city.

NATURAL FEATURES

Heywood Park is characterised by three distinct geographic areas. The **southern portion (A)** of the park (approximately 2.5 hectares) includes open grass fields, aging playground and washroom facilities, a fish hatchery and a large, yet inefficiently organised parking area. Here, the spatial experience of the park is more open as the enclosing ravine topography to the north gives way to the creek's relatively flat floodplain. The area is popular for picnics, unprogrammed

Natural Areas Context Map

- 1 Mackay Creek Watershed
- 2 Capilano River Regional Park
- 3 Mosquito Creek Park
- 4 Mahon Park
- 5 Lynn Headwaters Regional Park
- 6 Lower Seymour Conservation Area

recreation (kicking soccer balls, throwing frisbees etc) and occasional community events (eg River's Day Festival; Easter Egg Hunt). The southern area's location next to Marine Drive provides an opportunity to enhance the streetscape, celebrate Mackay Creek's intersection with Marine Drive, and provide an improved western gateway into the City. The current Marine Drive frontage is defined by overgrown plants, limited views into the park and garbage dumpsters in the Rogers Video parking lot, garbage resulting in many people being unaware of the park's presence.

Heywood Park Geographic Zones & Cultural Heritage



Capilano Street Car Trestle Bridge Piles in Mackay Creek - 20th St Alignment



Tomahawk BBQ Camp along Marine Drive



Zone C - Hamilton Fields



View Across All Weather Fields



Heywood Park along Marine Drive

Zone B - Mackay Creek Ravine



Creekside Trail



Heywood Park along Marine Drive

Zone A - Southern Park & Marine Drive Frontage



Grass Field North of Existing Parking Lot



Heywood Park along Marine Drive

The **central and northern areas (B)** of Heywood Park (approximately 12.2 hectares) feature the Mackay Creek ravine and its associated mixed coniferous, deciduous and riparian forest. These sections of the park include relatively high quality aquatic and terrestrial habitat, and a number of nature trails. They have however been adversely affected by trails that are too close to the creek, invasive exotic plants, storm water run-off and contaminants leaching from the former landfill that underlies the play fields to the east. Some sections of trails have been officially closed in an attempt to reduce their environmental impacts. However there is continuing use of these trails.

The third distinct area of Heywood Park is the **Hamilton Sports Field (C)** complex (approximately 1.5 hectares), situated to the east of the Mackay Creek ravine. The two gravel fields include full lighting and are actively used by community soccer. The play fields, associated parking lot and change room/washroom building, and their geographical location outside the ravine, create a contrasting feature to the park's otherwise 'natural' setting. The challenge presented by the playfields for the master plan is to address the storm water runoff from the fields currently flowing into and eroding the adjacent ravine and transporting sediment into Mackay Creek.

Several recent studies into the environmental condition of Heywood Park and the Mackay Creek watershed provide useful insight into some of the opportunities and challenges the Heywood Park Master Plan needs to address including the following:

Forest Resources

The Urban Forest Management Plan (2007) provided an assessment of, and management recommendations for the CNV's numerous park ecosystems. The report includes both city-wide and park specific assessments. It characterises all the CNV parks as falling within the Dry Maritime Coastal Western Hemlock Subzone (CWHdm) of the British Columbia Biogeoclimatic Ecosystem Classification System (BEC). The CWHdm is dominated by Western Hemlock and Western Red Cedar and is characterized by warm, relatively dry summers and moist, mild winters with little snowfall. These climatic qualities can lead to forest

ecosystems that are highly productive and biologically complex. However, urban development typically fragments the natural processes that would otherwise lead to the evolution of these ecosystems. The report found the majority of the Heywood Park contains:

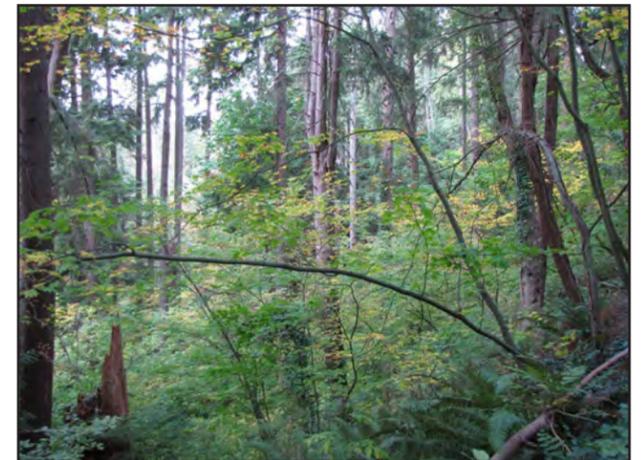
- A mature forest of mixed coniferous and deciduous species.
- A young Red Alder forest on the disturbed former landfill site.
- MacKay Creek, which is perennial and fish bearing.
- Diverse wildlife habitat provided by uneven-aged, open stand structure.
- Significant number of wildlife trees.
- Diverse and lush understory vegetation.

Notwithstanding these attributes there are several primary environmental concerns including:

- Invasive Species (e.g. English Ivy, Blackberry, Japanese Knotweed, and Lamium) are well established throughout the park and present significant management challenges
- There is typically mediocre to poor stand regeneration and plant succession due to competition from exotic plants, as well as an overall reduction in the park's indigenous ecology.
- Numerous trails are too close to the creek, resulting in a direct loss of critical streamside (riparian) vegetation.
- Trails are growing wider (braided) as people step around wet areas on the main trail.
- Yard/Garden waste is discarded into the park contributing to the problems of invasive exotics.
- Leachate and iron-rich water draining from the former fill site that underlies the play fields to the east.

Aquatic Resources

The North Shore Streamkeepers completed the Mackay Creek Water Quality and Watershed Health Study in 2009. Surveys were taken throughout the watershed to better understand the creek's environmental health. Like all of the North Shore's urban watersheds the catchment has been dramatically altered by urban development. The removal of substantial vegetation, increases in impervious surfaces and invasive vegetation, and the piping and conveyance of storm water and associated



Top: Mixed forest
Middle: Trail at edge of creek
Bottom: Ivy enveloping young alder forest

contaminants into the creek has fundamentally altered the creek’s morphology, decreased water quality and adversely affected aquatic wildlife and riparian vegetation. The Streamkeepers findings reveal Mackay Creek suffers from:

- Elevated fecal coliform levels due to animal feces in stormwater runoff.
- Elevated nutrient levels due to garden fertilizer use and road contaminants in stormwater runoff.
- Some Total Suspended Solids (TSS) and Turbidity exceedances that make it difficult for aquatic life to find food.
- Elevated water temperatures in summer that reduce oxygen levels in the water making it less hospitable for most aquatic life.
- Levels of heavy metals in stormwater runoff that occasionally exceedance canadian government water quality guidelines.

According to the Pacific Streamkeepers Federation, Mackay Creek is considered endangered by the Department of Fisheries. Furthermore Raincoast Applied Ecology’s 2006 comparative study of several Greater Vancouver Streams found the benthic communities (considered a marker of stream health) in Mackay Creek exhibited poor to very poor conditions.

Nevertheless the North Shore Fish and Game Club, which operates the small hatchery attached to the existing public washroom in the southern part of the park, found that 2009’s return of chum salmon was one of the best returns since they have been operating the hatchery. An estimated 40 salmon were seen and there are currently 35,000 chum eggs from the Alouette River now incubating in the hatchery. In addition, coho and trout can be found in Mackay Creek.

Heywood Park’s capacity to support returns of salmonids is promising, even though current populations are relatively low and habitat within the park and throughout the watershed is under duress. These are problems common to urban watersheds that require a suite of solutions throughout the watershed. For Heywood Park the findings mean:

- Improvements to the health and extent of the park’s riparian vegetation.
- Managing stormwater runoff to reduce the contaminants coming from parking lots and play fields.

- Managing nutrient loads resulting from fertilizer use in adjacent neighbourhoods and dog feces.
- Introducing side channel or off channel habitat within the southern part of the park to provide areas of refuge for young fish and add more ecological diversity to the park.

Geotechnical Considerations

The CNV hired a consultant to assess the “geotechnical stability of creek ravines with the objective of determining preliminary landslide partial risk ratings on select slope areas within CNV’s boundaries”. The objectives of the study were to help the CNV “prioritize areas for follow-up risk assessment and, if necessary, risk reduction. The preliminary study focused on areas where buildings or civil infrastructure are located adjacent to slopes that were identified as hazards or potential hazards”.

The 2009 study concluded there were no properties along the ravines where there was an ‘imminent risk’ of landslides. However, several properties along the west side of Mackay Creek ravine adjacent to Heywood Park warranted further evaluation. Some of these properties sit above sections of the existing west creek trail where trail erosion is most severe and where some small landslides, low down on the slopes, adjacent to the creek have occurred.

Considering the concerns identified in this slope stability report and the current impact of trails in the area, trail closure and re-routing is one of the imperatives for the Heywood Park Master Plan.

RECREATIONAL FEATURES

Heywood Park is popular for walking, jogging, sitting, bird watching, picnicing and numerous other recreational activities. The experience it offers is somewhat different than other natural parks in the CNV, particularly its trails, which are less developed and more rugged than those found in other parks. This ‘naturalness’ was widely cited by park users as one of the most important feature of Heywood Park. Others enjoy relaxing in the open fields or playing on the swings or play structure in the southern part of the park.



Top: Fish Hatchery
Middle: Salmon carcass
Bottom: Delapitad boardwalk

Trails & Access

Heywood Park’s numerous trails are among the park’s most important assets. Unfortunately many of the trails and the activities they support are too close to the creek. In some cases the trail is the edge of the creek. The damage to riparian vegetation is all too apparent – where little or no riparian vegetation remains. And yet, healthy riparian vegetation is among the most important characteristics of a healthy creek ecosystems.

The challenges with Heywood Park’s trails includes off leash dogs. Currently dogs are not allowed in the park’s southern fields and play areas other than to transit to and from the forest trails. Dogs are allowed on the ravine trails, on leash only. However, few dog owners appear to obey the regulations, either because they are unaware of the disturbance their animals can cause to plants and wildlife, or they choose to ignore the disturbance anyway. Yet dog owners can have a positive impact on the park since they use it regularly, and will activate the park in the early and late hours of the day, even when it is cold and rainy. This regular use can enhance the park’s safety by virtue of their ‘eyes’ in the park.

Considering the popularity of dog walking, and the vulnerability of the park’s native flora and fauna, it is recommended that the current dog regulations remain with dogs allowed on-leash in the ravine. Fencing along the creek side of trails will help regenerate the riparian vegetation and the wildlife habitat it provides. Signage explaining the reasons for the ‘on-leash’ requirement will also be important in gaining park users support.

Heywood Park’s trailheads are typically not marked. Only one sign announces the park and it is buried within the overgrown vegetation fronting Marine Drive. This makes it difficult for some people to orient themselves in terms of what the park has to offer. For others, particularly those with mobility challenges, the lack of signage makes it difficult to assess how accessible the park may be. Similarly, arriving by vehicle from Hamilton Avenue is, at best, an unremarkable visitor experience: one dominated by an expansive parking area. Compounding Heywood Park’s underwhelming entry experience is the absence of any barrier free access points into the park for anyone arriving at the park other than by car.

Children’s Playground

Although play equipment has been a part of Heywood Park for decades, the existing equipment is limited to two sets of aging swings and one newer play apparatus, placed in an unimaginative layout. Adding to the play area’s challenges is that the equipment is located within the 15 meter riparian setback zone for Mackay Creek, limiting the ability for riparian planting to re-establish itself.

In addition to the formal play equipment there is a small area, at the edge of Mackay Creek, that children use to touch and play in the water. The ‘beach’ is located at an eddy in the creek so even when the current is strong the area is a relatively safe area to play. Unfortunately, the popularity of the area has lead to bank erosion and damages riparian vegetation. Maintaining some form of ‘controlled access’ for children to Mackay Creek and adding new play structures, configured in a more engaging layout that appeals to a broader range of ages are expectations the CNV has for Heywood Park’s playground.

Public Washroom

The existing public washroom is decades old, located within 15 meter riparian setback zone of Mackay Creek and does not provide barrier free access. It has ,however, been recently adorned with a mural through a community inspired art project and it provides a home for a small fish hatchery. While it would be difficult to renovate this older building for continued use as a washroom the building does, due to its close proximity to the playground, have potential to be renovated into a dynamic environmental education centre.

Marine Drive Frontage

Heywood Park’s current ‘face’ to Marine Drive is a combination of small trees and shrubs, and dumpsters that create a visual barrier into the park. From Marine Drive there is little to signal this is an important and desirable city park. Considering Heywood Park is the city’s second largest park and occupies such a high profile ‘gateway’ location, the Master Plan will need to address the relationship of the park to Marine Drive.



Top: Existing public washroom
 Middle: Marine Dr frontage
 Bottom: Erosion at Hamilton playfields

Picnicing

The park currently provides no picnic shelters and only a few picnic tables. Picnics do occur on the lawns in the southern part of the park, however these are relatively poorly drained and often too wet to sit. Providing more picnicing opportunities, including a picnic shelter, was identified by the public during the Heywood Park Master Plan public meetings as well as during the City of North Vancouver Park Master Plan’s planning process.

Hamilton Playfields

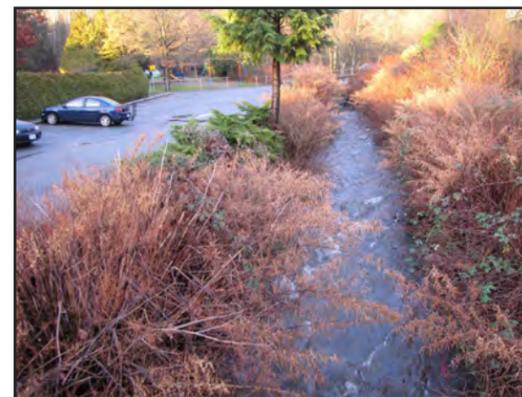
The all weather Hamilton play fields in the northeast section of Heywood park are an important recreational facility and are heavily used throughout the year. Yet the granular surfacing of the fields is vulnerable to erosion during heavy rains and ultimately sediment migrating to Mackay Creek.

SUMMARY - STRENGTHS & WEAKNESSES

Heywood Park’s natural and recreation features define its character and the experience visitors have of the park. Ultimately the Master Plan’s success will depend on how well it can reinforce the strengths of these features and address their weaknesses.

Natural Features – Strengths

- Park is a significant representative landscape for the region.
- Park preserves wildlife habitat and native vegetation.
- Existing forest cover and good forest connectivity
- Presence of a variety of habitat types/ Intact native vegetation assemblages
- A largely continuous vegetation buffer along most of the main channel of Mackay Creek.



Top: Pool and Riffle, Mackay Creek
 Middle: Bard owl
 Bottom: Displaced riparian zone

- Viable fish habitat with existing salmon runs
- Active streamkeepers group

Natural Features – Weaknesses

- Widespread presence of invasive plant species
- Some trails too close to Mackay Creek
- Declining forest health – poor stand regeneration
- Development has compromised riparian vegetation
- Sensitive soils and slopes
- Water quality issues/leachate from landfill

Recreational Features – Strengths

- Scenic beauty
- A variety of recreational opportunities.
- Nature trails
- The park’s natural resources.
- Links to other CNV trail system
- Multiple entry points
- Active streamkeepers group

Recreational Features - Weaknesses

- Aging park infrastructure and facilities.
- Poor condition of many trails
- Poor accessibility into the park
- Lack of visual identity at crossings through, and approaches to the park
- Lack of interpretative signs at ecological, historical and cultural locations
- Lack of identity/gateway at Marine Drive.
- Finite budget.



Top: Mackay Creek
 Middle: Submerged boardwalk
 Bottom: Entry of Mackay Ave.

CHAPTER 3

Master Plan

The Heywood Park Master Plan provides a vision for the park that will guide redevelopment and maintenance decisions for the foreseeable future.

The plan's various elements include trail realignments and closures, new washroom and playground facilities, a reconfigured parking lot and a 'gateway' treatment for the Marine Drive frontage. The plan also provides an estimate of probable costs and identifies a phasing strategy to help prioritise funding. The following goals were established to guide the development of the master plan:

- Protect and enhance natural areas and wildlife habitat
- Improve accessibility and connectivity of existing trails, open spaces and wildlife corridors
- Provide opportunities to build community and bring community members together
- Ensure accessibility for all ages and abilities
- Emphasize the park's Marine Drive 'Gateway to the City' location
- Promote watershed health, awareness and education

MASTER PLAN

The Heywood Park Master Plan proposes several changes to the park's existing recreational features including a realigned trail network, new and relocated pedestrian bridges, updated playground and washroom facilities, a new 'gateway' treatment along Marine Drive, a picnic shelter, and a reconfigured parking lot.

The master plan also includes changes to the park's natural features

including a widening and re-establishment Mackay Creek's critical riparian zone, the introduction of off-channel aquatic habitat, and vegetation management strategies to enhance both forested ecosystems and control the spread of invasive exotic plants.

Trails

The Heywood Park Master Plan illustrates recommendations for trail realignments and closures to reduce the environmental impact of the trails on Heywood Park's ecosystem while preserving the experience of walking through its unique ravine environment. In general the master plan looks to reduce the current situation of trails located on both sides of the creek to a single trail that meanders near the creek with some segments on the west side of the creek and some segments on the east side. This will preserve the essential creek experience of the park while providing larger continuous areas of wildlife habitat within riparian zones, not subject to disturbance from people and pets. Where possible, the trail plan utilizes existing trails.

However, with several trail segments too close to the creek, realignments to reduce impacts on natural resources and improve accessibility is essential.

Other modifications include:

- closing trails where severe erosion issues are occurring or a current route infringes on sensitive biotic resources; and,
- adding boardwalks in wet areas to minimize disruption to existing drainage patterns.

The trails are kept as narrow (max 2m) to preserve the natural experience of the park while allowing efficient maintenance access. Fencing is to be placed on the creek side of certain trails, with a buffer planting between the trail and the fence, to keep people and pets on the trail and minimize damage to the regenerating native plants.

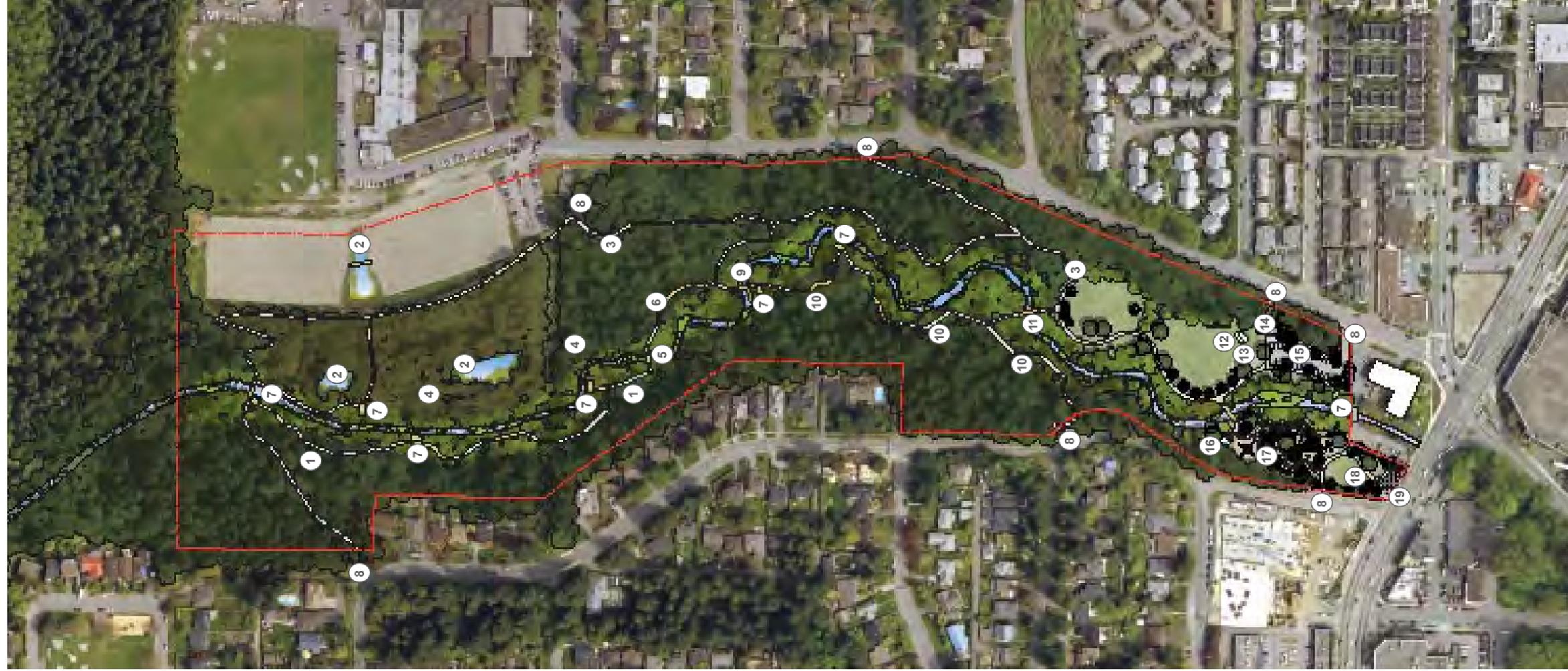
These trail recommendations should be understood as general guidelines and will require field verification and/or adaptation, since there are significant topographical variations throughout the park and numerous existing trees affected by current and future trail alignments not currently represented on existing surveys.



Top: Existing public washroom
Middle: Marine Dr frontage
Bottom: Erosion at playfield

Features

1. **Upper West Creek Trail**
Existing trail re-aligned to reduce amount of the trail within 15m of edge of creek. Includes sections of boardwalk.
2. **Constructed Wetlands**
Constructed wetlands to capture sediment from all weather playfields and treat leachate from former landfill under fields.
3. **Reconstructed Stairs**
New wood staircase replaces existing broken staircase.
4. **Decommissioned Trail**
Existing trail linking powerline area with playfields decommissioned.
5. **New Bridge**
Bridge connecting realigned West Creek Trail with realigned East Creek Trail.
6. **East Creek Trail**
Existing trail re-aligned to reduce amount of the trail within 15m of edge of creek. Includes sections of boardwalk.
7. **Viewing Platforms**
Numerous wood viewing platforms added.
8. **Entry Signs**
New entry signs added to key trailheads to help with wayfinding.
9. **New Bridge**
Bridge added connecting realigned East Creek Trail with Lower West Creek Trail.
10. **Lower West Creek Trail**
Existing trail re-aligned to reduce amount of the trail within 15m of edge of creek. Includes sections of boardwalk.
11. **Relocated Bridge**
Existing bridge relocated to connect with realigned trailheads to reduce amount of the trail within 15m of edge of creek.
12. **New Picnic Pavilion**
Open air picnic pavilion and event stage.
13. **Tot Lot**
Incl. relocated Kompan play equipment.
14. **New Public Washroom**
15. **New Parking Lot /Phase 2)**
Gravel/Pave lot with wheelchair accessible paths.
16. **Environmental Education Centre**
Adaptive reuse of existing bathroom.
17. **Adventure Playground**
Playground combining new play equipment and other elements.
18. **Ethnobotanical Garden**
New tree and shrub planting to reflect First Nations and European histories.
19. **Entry Plaza with Public Art Poles**
10m high wood poles set adjacent to Marine Drive to create gateway into City.



North



Heywood Park Master Plan

Upper West Creek Trail

The existing upper West Creek Trail is re-aligned to reduce the amount of the trail within 15m of edge of creek to reduce erosion and allow the riparian vegetation to re-establish itself. Currently 100% of the trail is located within 15m of the creek bank with many sections at or within 5m of the creek bank. Boardwalks are to be used for sections of trail located in wet areas to minimize impact on natural drainage patterns. The Upper West Creek Trail is the northern segment of what will be, when all phases of trail reconstruction are completed, a universally accessible, north-south trail linking the southern meadow and parking area with the northern bridge.

Lower West Creek Trail

The majority of the existing Lower West Creek Trail is realigned due to significant segments of trail located either in wet areas or too close to the creek bank. Boardwalks are to be used for segments located in wet areas to minimize impact on natural drainage patterns.

One section of trail (on the 20th Street alignment) traverses a steep slope vulnerable to landslides and is to be permanently closed. This trail has been the site of previous minor landslides and is particularly vulnerable to future slides as Mackay Creek is in a 'cut bank' condition at this point, whereby the creek's flow continually scours and erodes the creek bank.

East Creek Trail

The existing southern section of the East Creek Trail is re-aligned to reduce the amount of trail within 15m of edge of creek to reduce erosion and allow the riparian vegetation to re-establish itself. Currently 95% of the East Creek Trail is within 15m of the edge of creek with many sections at or within 5m of the creek bank. Boardwalks are used for sections of trail located in wet areas to minimize impact on natural drainage patterns.

East Creek Trail

The northern section of the East Creek trail is to be permanently closed. The trail currently passes over the former landfill site and the young alder forest that is attempting to grow on top of the site. It has become a conveyance path for surface runoff, passes through areas

where leachate from the landfill comes to surface. Combined with the extensive colonisation by English Ivy, this trail provides a lower quality park experience than the existing West Creek Trail, both of which provide access to and from the north. Considering the decision to limit trails to one side of the creek this trail is expendable.

Reconstructed Stairs

There are two areas where stairs need to be replaced. One is near the top of the trail leading out of the ravine to the Hamilton play fields washroom. The second set of stairs is at the northeast corner of the northern most meadow in the southern section of the park. They are to be wood timber construction.

Viewing Platforms

Numerous wood viewing platforms have been located along the West Creek Trail to provide personal yet controlled contact with the creek while minimizing environmental impact of trail users. The final locations will need to be determined in the field.

BRIDGES

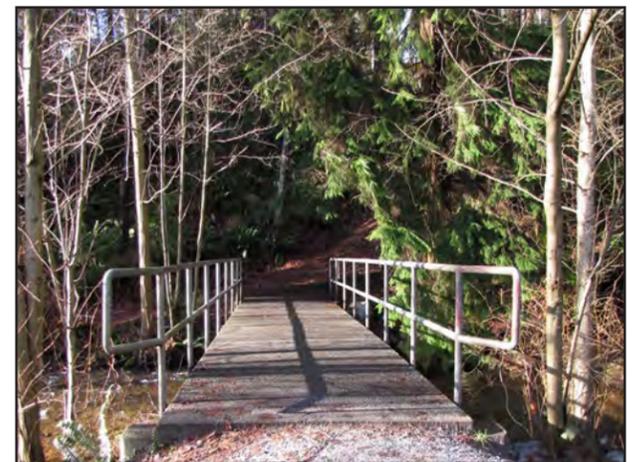
Three bridges currently span Mackay Creek within Heywood Park. Two are found within the southern part of the park with the third crossing near the park's northern boundary. The Master Plan adds two new bridges and relocates one bridge to service the reconfigured trail network.

Crossover Bridge

This new bridge connects the Upper West Creek Trail with the East Creek Trail approximately 60 meters south of the power lines that pass through Heywood Park. It is located in a relative straight section of the creek to minimize vulnerability to scouring associated with cut banks.

Trestle Bridge

This new bridge connects the realigned East Creek and Lower West Creek Trails and is the last element required to complete the universally accessible south to north path linking the Southern Meadow to the northern parts of the park. The Trestle Bridge spans in a relative straight section of



Top: Existing granular rock trail, Heywood Park
 Middle: Possible boardwalk treatment.
 Bottom: Relocated bridge



Northern Park Improvements



Central Park Improvements

Mackay Creek near and within view of the remanent piles from the former trestle bridge that supported the Capilano street car line.

Relocated Bridge (Phase 3)

The existing bridge that connects the Mackay Avenue Trailhead with the Southern Meadow is to be relocated approximately 60 meters upstream from its current location. This new location moves the bridge to a level crossing of Mackay Creek and away from a relatively steep slope that prevents barrier free access to the Lower West Creek Trail. The relocated bridge will continue to provide a connection from Mackay Street to the Southern Meadow. It is located in a relative straight section of the creek to minimize vulnerability to scouring associated with cut banks.

ACCESSIBILITY

Heywood Park currently offers no barrier free entry into the park. For many the only option is to drive to the park. The new master plan provides barrier free access directly off of Marine Drive through the Pole Forest and Gateway Plaza. In addition there is a new sidewalk that provides access from Hamilton Avenue. And once fully implemented the master plan will include a universally accessible trail linking Marine Drive with the norther portion of the park, ensuring everyone can experience the essential parts of the Heywood Park.

SOUTHERN PARK

The southern park area includes the flatter, more open portion of Heywood Park. It is comprised of the following elements:

The Common (Phase 1)

This is the existing field immediately north of the parking lot. Its large size accommodates un-programmed play (e.g. tag, touch football, frisbee throwing), picnics on the grass, as well as larger community gatherings and festivals. The existing trail that skirts along its western edge is reconfigured to widen the useable lawn area as well as, at the northwest corner of the field, increasing the trail's setback from the creek. Off-channel habitat replaces the current east side ditch and should help improve the fields poor drainage by intercepting water seeping out of the bank.

Wildflower Meadow (Phase 1)

This is the smaller field north of The Common. Considering it sits in a transition zone between the forested ravine to the north and the more developed park to the south makes it an ideal candidate for adding more ecological diversity to the park while maintaining the openness of the southern portion of the park. The wildflower meadow will provide habitat for birds and insects. As is the case with The Common, the existing trail skirting the western edge of the Wildflower Meadow is reconfigured to widen the useable meadow area.

The Lower Lawn (Phase 1)

This is the southern lawn area adjacent to Marine Drive and the pole forest. It is enclosed by the Ethnobotanical Garden and allows views from Marine Drive into the park. Like The Common its open lawn supports unprogrammed play.

New Public Washroom (Phase 1)

The new four stall (2f&2m) public washroom is to be constructed adjacent to the northeast corner of the parking lot, just below the existing wood stair case that links to Hamilton Avenue. The location provides convenient access to The Common, Tot Lot, and picnic pavilion while not dominating site lines into the park.

Environmental Education Centre (Phase 1 & 2)

The original washroom is to be adapted for reuse as an environmental centre and permanent home for the fish hatchery. The building's fixtures and non structural walls are to be removed. The remaining building shell will then be available for a community lead retrofit of the building as an educational centre and fisheries facility.

Adventure Playground (Phase 1)

The Adventure Playground combines new play equipment and other elements to create a diverse play area for a wide range of ages. The area is organised around a central path that meanders through coarsely grasses mounds mimicking the flow of a river through mountains. The various play elements are as follows:



Top: Caribbean Days, Waterfront Park
 Middle: Douglas Aster, BC Wildflower
 Bottom: Pre-engineered Washroom, 'Rectec Industries'



Perspective: Pole Forest/Gateway Plaza
@ Marine Drive



Poles @ 2000 Summer Olympic Park,
Sydney Australia



- Fitness equipment
- Environmental Education Centre
- Tot lot
- Adventure playground
- New entry
- Ethnobotanical Garden
- Pole Forest & Gateway Plaza
- New entry

- Realigned 'West Creek' Trail
- Decommissioned trail alignment
- Relocated bridge
- Reconstructed staircase
- Wildflower meadow
- Off channel habitat
- The Common
- Horseshoe pit
- Picnic shelter
- New washroom
- Entry sign
- Reconfigured parking lot
- Entry walk and sign

Southern Park Improvements

- **Corocord spacenet (model 3140)** - adjacent to the Environmental Education centre
- **Kompan 'BLOQX 3'** play structure - south of the Corocord spacenet.
- **Big Toys ME05 Rock n' Cross** - east of the Kompan 'BLOQX 4'
- Kompan 'Crest' play structure – south end of adventure play
- **Stilt Walk** – posts set into the ground with cleats attached to the side of the post at different heights
- **Zip Line** - centre of playground.
- **Spiral Mound** – wood logs set on edge connecting from the fish fort to a small platform on top of a mound.
- **Fish Fort** – a custom play element.
- **Kids Beach** – a small wood platform and gravel area located beside Heywood creek at the east side of the playground

Tot Lot

The Tot Lot is located in The Common, near the new washroom and away from the adventure playground to provide separation between the different age groups. Its includes the relocated Kompan 'Elements' play structure and a new swing set.

Seniors Fitness Circuit

Three adult focused apparatus (Landscape Structures Healthbeat™ Assisted Row/Push-Up, Balance Steps, Ab Crunch/Leg Lift) are included amongst the trees beside the western path in The Commons. These elements, combined with the park's improved trails including the universally accessible south-north trail will provide seniors with a much improved recreational experience.

New Parking Lot

The existing parking lot and its driveway has been reconfigured to provide an improved entry into the park by emphasizing views of the creek from the driveway and by adding trees to the parking lot and significantly reducing the amount of paved surface. The new parking lot is to be constructed with GravelPave pervious paving. A new concrete walkway parallels the entry driveway and connects northwards into the park.

Ethnobotanical Garden

The Ethnobotanical Garden is comprised of tree, shrub and ground cover planting that reflects the First Nations and European heritage of the park. Labels in both Squamish Nation and English will identify the different plants and their traditional uses.

Pole Forest & Gateway Plaza

The Pole Forest is comprised of several 10m high, 0.3m diam wood telephone poles, set adjacent to Marine Drive to help make the western entrance into the City of North Vancouver. The poles represent the Red Cedar trees that would have populated the edge of Mackay Creek prior to the development of the city. The sides of the poles could be used for telling the story of the Mackay Creek watershed.

New Picnic Pavilion

A new picnic pavilion and event stage is included in The Commons. It is envisioned that the pavilion be an inspired piece of architecture that reflects the natural qualities of Heywood Park.

Off channel Habitat

The existing drainage ditches on the east side of the meadows are reconfigured to enhance contribution to Mackay Creek's aquatic habitat. The ditches are to be widened and deepened to increase their water holding capacity. Woody debris is to be introduced along the length of the ditches to add complexity and provide cover for juvenile fish to safely overwinter.

CONSTRUCTED WETLANDS

Constructed wetlands are proposed for three locations to treat stormwater runoff from the play fields and leachate from former landfill.

Play field Wetland

This wetland is proposed for the space between the two play fields. Its role is to capture sediment laden stormwater runoff from the play fields and allow the sediment to settle out before the water heads down to the



Top: 'Gravelpave' parking lot, Sunrise Park, CNV
 Middle: Pavilion, Snoqualmie Park, WA
 Bottom: Landscape Structures 'Balance Steps'

Corocord spacenet
(model 3140)

Spiral Mound
Wood logs set vertically connecting from fish fort to small platform on top of a mound.

Kompan 'BLOQX 3'
play structure

Big Toys ME05
Rock n' Cross
play structure

Earth Mounds

Kompan 'Crest'
play structure



Perspective:
Adventure Playground

Kids Beach

Small wood platform and gravel area located adjacent to Mackay Creek

Fish Fort

Custom play element featuring wood logs set on edge, small wood decks, and precast concrete salmon set into a resilient surface. The overall shape of the fort resembles the shape of a salmon

Zip Line

Stilt Walk

Posts set into the ground with cleats attached to the side of the post at different heights.



Adventure Playground

creek. A new outflow will convey the sediment free runoff down to the lower wetlands. A boardwalk bisects the wetland, connecting the fields. A fence along the adjacent ends of the play fields will be necessary to prevent soccer balls from entering the wetland. Vehicle access will be required to the west end of the wetland to remove sediment that accumulates in the wetland.

Lower Wetlands

Two wetlands are proposed for the slope to the west of the play fields. Each is located on relatively flat, treeless terrain. These wetlands are intended to help treat the leachate emanating from the former landfill and seeping out of the ground in various locations. Stormwater channels will need to be constructed to convey runoff from the slope into the wetlands. Vehicle access will be required to both wetlands to occasionally remove plants that have bioaccumulated the contaminants in leachate.

SIGNAGE

Incorporating signage into the park helps people arriving at the park orient themselves as to what the park contains. At the same time too much signage will reduce the ‘natural’ experience of Heywood Park. It is important to find a balance between the objectives of informing park users and respecting the visitor experience. To that end the master plan envisions three types of signage:

Entry Signs

New entry signs are to be added to trailheads to help with way finding. The signs should indicate the location and relative difficulty of each trail.

Heritage Interpretation – trails

Signs are to be added to the southern part of the park, near Marine Drive to highlight Heywood Park’s natural and cultural history. In addition a sign should be added to the Trestle bridge or nearby viewing platform to explain the history of the Capilano street car.

Nature Interpretation – trails

Signs should be added as appropriate along different trails to provide information about Heywood Park’s flora and fauna.

LANDSCAPE FURNITURE

Landscape furniture shall include the following:

- Backed benches, picnic tables, trash receptacles and recycling stations, and bicycle racks are to be located in the southern part of the park
- Trash receptacles and recycling stations at main trail heads;
- Backed benches, picnic tables, trash receptacles and recycling stations, and bicycle racks adjacent to the play fields.
- The Picnic Pavilion will provide covered seating

VEGETATION

Most of Heywood Park’s vegetation is a mixed coniferous and deciduous forest, the management of which is discussed in Chapter 4. Nevertheless there are important tree and shrub plantings in the southern area of the park which are worthy of being incorporated within the new master plan either in their current location or relocated to a new area within the southern part of the park.

Existing Specimen Trees

Large mature Oak, Beech and London Plane trees are among the notable trees found southern park. Most are healthy, provide summer shade and are an integral part of the park experience. Most are too large to relocate and should remain in place. Some trees of transplantable size within the area of The Commons are to be relocated to help define the landscape room .

Heritage Trees and Shrubs

CNV Park Staff have noted there are historically important shrub plantings adjacent to Marine Drive. These plants should be identified and relocated into new planting beds in nearby areas of the park.



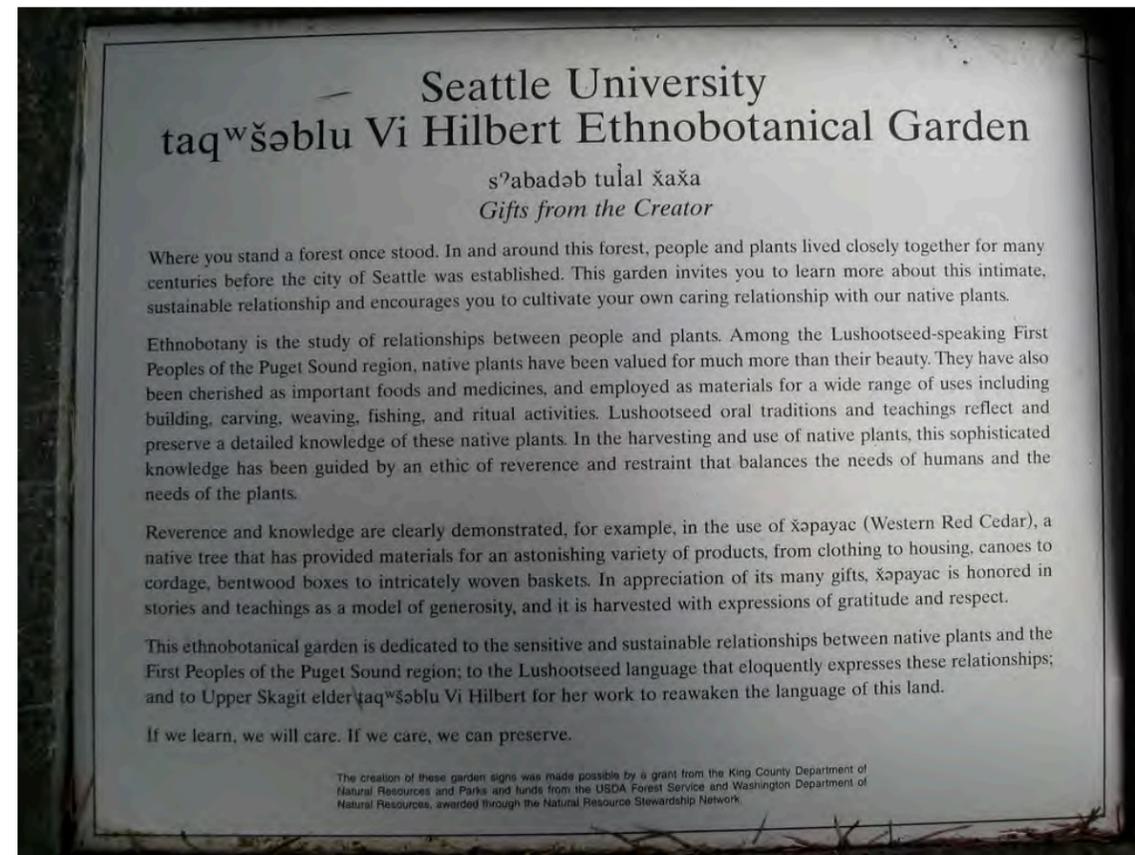
Top: Constructed wetland
Middle: Backer bench
Bottom: Park sign

New Shade Trees

New specimen trees have been added to specific locations to provide additional shade along paths and picnic areas, and help separate different activities. As these trees grow they should be pruned high to allow views into and within the park.

Ethnobotanical Garden

Trees, shrubs, ground cover and perennials chosen for this garden could reflect the Squamish Nation and European influences on the site, and include bilingual plant names as appropriate.



taqʷsheblu Vi Hilbert Ethnobotanical Garden, Seattle University

CHAPTER 4

Implementation

The master plan represents the first step, and arguably simplest stage in the process of revitalizing Heywood Park. Implementing the plan is more challenging as many of the proposed changes in the master plan require significant capital that, at least initially is not available. Therefore the master plan identifies phases that reflect the key priorities for the park. The complete implementation of this master plan will take years and will require ongoing community enthusiasm and staff CNV commitment.

PHASING AND PROBABLE COSTS

A 'Class C' Cost Estimate was prepared as part of the master plan process (refer to Appendix A) to understand the financial implications of the Heywood Park Master Plan and determine a phasing strategy. The cost estimate included all of the major site features, the program elements, and their related parts.

The recommended phasing is based on balancing staff and public comments that surfaced during the park master planning process with the current funding from both the Federal Government's Stimulus Funds and the CNV funds. current available information in terms of available funds. Nevertheless, the phasing represents choices, and as values or priorities change so to might these choices. The phasing should be considered a guide rather than an absolute.

PHASE 1: \$400,000 (includes \$133,000 Federal Government RinC Funding)

Includes:

- New Public Washroom
- New Adventure Playground
- Relocated Tot Lot
- New pathways associated playground redevelopment

PHASE 2: \$500,000

Includes:

- Two new, fully accessible entries into the park from Marine Drive
- Phase 1 of Entry plaza adjacent at Marine Drive
- Decommissioning of the existing washroom
- New mid park bridge (Cross Over Bridge) to connect the west and east trail and enable certain eroded sections of trails to be decommissioned.
- Realignment and regrading of existing trail sections in the southern part of the park to increase the accessibility
- Riparian vegetation restoration in the southern part of the park
- Ethnobotanical Garden in the southern part of the park
- New viewing platform in the southern part of the park
- Drainage improvements to the open meadows in the southern part of the park
- Off channel habitat in the southern part of the park

SUBSEQUENT PHASES

- Reconfigured Parking Lot and park entry off Hamilton
- Pole Forest Public art installation & Gateway Plaza along Marine Drive
- Trail realignment in the middle and northern sections of the park to minimize the amount of trail within 15m of Mackay Creek
- Reconstructed Stairs
- Viewing Platforms overlooking Mackay Creek along strategic sections of trail
- Constructed Wetlands
- Adult/seniors focused fitness equipment for the southern part of the park
- Riparian & Upland Forest Management
- Heritage Interpretation
- New Picnic Pavilion
- Off channel Habitat
- Relocated Bridge
- Trestle Bridge

TRAIL CONSTRUCTION GUIDELINES

Trails are to be a maximum of 2 meters in width. The following two types of trail surfaces are envisioned for Heywood Park.

Crushed Granular Trail: This is the most common trail surface. These trails are to be constructed of decomposed granite rather than crushed limestone to reduce the potential for lime to leach into the groundwater and effect the pH of the water.

- Base course - 75mm clear crush stone should be placed to within 100mm of the finish elevation. The base course should be limited to 2.0 meters in width and 1 meter in depth.
- Top course - 19mm clear crush stone should be placed on top of the base course to meet finish grade. The top course should be limited to 1.8m in width.

Boardwalks: These are used in wet areas and built out of either Western Red Cedar, ‘Thermowood’ treated wood planks or ‘Perma-Deck’ composite planks. In general the boardwalks should be a maximum of 2m wide. Consideration should be given to using rock filled gabion footings (2m long x 1 m wide x .3 m tall) as a footing to provide a stable foundation that can float on wet soils without significant displacement or disruption to drainage patterns.

Trails and Fences: Split rail fences should be placed on the creekside of trail segments located within the 15m buffer zone of the creek. Attach black or dark green vinyl coated wire mesh to the creek side of the fence to prevent pets from entering environmentally sensitive areas. Include native planting between trail and fence to soften the appearance of the fence and help maintain the ‘natural’ experience of the trail.

TRAIL DECOMMISSIONING GUIDELINES

With the majority of the existing trails being realigned trail decommissioning will be an important procedure in repairing the damage done to Heywood Park’s flora and fauna by the existing trails. There are several components to successfully closing trails.

Inform: Conflicts surrounding trail closures can be avoided if people understand why a route must be closed. Signage should to be placed at the point of closure that explains why the trail is closed and includes a map showing the new trail .

Repair: Break up or scarify the soil of the decommissioned trail to encourage seeds and roots of new plants to penetrate.

Control erosion: Use check dams or water bars to stop runoff from flowing down the decommissioned trail and eroding the path. This will give planting a chance to re-establish itself and not be washed away which in turn speeds up the process of vegetative infill and obscuring the view of the trail.

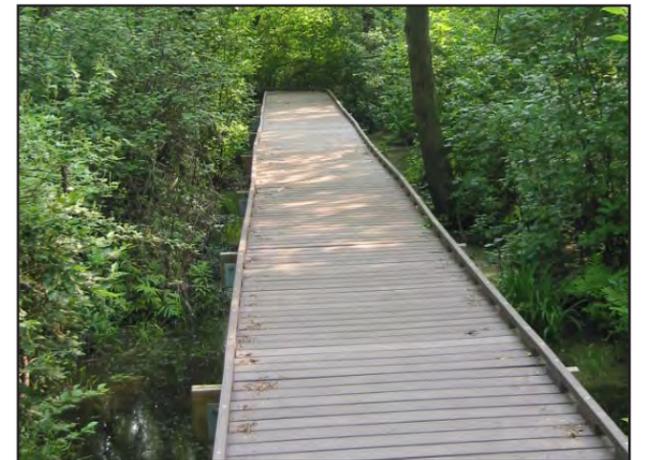
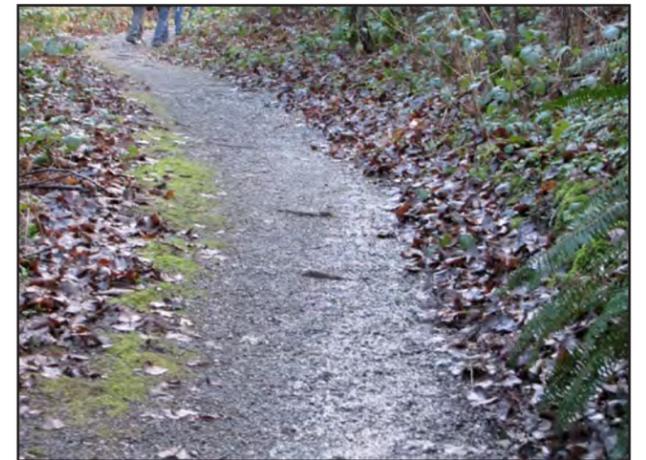
Transplant vegetation: Relocate shrubs and small trees from the new trail alignment.

Block and Disguise: Scatter logs and wood debris several meters wide and deep and plant native shrubs and trees at the entrance to decommissioned trails to discourage access and disguise the former trail. Material taken from the new trail alignment is the best source of supplies.

Fence the Entrance: If people persist in using the trail, construct a temporary fence with signs until the new trail is fully established.

VEGETATION MANAGEMENT

Heywood Park includes some of the most significant stands of native coniferous and deciduous forests in the CNV. Yet these forests and their associated shrub, ground cover and herbaceous layers are under duress as invasive, non-native plant species are becoming well established throughout the park. English Ivy engulfs the young regenerating alder forest growing on the site of the former landfill. Japanese knotweed is starting to thrive along Mackay Creek. And Himalayan Blackberry is encroaching from the edges of the park. In some cases the rapid colonisation is threatening native plant communities, and if allowed to continue, will adversely affect the park’s indigenous flora and fauna.



Top: Existing granular rock trail, Heywood Park
 Middle: Possible boardwalk treatment.
 Bottom: Split rail fence with planting buffer in front and wire mesh on back side.

The invasive plants tolerate and often thrive on nutrient-poor soils such as those overlying the former landfill site. Some of these invasive plants originate from the dumping of garden refuse along the park's margins. Others are brought to the site, inadvertently by birds or are wind transported. Their presence:

- replaces complex native assemblages of plants with monocultures.
- interferes with natural succession;
- dilutes the genetic composition of native species through hybridization;
- may be noxious to native animals; and,
- can be very difficult to control due to their aggressive growth habits.

Preventing the initial establishment and spread of invasive plants is the single most effective method of invasive plant control. In those areas of Heywood Park where invasive exotics have not gained a dominating presence, being vigilant and removing non-natives is the most ecologically sound and cost effective control measure. In other areas, however, where invasive plants are well established, management, rather than eradication, is the more realistic goal. And considering the finite resources available for managing Heywood Park's vegetation, prioritization is necessary. To that end the invasive non-natives can be categorised into the following High and Medium Priority categories.

High Priority

Invasive plants that pose a high risk for invasion and spread into undisturbed sites. These species have the ability to become the most abundant plant across a site or area, often becoming the dominant species. The invasion may occur slowly or rapidly. Plants in this category include:

- English Ivy
- Japanese Knotweed

Medium Priority

Invasive plants that pose a moderate risk of invasion and spread into undisturbed sites. These species may become very prevalent and abundant across some or all of a site or area but may require some disturbance to become the dominant species.

- English Holly

- Lamium
- Himalayan Blackberry

The following vegetation management techniques can be considered for use either individually or in combination:

Mechanical control;

Mechanical control methods involve eradicating plants either by physically removing them or changing their growing conditions to such an extent that they die. Methods include:

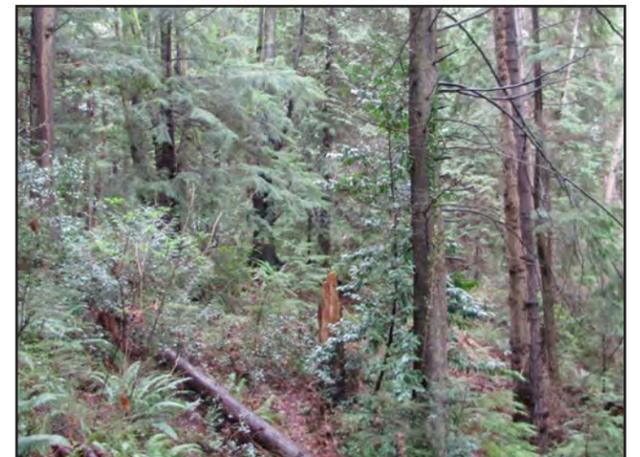
- Covering/Smothering;
- Cutting;
- Digging/Excavating;
- Hand pulling;
- Pruning; and
- Spot burning.

Mechanical methods of invasive plant control offer several advantages:

- Use of simple and readily available tools and equipment;
- Environmentally safe if timed correctly and precautions taken to minimize soil disturbance/native vegetation loss in the management area;
- Are sometimes the only available techniques for invasive plant control in areas where herbicides cannot be used (e.g. close proximity to environmentally sensitive features);
- May be effective at reducing invasive plant density or movement off site; and/or
- Result in minimal or no impacts to fish habitat.

The limitations of mechanical control are as follows:

- Mowing is less effective on low-growing plants, or those that have the ability to resprout quickly after disturbance. Mowing may not be the best choice on a site if seed feeding bio-control agents are present;
- Cutting effectiveness is largely dependent on plant species, stem diameter, time of cut, and age of the plant;
- Spot burning can pose safety issues for both workers and the environment;



Top: English Ivy, North Heywood Park
 Middle: Knotweed, Mackay Ck @ Marine Drive
 Bottom: Blackberry & Holly, North Heywood Park

- Burning and/or mowing exacerbates the growth of some invasive plant species;
- Covering/smothering may be costly and labour intensive because treatment sites require regular monitoring to detect and repair torn materials;
- Excavating may be costly and labour intensive as complete removal of all root fragments must be obtained to prevent re-growth in rhizomatous species;
- Digging; excavating and hand-pulling are not suitable treatments for species with adventitious root buds and rhizomes;
- Soil disturbance may facilitate the re-establishment of invasive plants; and
- Repeated follow-up treatments must be conducted to remove all new germinates for three to five years or longer, dependant on the length of time the targeted species' seed remains viable.

Biological control agents

Biological control agents are predominantly insects and are introduced when and where appropriate to reduce invasive plant populations. They attack and weaken target invasive plant species and over time reduce the plant density. This treatment option is most often used behind containment lines to assist in rehabilitation of infested areas.

The benefits of using biological control agents include the following:

- Affords long-term control on sites with well-established invasive plant populations;
- Used in areas where other treatment methods may not be feasible, such as pesticide free zones (PFZ); and
- They reduce invasive plant populations below a level where significant environmental or economic damage occurs.

Some of the limitations of using biological control include the following: Some agents may be slow to effect target species because they can take up to 5 or 10 years to become established and disperse; and Biological control agents are not available for all invasive plant species.

Selective Use of Herbicides.

All herbicides are applied on a spot treatment basis to suppress invasive plants with the goal of reducing herbicide use on each site over time. Herbicides are used when no other method of control is practical or effective. The benefits of spot applications of herbicides include

- Effective, safe and easy to use IPM tool;
- Treatment costs may be significantly lower than those associated with manual or mechanical methods; and
- No soil disturbance.

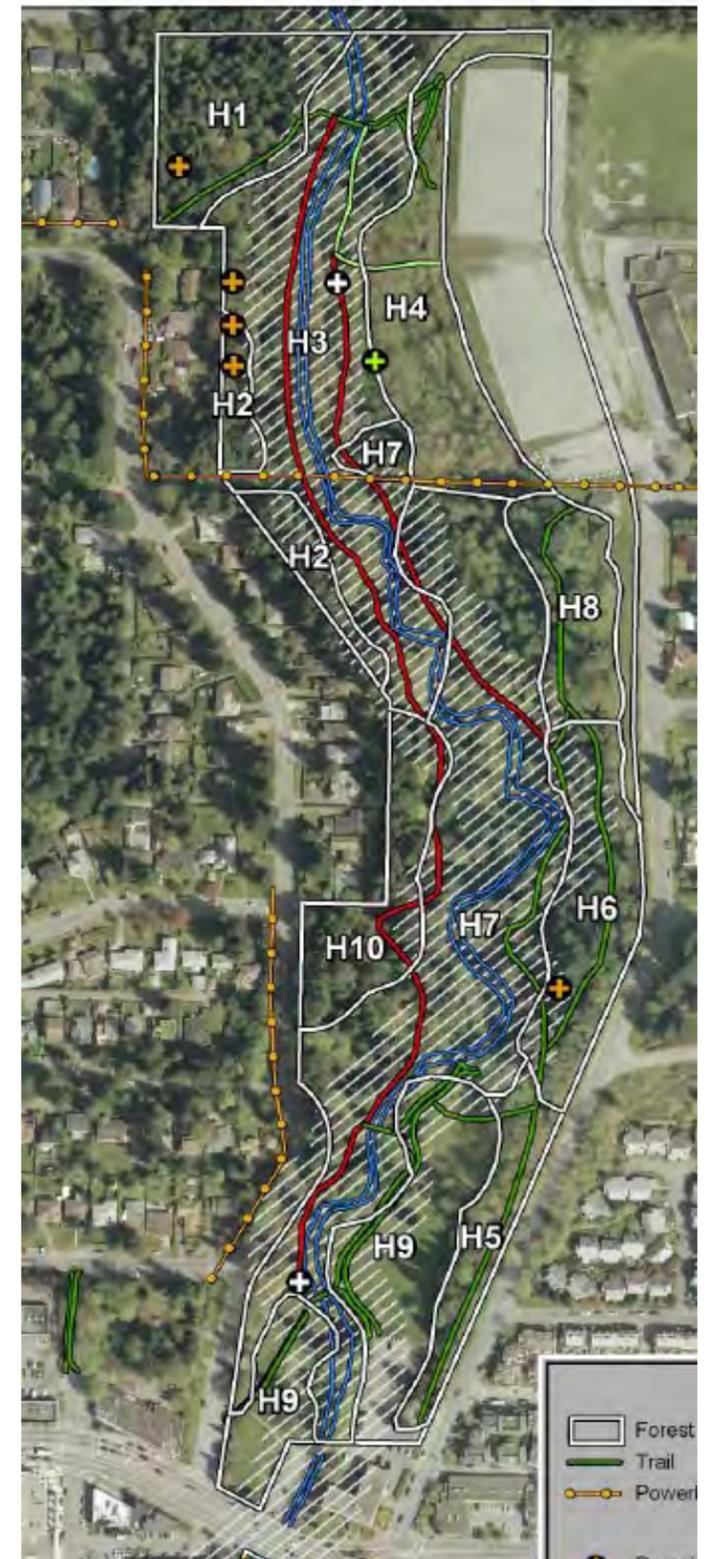
The disadvantage of herbicides is they introduce toxic chemicals into the environment with known and unknown consequences. For this reason their use should be considered as a last option. Furthermore they should not be used within ten meters of water, along seasonal water courses and on sites with coarse soils.

Ultimately controlling invasive non-native plants is a difficult, complex proposition. No single control method will likely achieve control in a single treatment. The integration of a number of control strategies is often more effective than using a single treatment alone.

For these reasons a vegetation management plan specific to Heywood Park is needed to maximise the effectiveness of the financial and human resources available to the park. The Urban Forest Management Plan (2007) prepared by Diamond Head Consulting provides general suggestions for vegetation management in the park. However a more detailed plan is necessary to better reflect the park's various environmental conditions.

CONCLUSION

The Heywood Park Master Plan process is the first step toward realizing the goal of rejuvenating the natural and recreational benefits this beloved park provides to the CNV. Upon its completion, visitors will have a place to gather, celebrate, play, and enjoy the quiet beauty of this remarkable place. Simultaneously, the park will provide biologically diverse and healthy habitat for a wide range of indigenous plants and animals.



Heywood Park Vegetation Polygons, Urban Forest Management Plan, 2007

REFERENCES

2010 - City North Vancouver Parks Master Plan: *Catherine Berris Associates*

2009 - **North Vancouver City and District Park Accessibility Review**: *S Golden & Associates*

2009 - Mackay Creek Water Quality and Watershed Health Study: *North Shore Streamkeepers*

2009 - CNV Geotechnical Stability Study Preliminary Partial Risk Analysis: *BGC Engineering Inc.*

2007 - Urban Forest Management Plan Technical report: *Diamond Head Consulting*

2006 - Comparison of Two Benthic Invertebrate Sampling and Analysis Methods for Streams in Greater Vancouver: *Raincoast Applied Ecology and Environment Canada*

2006 - City of North Vancouver Marine Drive Task Force

2003 - City of North Vancouver Senior's Park and Open Space Study: *PWL Partnership*

2002 - Parks and Greenways Strategic Plan: *Lanarc Consultants*

1991 - City of North Vancouver Parks and Recreation Master Plan

APPENDICIES

- A: Estimation of Probable Costs
- B: Public Open House # 1 Results
- C: Open House 2 - Design Options
- D: Public Open House #2 Results

Appendix A: Estimation of Probable Costs

Heywood Park Cost Estimate_x000D_April 16 2010

Heywood Park Preliminary Cost Estimate – June 2010

Hard Landscape Elements

| Feature | Qty | Unit | Unit Price | Sub Total | Total | PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4 |
|---|----------|------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| Walkways | | | | | \$110,512.50 | | | | |
| Stone Paver Plaza Mackay & Marine | 85 m2 | | \$90.00 | \$7,650.00 | | | \$7,650.00 | | |
| CIP Entry Mackay | 12.5 m2 | | \$75.00 | \$937.50 | | \$937.50 | | | |
| CIP Entry Marine | 8 m2 | | \$75.00 | \$600.00 | | \$600.00 | | | |
| CIP Concrete off Hamilton: 1.8m wide | 270 m2 | | \$70.00 | \$18,900.00 | | | \$18,900.00 | | |
| CIP Concrete along side Hamilton: 1.8m wide | 1000 m2 | | \$70.00 | \$70,000.00 | | | \$70,000.00 | | |
| Granular: 2m wide | 372 m2 | | \$25.00 | \$9,300.00 | | \$9,300.00 | | | \$110,512.50 |
| Granular: 1.5m wide | 125 m2 | | \$25.00 | \$3,125.00 | | \$3,125.00 | | | |
| Forest Trail: 1.8m wide | | | | | \$98,000.00 | | | | |
| Phase 1 | 500 In m | | \$100.00 | \$50,000.00 | | \$50,000.00 | | | |
| Phase 2 | 280 In m | | \$100.00 | \$28,000.00 | | | \$28,000.00 | | |
| Phase 3 | 200 In m | | \$100.00 | \$20,000.00 | | | \$20,000.00 | | |
| Decommission Forest Trails | | | | | \$22,500.00 | | | | |
| Phase 1 | 600 In m | | \$25.00 | \$15,000.00 | | \$7,500.00 | | | |
| Phase 2 | 300 In m | | \$25.00 | \$7,500.00 | | \$7,500.00 | | | \$98,000.00 |
| Boardwalk: 2m wide | | | | | \$88,500.00 | | | | |
| <i>South to North</i> | | | | | | | | | |
| Segment 1 | 34 In m | | \$500.00 | \$17,000.00 | | | \$17,000.00 | | |
| Segment 2 | 36 In m | | \$500.00 | \$18,000.00 | | | \$18,000.00 | | |
| Segment 3 | 32 In m | | \$500.00 | \$16,000.00 | | | \$16,000.00 | | |
| Segment 4 | 35 In m | | \$500.00 | \$17,500.00 | | | \$17,500.00 | | |
| Segment 5 | 40 In m | | \$500.00 | \$20,000.00 | | | \$20,000.00 | | \$88,500.00 |
| Pedestrian Bridge: Concrete w conc footings | | | | | \$135,000.00 | | | | |
| New - 2.5m wide x 14m long (Bridge #) | 1 LS | | \$60,000.00 | \$60,000.00 | | \$60,000.00 | | | |
| New - 2.5m wide x 14m long (Bridge #) | 1 LS | | \$60,000.00 | \$60,000.00 | | | | \$60,000.00 | |
| Relocated Bridge (Bridge #3) | 1 LS | | \$10,000.00 | \$10,000.00 | | | \$10,000.00 | | |
| Ped Bridge over off channel habitat 3x 4m | 1 LS | | \$3,000.00 | \$3,000.00 | | | \$3,000.00 | | |
| Ped Bridge over swale 2x 3m | 1 LS | | \$2,000.00 | \$2,000.00 | | | \$2,000.00 | | \$135,000.00 |
| Viewing Platforms: wood w/ conc footings | | | | | \$144,375.00 | | | | |
| <i>South to North</i> | | | | | | | | | |
| Platform 1 (@parking lot) 2.5m x 7 m | 17.5 m2 | | \$750.00 | \$13,125.00 | | | | \$21,125.00 | |
| footing (6 concrete 2mx3m piles) | LS | | \$8,000.00 | \$8,000.00 | | | | | |
| Platform 2 (@adventure playground) 2.5m x 4m | 10 m2 | | \$750.00 | \$7,500.00 | | \$10,000.00 | | | |
| footing | LS | | \$2,500.00 | \$2,500.00 | | | | | |
| Platform 3 (@north of bridge 3) 3.5m x 5m | 16.5 m2 | | \$750.00 | \$12,375.00 | | | \$14,875.00 | | |
| footing | LS | | \$2,500.00 | \$2,500.00 | | | \$14,875.00 | | |
| Platform 4 - 3.5m x 8m | 16.5 m2 | | \$750.00 | \$12,375.00 | | | | \$21,000.00 | |
| footing | LS | | \$2,500.00 | \$2,500.00 | | | | \$21,000.00 | |
| Platform 5 - 4m x 6m | 24 m2 | | \$750.00 | \$18,000.00 | | | | | \$24,000.00 |
| footing | LS | | \$3,000.00 | \$3,000.00 | | | | | \$16,500.00 |
| Platform 6 - 4m x 7m | 28 m2 | | \$750.00 | \$21,000.00 | | | | | \$22,000.00 |
| footing | LS | | \$3,000.00 | \$3,000.00 | | | | | \$21,000.00 |
| Platform 7 - 3m x 6m | 18 m2 | | \$750.00 | \$13,500.00 | | | | | \$16,500.00 |
| footing | LS | | \$3,000.00 | \$3,000.00 | | | | | \$22,000.00 |
| Platform 8 - 4m x 6m | 24 m2 | | \$750.00 | \$18,000.00 | | | | | \$18,000.00 |
| footing | LS | | \$4,000.00 | \$4,000.00 | | | | | \$144,375.00 |
| Stairs: wood w/ conc footings | | | | | \$17,500.00 | | | | |
| Stairs 1 - Lower Park | 10 In m | | \$700.00 | \$7,000.00 | | \$7,500.00 | | | |
| Stairs 2 - Upper Park | 15 In m | | \$700.00 | \$10,500.00 | | | | | \$17,500.00 |
| Buildings Washroom and Picnic Pavilion | | | | | \$106,000.00 | | | | |
| Romtec 2043 - Supply and install sewer and water connection | LS | | \$92,000.00 | \$92,000.00 | | | | | |
| | LS | | \$4,000.00 | \$4,000.00 | | | | | |
| Romtec 2062 - Supply and install sewer and water connection | LS | | \$105,000.00 | \$105,000.00 | | \$105,000.00 | | | |
| | LS | | \$4,000.00 | \$4,000.00 | | \$4,000.00 | | | |
| Buildings - Renovate existing washroom | LS | | \$10,000.00 | \$10,000.00 | | \$10,000.00 | | | |
| Picnic Pavilion | LS | | \$30,000.00 | \$30,000.00 | | | | \$30,000.00 | |
| Parking Lot | | | | | \$104,800.00 | | | | |
| Site Demolition (ex parking lot approx 1500m2) | 720 m2 | | \$3.00 | \$4,500.00 | | | \$104,800.00 | | |
| Gravelpave (incl gravel, road base and filter fabric) | 1500 m2 | | \$50.00 | \$36,000.00 | | | | | |
| 720 m2 | 720 m2 | | \$8.00 | \$5,760.00 | | | | | |
| Subbase (200mm - 75mm clear crush) | 720 m2 | | \$7.00 | \$5,040.00 | | | | | |
| Subsurface Drainage | 170 In m | | \$250.00 | \$42,500.00 | | | | | |
| CIP Concrete Curb | 2 | | \$3,000.00 | \$6,000.00 | | | | | |
| Manholes | 2 | | \$500.00 | \$1,000.00 | | | | | |
| Cleanouts | 1 | | \$4,000.00 | \$4,000.00 | | | | | |
| Outlet Structure at Creek | | | | | | | | | \$104,800.00 |
| Driveway | | | | | \$27,500.00 | | | | |
| Asphaltic Concrete Paving-80mm | 200 m2 | | \$20.00 | \$4,000.00 | | | \$27,500.00 | | |
| Base Gravel - 150mm thick of 19mm minus | 200 m2 | | \$8.00 | \$1,600.00 | | | | | |
| Subbase Gravel - 300mm thick of 75mm minus | 200 m2 | | \$12.00 | \$2,400.00 | | | | | |
| CIP Concrete Curb | 65 In m | | \$300.00 | \$19,500.00 | | | | | |
| Play Equipment - Adventure Playground | | | | | \$149,774.00 | | | | |
| Kompan 'Crest': supply and instal | 1 LS | | \$35,000.00 | \$35,000.00 | | \$149,774.00 | | | |
| Fibar surfacing | 76 m2 | | \$30.00 | \$2,280.00 | | | | | \$119,960.00 |
| Forever Lawn | 76 m2 | | \$160.00 | \$12,160.00 | | | | | w fibar |
| Kompan 3 BLOOX: supply and instal | 1 LS | | \$25,000.00 | \$25,000.00 | | | | | |
| Fibar surfacing | 30 m2 | | \$30.00 | \$900.00 | | | | | |
| Forever Lawn | 30 m2 | | \$160.00 | \$4,800.00 | | | | | |
| Big Toys ME05 Rock and Cross:supply and instal | 1 LS | | \$8,000.00 | \$8,000.00 | | | | | |
| Fibar surfacing | 40 m2 | | \$30.00 | \$1,200.00 | | | | | |
| Forever Lawn | 40 m2 | | \$160.00 | \$6,400.00 | | | | | |
| Habitat: Macro Spacenet: supply and instal | LS | | \$26,300.00 | \$26,300.00 | | | | | |
| Fibar surfacing w wood border | LS | | \$5,994.00 | \$5,994.00 | | | | | |
| Forever Lawn | 120 m2 | | \$160.00 | \$19,200.00 | | | | | |
| | | | \$32,258.00 | \$32,258.00 | | | | | |

Heywood Park Preliminary Cost Estimate – June 2010

Hard Landscape Elements

| Feature | Qty | Unit | Unit Price | Sub Total | Total | PHASE 1 | PHASE 2 | PHASE 3 | PHASE 4 |
|---|----------|------|--------------|--------------|--------------|-------------|--------------|-------------|--------------|
| Walkways | | | | | \$110,512.50 | | | | |
| Stone Paver Plaza Mackay & Marine | 65 m2 | | \$90.00 | \$7,650.00 | | | \$7,650.00 | | |
| CJP Entry Mackay | 12.5 m2 | | \$75.00 | \$937.50 | | \$937.50 | | | |
| CJP Entry Marine | 8 m2 | | \$75.00 | \$600.00 | | \$600.00 | | | |
| CJP Concrete off Hamilton: 1.8m wide | 270 m2 | | \$70.00 | \$18,900.00 | | | \$18,900.00 | | |
| CJP Concrete along side Hamilton: 1.8m wide | 1000 m2 | | \$70.00 | \$70,000.00 | | | \$70,000.00 | | |
| Granular: 2m wide | 372 m2 | | \$25.00 | \$9,300.00 | | \$9,300.00 | | | |
| Granular: 1.5m wide | 125 m2 | | \$25.00 | \$3,125.00 | | \$3,125.00 | | | \$110,512.50 |
| Forest Trail: 1.8m wide | | | | | \$98,000.00 | | | | |
| Phase 1 | 500 ln m | | \$100.00 | \$50,000.00 | \$50,000.00 | | | | |
| Phase 2 | 280 ln m | | \$100.00 | \$28,000.00 | \$28,000.00 | | | | |
| Phase 3 | 200 ln m | | \$100.00 | \$20,000.00 | \$20,000.00 | | | | |
| Decommission Forest Trails | | | | | \$22,500.00 | | | | |
| Phase 1 | 600 ln m | | \$25.00 | \$15,000.00 | \$7,500.00 | \$7,500.00 | | | |
| Phase 2 | 300 ln m | | \$25.00 | \$7,500.00 | \$7,500.00 | | | | |
| Boardwalk: 2m wide | | | | | \$88,500.00 | | | | |
| <i>South to North</i> | | | | | | | | | |
| Segment 1 | 34 ln m | | \$500.00 | \$17,000.00 | | \$17,000.00 | | | |
| Segment 2 | 36 ln m | | \$500.00 | \$18,000.00 | | \$18,000.00 | | | |
| Segment 3 | 32 ln m | | \$500.00 | \$16,000.00 | | \$16,000.00 | | | |
| Segment 4 | 35 ln m | | \$500.00 | \$17,500.00 | | \$17,500.00 | | | |
| Segment 5 | 40 ln m | | \$500.00 | \$20,000.00 | | \$20,000.00 | | | |
| Pedestrian Bridge: Concrete w conc footings | | | | | \$135,000.00 | | | | |
| New - 2.5m wide x 14m long (Bridge #) | 1 LS | | \$60,000.00 | \$60,000.00 | \$60,000.00 | | | | |
| New - 2.5m wide x 14m long (Bridge #) | 1 LS | | \$60,000.00 | \$60,000.00 | \$60,000.00 | | | | \$60,000.00 |
| Relocated Bridge (Bridge #3) | 1 LS | | \$10,000.00 | \$10,000.00 | | \$10,000.00 | | | |
| Ped Bridge over off channel habitat 3x 4m | 1 LS | | \$3,000.00 | \$3,000.00 | | \$3,000.00 | | | |
| Ped Bridge over swale 2x 3m | 1 LS | | \$2,000.00 | \$2,000.00 | | \$2,000.00 | | | |
| Viewing Platforms: wood w/ conc footings | | | | | \$144,375.00 | | | | |
| <i>South to North</i> | | | | | | | | | |
| Platform 1 (@parking lot) 2.5m x 7 m | 17.5 m2 | | \$750.00 | \$13,125.00 | | | | \$21,125.00 | |
| footing (6 concrete 2mx.3m piles) | LS | | \$8,000.00 | \$8,000.00 | | | | | |
| Platform 2 (@adventure playground) 2.5m x 4m | 10 m2 | | \$750.00 | \$7,500.00 | \$10,000.00 | | | | |
| footing | LS | | \$2,500.00 | \$2,500.00 | | | | | |
| Platform 3 (@north of bridge 3) 3.5m x 5m | 16.5 m2 | | \$750.00 | \$12,375.00 | | \$14,875.00 | | | |
| footing | LS | | \$2,500.00 | \$2,500.00 | | | | | |
| Platform 4 - 3.5m x 5m | 16.5 m2 | | \$750.00 | \$12,375.00 | | \$14,875.00 | | | |
| footing | LS | | \$2,500.00 | \$2,500.00 | | | | | |
| Platform 5 - 4m x 6m | 24 m2 | | \$750.00 | \$18,000.00 | | \$21,000.00 | | | |
| footing | LS | | \$3,000.00 | \$3,000.00 | | | | | |
| Platform 6 - 4m x 7m | 28 m2 | | \$750.00 | \$21,000.00 | | \$24,000.00 | | | |
| footing | LS | | \$3,000.00 | \$3,000.00 | | | | | |
| Platform 7 - 3m x 6m | 18 m2 | | \$750.00 | \$13,500.00 | | \$16,500.00 | | | |
| footing | LS | | \$3,000.00 | \$3,000.00 | | | | | |
| Platform 8 - 4m x 6m | 24 m2 | | \$750.00 | \$18,000.00 | | \$22,000.00 | | | |
| footing | LS | | \$4,000.00 | \$4,000.00 | | | | | \$144,375.00 |
| Stairs: wood w/ conc footings | | | | | \$17,500.00 | | | | |
| Stairs 1 - Lower Park | 10 ln m | | \$700.00 | \$7,000.00 | \$17,500.00 | | | | |
| Stairs 2 - Upper Park | 15 ln m | | \$700.00 | \$10,500.00 | | | | | |
| Buildings Washroom and Picnic Pavilion | | | | | \$106,000.00 | | | | |
| Romtec 2043 - Supply and install sewer and water connection | LS | | \$92,000.00 | \$92,000.00 | | | | | |
| | LS | | \$4,000.00 | \$4,000.00 | | | | | |
| Romtec 2062 - Supply and install sewer and water connection | LS | | \$105,000.00 | \$105,000.00 | \$105,000.00 | | | | |
| | LS | | \$4,000.00 | \$4,000.00 | \$4,000.00 | | | | |
| Buildings - Renovate existing washroom | LS | | \$10,000.00 | \$10,000.00 | \$10,000.00 | | | | |
| Picnic Pavilion | LS | | \$30,000.00 | \$30,000.00 | | | \$30,000.00 | | |
| Parking Lot | | | | | \$104,800.00 | | | | |
| Site Demolition (ex parking lot approx 1500m2) | 720 m2 | | | | | | | | |
| Gravelpave (incl gravel, road base and filler fabric) | 1500 m2 | | \$3.00 | \$4,500.00 | | | \$104,800.00 | | |
| Subbase (200mm - 75mm clear crush) | 720 m2 | | \$8.00 | \$5,760.00 | | | | | |
| Subsurface Drainage | 720 m2 | | \$7.00 | \$5,040.00 | | | | | |
| CJP Concrete Curb | 170 ln m | | \$250.00 | \$42,500.00 | | | | | |
| Manholes | 2 | | \$3,000.00 | \$6,000.00 | | | | | |
| Cleanouts | 2 | | \$500.00 | \$1,000.00 | | | | | |
| Outlet Structure at Creek | 1 | | \$4,000.00 | \$4,000.00 | | | | | |
| Driveway | | | | | \$27,500.00 | | | | |
| Asphaltic Concrete Paving-80mm | 200 m2 | | \$20.00 | \$4,000.00 | | | \$27,500.00 | | |
| Base Gravel - 150mm thick of 19mm minus | 200 m2 | | \$8.00 | \$1,600.00 | | | | | |
| Subbase Gravel - 300mm thick of 75mm minus | 200 m2 | | \$12.00 | \$2,400.00 | | | | | |
| CJP Concrete Curb | 65 ln m | | \$300.00 | \$19,500.00 | | | | | |
| Play Equipment – Adventure Playground | | | | | \$149,774.00 | | | | |
| Kompan 'Crest': supply and instal | 1 LS | | \$35,000.00 | \$35,000.00 | \$149,774.00 | | | | |
| Fibar surfacing | 76 m2 | | \$30.00 | \$2,280.00 | | | | | |
| Forever Lawn | 76 m2 | | \$160.00 | \$12,160.00 | | | | | |
| Kompan 3 BLOXX: supply and instal | 1 LS | | \$25,000.00 | \$25,000.00 | | | | | |
| Fibar surfacing | 30 m2 | | \$30.00 | \$900.00 | | | | | |
| Forever Lawn | 30 m2 | | \$160.00 | \$4,800.00 | | | | | |
| Big Toys ME05 Rock and Cross: supply and instal | 1 LS | | \$8,000.00 | \$8,000.00 | | | | | |
| Fibar surfacing | 40 m2 | | \$30.00 | \$1,200.00 | | | | | |
| Forever Lawn | 40 m2 | | \$160.00 | \$6,400.00 | | | | | |
| Habitat: Macro Spacenet: supply and instal | LS | | \$26,300.00 | \$26,300.00 | | | | | |
| Fibar surfacing w wood border | LS | | \$5,994.00 | \$5,994.00 | | | | | |
| Forever Lawn | 120 m2 | | \$160.00 | \$19,200.00 | | | | | |
| | | | \$32,258.00 | | | | | | |

Appendix B: Public Open House Questionnaire Responses

Heywood Park Master Plan

February 2, 2010 - Public Open House

Questionnaire results:

- 24 Attendees
- 16 Questionnaires submitted

| Resident of: | No. | Remarks |
|--------------|-----|--|
| CNV | 10 | Questionnaire No - 1, 3, 5, 7, 8, 9, 13,14, 15, 16 |
| DNV | 6 | Questionnaire No - 2, 4, 6, 10, 11, 12 |

How often do you visit Heywood Park?

| Frequency | No | Questionnaire Tally |
|-----------|----|---------------------|
| Daily | 8 | 1, 1,1,1,1,1,1,1 |
| Weekly | 5 | 1, 1,1,1,1 |
| Monthly | 2 | 1,1 |
| Seldom | 1 | 1 |
| Never | | |

What activities do you do in the Park (check as many as apply)?

| Activity | No | Questionnaire Tally & Remarks |
|--------------------|----|---|
| Walking the trails | 9 | 1,1,1,1,1,1,1,1,1 |
| Dog Walking | 12 | 1,1,1,1,1,1,1,1,1,1,1,1 |
| Nature Viewing | 7 | 1,1,1,1,1,1,1 |
| Playground | 1 | 1 |
| Soccer | 1 | 1 |
| Other | | <ul style="list-style-type: none"> •Attending the fish hatchery/Streamkeeper •Annual creek cleanup, salmon spawning/fry surveys •Enjoying open space/sunshine with dogs & family •Cut through park to get to Marine Drive •Remove invasive plants/plant natives •Walking to Cap Mall and Rogers Video |

What do you like most about Heywood Park?

| | |
|-----|--|
| Q1 | <ul style="list-style-type: none"> •Proximity to nature/living next door •wildlife •trees and creek •peace of mind |
| Q2 | <ul style="list-style-type: none"> •creek |
| Q3 | <ul style="list-style-type: none"> •wildness, open space •friendly people •dog walking |
| Q4 | <ul style="list-style-type: none"> • Less level of development |
| Q5 | <ul style="list-style-type: none"> •Access to nature •Easy access to trails • Quiet cut off from traffic & hwy noise |
| Q6 | <ul style="list-style-type: none"> • Quiet |
| Q7 | <ul style="list-style-type: none"> • Its nature |
| Q8 | <ul style="list-style-type: none"> • Natural trails and scenery |
| Q9 | <ul style="list-style-type: none"> • Sense of wilderness/isolation from city |
| Q10 | <ul style="list-style-type: none"> •The nature & quiet • Great place to walk |
| Q11 | <ul style="list-style-type: none"> •Proximity of natural area for young familiar • Fish bearing stream |
| Q12 | <ul style="list-style-type: none"> • Beauty & Nature |
| Q13 | <ul style="list-style-type: none"> • The undeveloped character of the park – unlike west side of Mosquito Ck |
| Q14 | <ul style="list-style-type: none"> • Natural wild habitat above grass fields to walk dog & view wildlife |
| Q15 | <ul style="list-style-type: none"> • “Natural” state |
| Q16 | <ul style="list-style-type: none"> • Trails close to creek/buffered against noise from Marine Drive |

Key Likes:

- Experience of Nature
- Naturalness/Wildness
- Trails
- Dog walking
- Creek and fish
- Quiet/Sounds of city reduced.

What do you like least about the park?

| | |
|-----|--|
| Q1 | <ul style="list-style-type: none"> • Invasive Plants • Litter • irresponsible dog owners |
| Q2 | <ul style="list-style-type: none"> • nothing |
| Q3 | <ul style="list-style-type: none"> • not big enough |
| Q4 | <ul style="list-style-type: none"> • big holes in grass area |
| Q5 | <ul style="list-style-type: none"> • poor repair • homeless camping in park in recent years • petty crime in neighbourhood |
| Q6 | <ul style="list-style-type: none"> • Unclear writing (check original) • Drinking in park (in bushes) particularly May-Sept |
| Q7 | <ul style="list-style-type: none"> • Poor accessibility for wheelchair users |
| Q8 | <ul style="list-style-type: none"> • Pollution and visible landfill garbage (rusting metal, old tires) |
| Q9 | <ul style="list-style-type: none"> • "toxic" landfill runoff • illegal dumping |
| Q10 | <ul style="list-style-type: none"> • "Weird" copper coloured stuff leaking from hill above creek • Trail erosion from winter weather |
| Q11 | <ul style="list-style-type: none"> • Huge amount of knotweed • Presence of homeless people in the bushes |
| Q12 | <ul style="list-style-type: none"> • No comment |
| Q13 | <ul style="list-style-type: none"> • Have to be careful walking on secondary trails |
| Q14 | <ul style="list-style-type: none"> • Trail degradation |
| Q15 | <ul style="list-style-type: none"> • Some of the unmaintained trails in rough shape |
| Q16 | <ul style="list-style-type: none"> • Parking Lot north of Rogers video late night hangout/undesirable activities |

Key Dislikes:

- Condition of Trail/degradation
- Invasive Plants
- Leachate concerns
- Homeless people
- Accessibility

If it appears from our natural resources inventory and assessment that we need to eliminate some trails, which trails do you value most, and why?

| | |
|-----|--|
| Q1 | <ul style="list-style-type: none"> • Primary trails (as designated on plan) are good • Maintain west creek trail |
| Q2 | <ul style="list-style-type: none"> • Not familiar with many of the trails |
| Q3 | <ul style="list-style-type: none"> • Will forward additional comments |
| Q4 | <ul style="list-style-type: none"> • Mackay – Hamilton link part of walking route to work • Upgrade West side trail |
| Q5 | <ul style="list-style-type: none"> • Maintain at least one trail closer to creek • Trail crossings at top and bottom of Mackay important |
| Q6 | <ul style="list-style-type: none"> • Trails on both sides of the creek important though in bad shape |
| Q7 | <ul style="list-style-type: none"> • Maintain both east – west & north – south circulation |
| Q8 | <ul style="list-style-type: none"> • Trails near creek and in the upper forest area |
| Q9 | <ul style="list-style-type: none"> • West side trail/closed trails for their solitude |
| Q10 | <ul style="list-style-type: none"> • Keep and improve all existing trails |
| Q11 | <ul style="list-style-type: none"> • Maintain existing trails |
| Q12 | <ul style="list-style-type: none"> • No comment |
| Q13 | <ul style="list-style-type: none"> • Trails on west and east sides of Mackay creek |
| Q14 | <ul style="list-style-type: none"> • Ensure trail network in Area 3 allows for walking without having to pop up to Hamilton Fields |
| Q15 | <ul style="list-style-type: none"> • No comment |
| Q16 | <ul style="list-style-type: none"> • N – S trail on east side of creek used as a jogging route |

Trail Priorities

- Trail(s) by creek
- Primary trails and west creek trail
- Keep all trails

Appendix C:
Preliminary Park Design Options
Natural Features:Strengths/Weaknesses

Strengths



Wildlife Conservation



Existing Forest Cover



Spawning Salmon



Habitat Conservation



Remnant Native Landscape



Active Streamkeepers Group



Riparain Corridor - Upper Sections of Ck



Existence Value of Greenspace

Weaknesses



Some Trails Degrading Riparian Zone



Water Quality:Leachate From Former Landfill/ Sediment From Playfields.



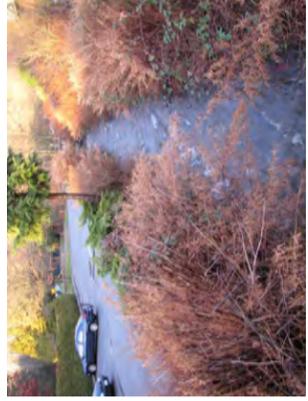
Areas With Poor Forest Regeneration



Illegal Dumping of Yard Waste & Refuse



Invasive plants dominate in many areas (English ivy, knotweed)



Parking/Recreation Facilities Encroaching on Riparian Vegetation

Appendix C:
Preliminary Park Design Options
Recreation Features: Strengths/Weaknesses



Wildlife Viewing



Nature Trails



Nature Trails



Scenic Beauty



Multiple Entry Points



Proximity to Neighbourhoods/Transit/ Bike Rts



Playground



Playfields

Weaknesses



Poor Condition of Many Trails



Eroding Trails



Broken Boardwalks



Marine Drive Frontage - 'Gateway to City of North Van' - Poorly Developed



Aging Park Infrastructure



Poor Entry Markers/Lack of Signage



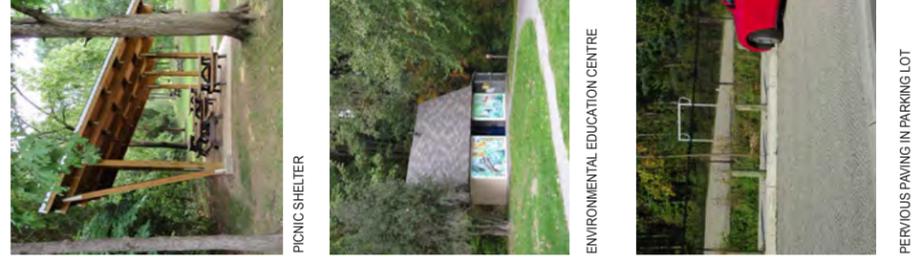
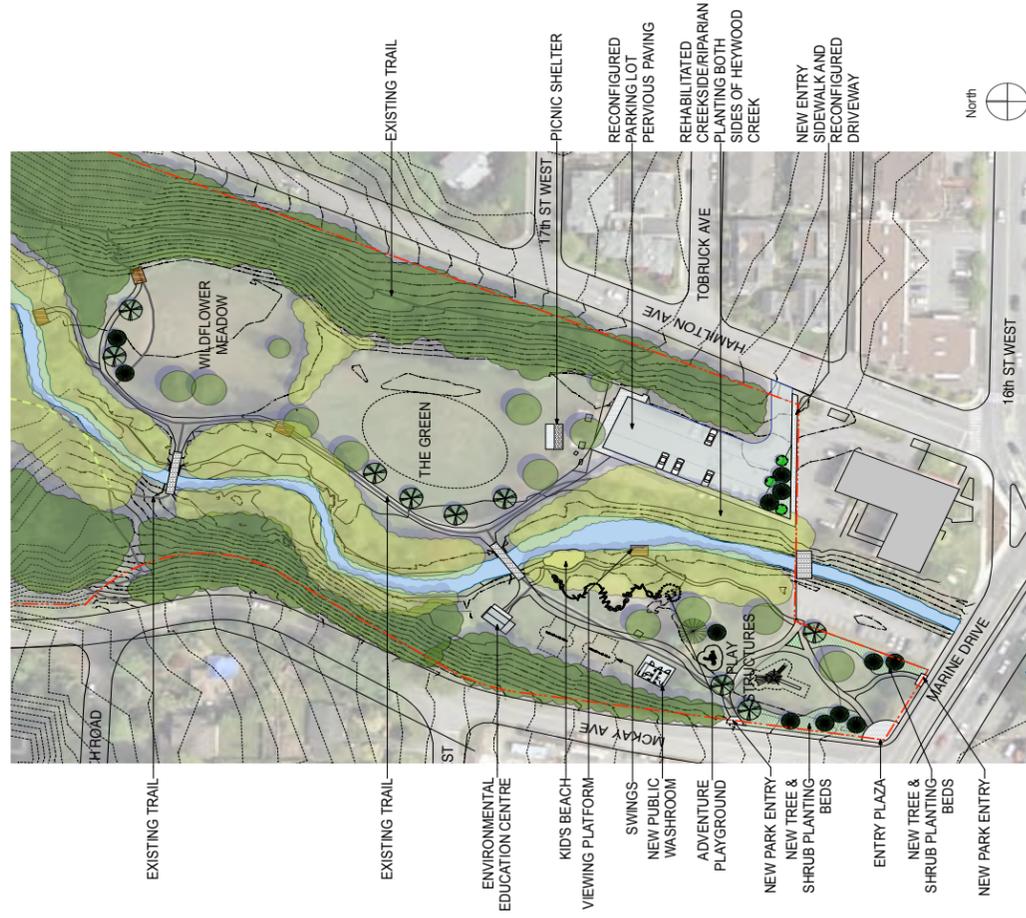
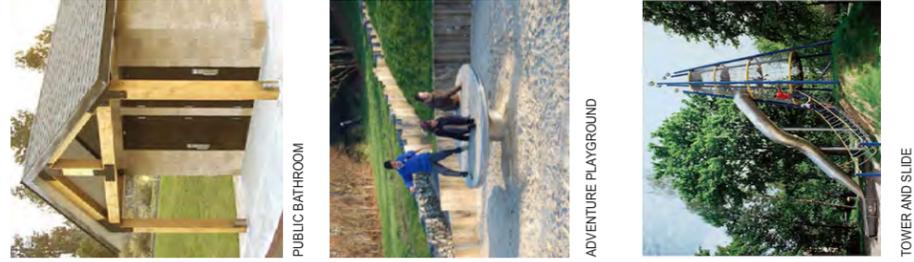
Sediment From Playfields Enters Creek



Lack of Heritage Interpretation (Tomahawk Restaurant/BBQ Tent Camp @ Marine Dr.)

Appendix C:
Park Design Options
Southern Area

SOUTH AREA - Option 1

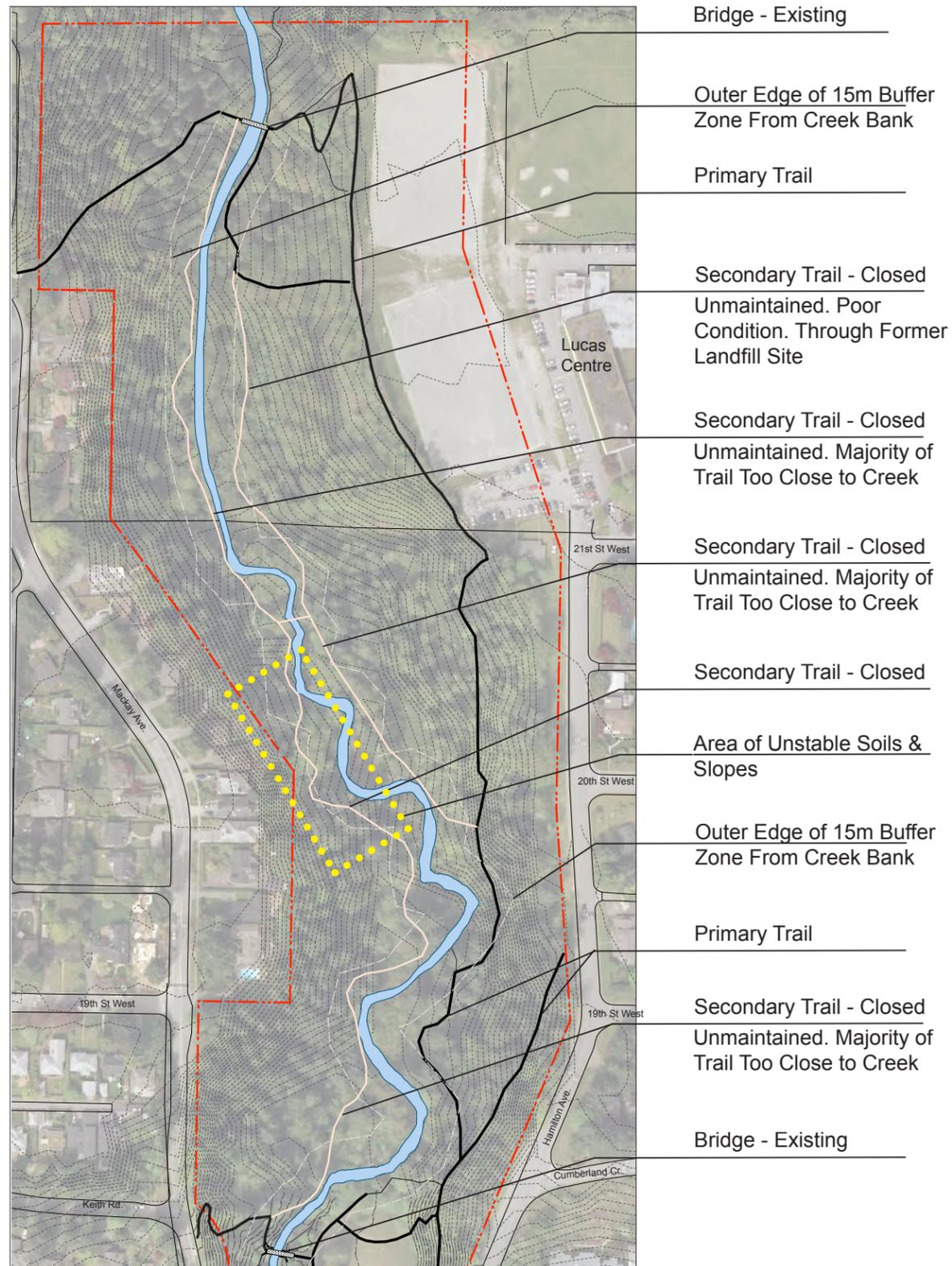


SOUTH AREA - Option 2

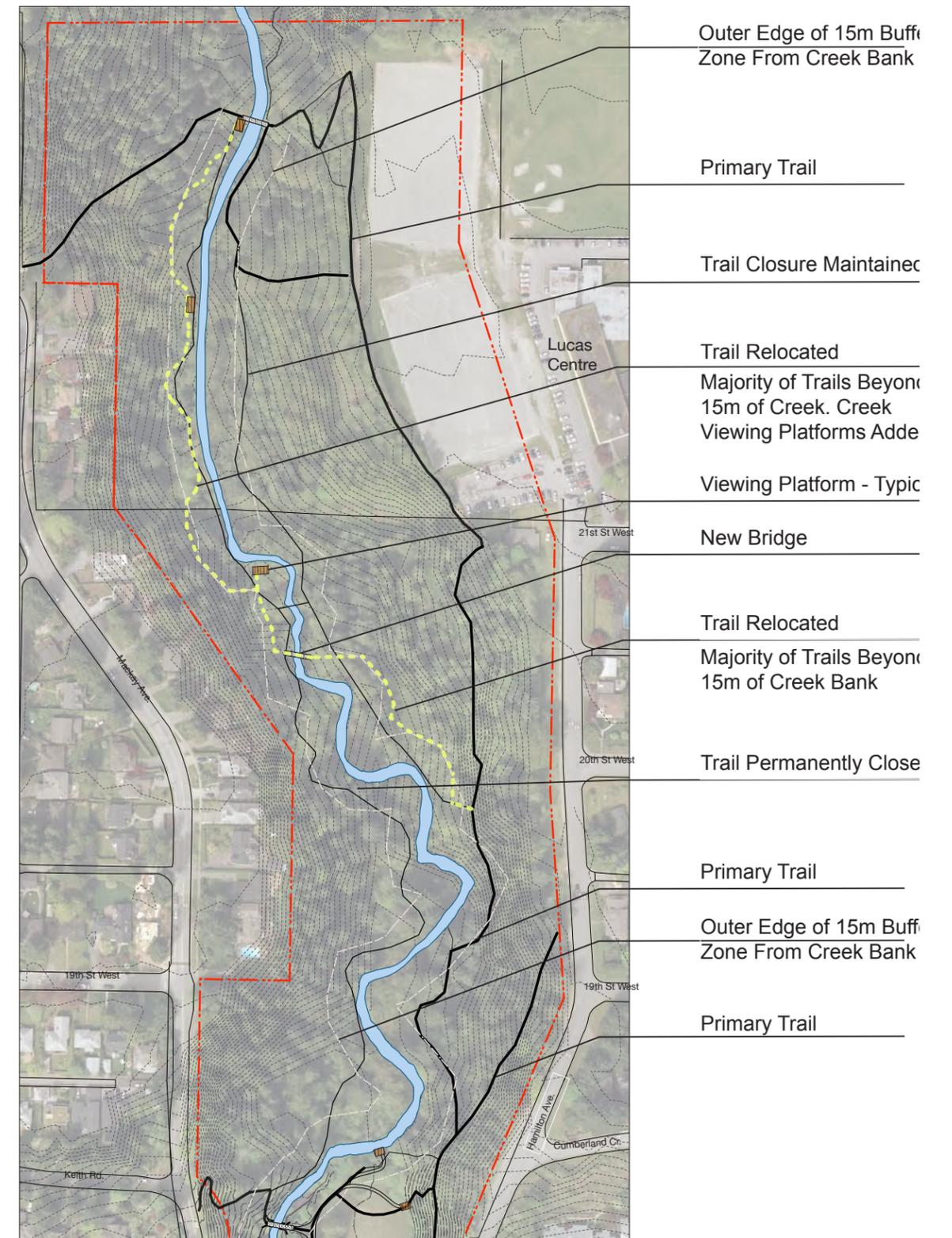


Appendix C: Preliminary Park Design Options - Trails

TRAILS - Existing Conditions

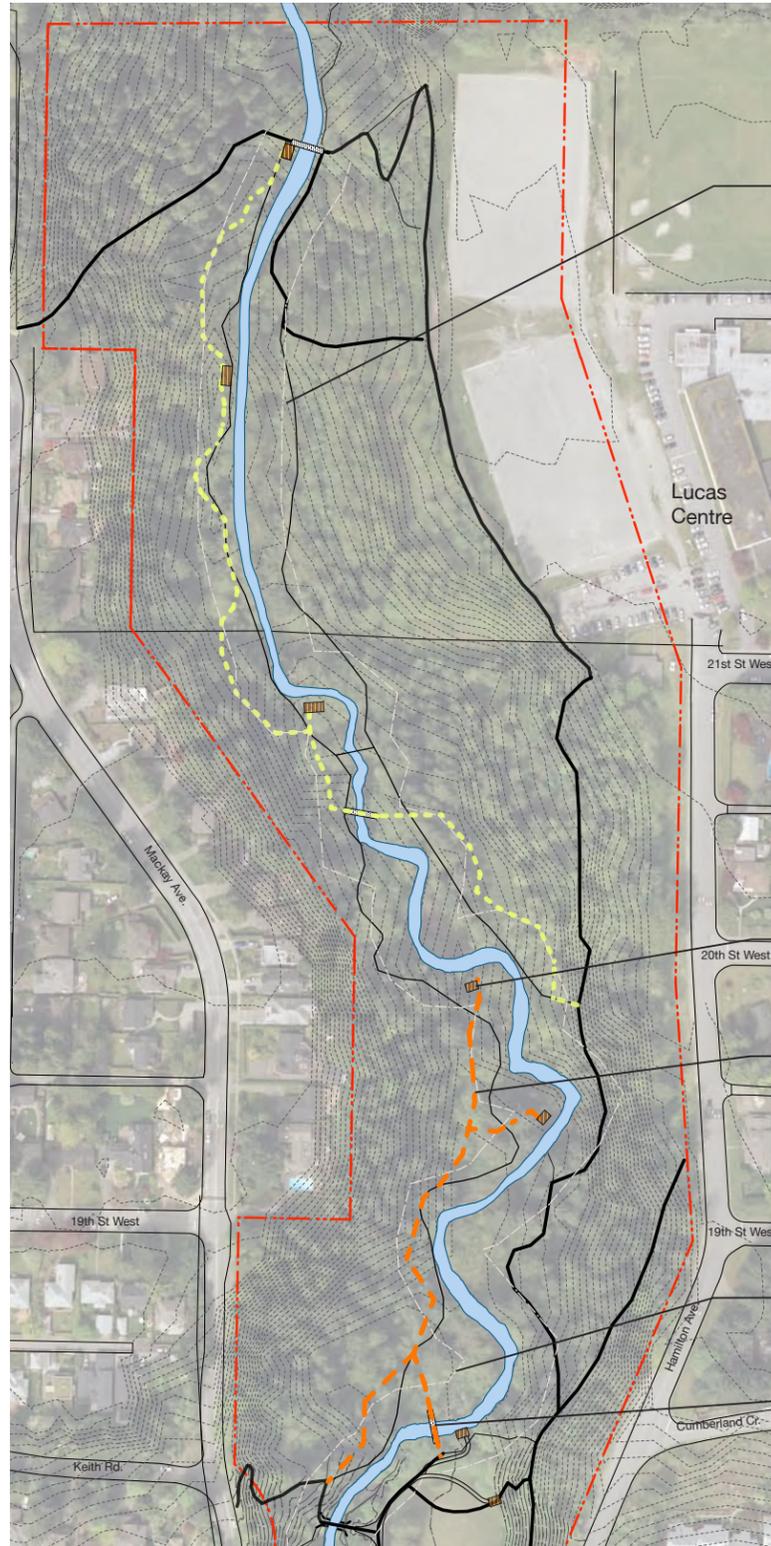


TRAILS - Phase One



Appendix C: Preliminary Park Design Options - Trails

TRAILS - Phase Two



Outer Edge of 15m Buffer Zone From Creek Bank

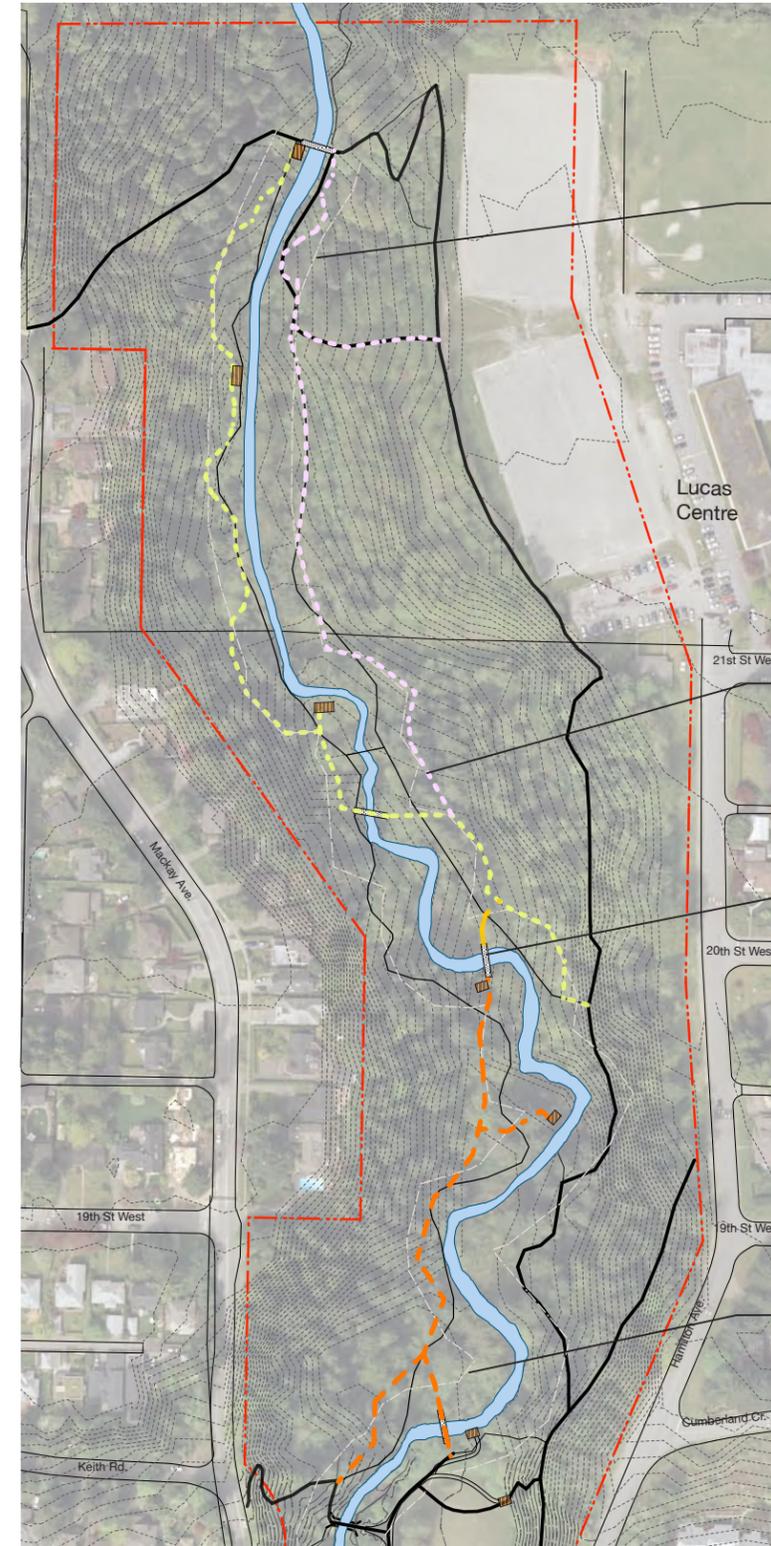
Viewing Platform

Trail Relocated
Majority of Trails Beyond 15m of Creek. Universally Accessible. Creek Viewing Platforms Added.

Outer Edge of 15m Buffer Zone From Creek Bank

Bridge - Relocated

TRAILS - Phase Three & Four



Outer Edge of 15m Buffer Zone From Creek Bank

Phase 4- Trail Reconstruction

Phase 3: New Bridge & Trail Line
Creates Universally Accessible Path - Top to Bottom

Outer Edge of 15m Buffer Zone From Creek Bank

Appendix D: Public Open House Questionnaire Responses

Heywood Park – Open House #2 Responses

March 24, 2010

Approximately 24 people attended

16 questionnaires returned

4 questions asked

- What do you like or dislike about the trail alignment?
- What is your opinion about Option 1 for the Southern part of the Park?
- What is your opinion about Option 2 for the Southern part of the Park?
- Other thoughts/Idea?

Key findings

What do you like or dislike about the trail alignment?

- 13 support the proposed trail realignments and associated setbacks/ thinks they are good ideas
- Maintain 'natural' trail experience – no asphalt surfacing/no wide trails
- New crossover bridge is a good idea
- Limit the number of creek crossings
- Maintaining a trail loop experience important

What is your opinion about Option 1 for the Southern part of the Park?

- Like the new playground, bathrooms and environmental education centre
- Like the reconfigured 'pervious paving' parking lot
- Like the riparian zone enhancements
- Dislike that there is no side channel habitat for fish
- Prefer Option 2

What is your opinion about Option 2 for the Southern part of the Park?

- Like the more elaborate adventure playground
- Like the proposed wetland for the Rogers Parking lot if and when it is purchased and added to the park
- Like the reconfigured 'pervious paving' parking lot
- Like the side channel habitat for fish
- Like the riparian zone enhancements
- Don't like the labyrinth
- Not keen on the pole forest public art piece

Other thoughts/Idea?

- Retain wilderness feeling of park
- Provide more seating areas & picnic shelters
- Deal with knotweed/invasives right away

March 24, 2010

Total Questionnaires returned: 16

What do you like or dislike about the trail alignment?

- Proposed trail realignment incl setbacks is good (1,1,1,1,1,1,1,1,1,1,1)
- Like wetland idea but not pedestrian bridge
- Make sure there is a loop trail option
- I like that there are no stairs along the main north south trail. Could ski it in winter snow.
- New 'crossover' bridge is much appreciated
- Maintain trail experience/no asphalt
- Too many creek crossings
- Viewing platforms could be okay as a means to provide trail access but need to monitor the success of the first ones
- Like idea of allowing areas for the creek to flood
- In some areas trails still too close to creek

What is your opinion about Option 1 for the Southern part of the Park?

- Adventure playground improvements are good (1,1,1,1)
- Bathroom improvements are good (1,1,1,1)
- Prefer the elements in Option 2 (1,1,1,1,1,1)
- Like environmental centre idea (1,1,1)
- Would prefer not to see a large climber as it will be dangerous (1,1)
- Place picnic shelters in sunny locations
- Not very interested as I don't use southern park very much
- Keep planted edge at Marine Drive
- Is environmental education centre necessary?
- Use existing south bridge alignment for new bridge – no trees to be cut

- Bathroom location makes sense
- Mix option 1 &2
- Keep playground structures for youngsters and include adventure play
- Keep swings and slide
- Like picnic shelter
- Dislike there is no off channel habitat
- Rogers Parking lot still there

What is your opinion about Option 2 for the Southern part of the Park?

- Like Option 2 (1,1,1,1,1,1,1,1,1)
- Not impressed with 'Pole' Forest (1,1,1,1,1,1,1,1)
- Do not want the maze/Labyrinth (1,1,1,1)
- Parking area redesign is good (1,1,1)
- Fence tot lot like Princess Park (1,1)
- Use wildflower area as a off leash dog area(1,1)
- Do not use asphalt surfacing for trails
- Don't relocate bridge
- Separate play areas is good
- Like riparian revegetation
- Maintain low vegetation along Marine Drive to protect children playing in the area
- Not very interested as I don't use southern park very much
- Like wetland
- Don't make mounds so high that they block views of children playing
- Lower profile adventure play equipment look safer
- Environmental values of this one good but too many creek crossings
- Like wetland/Buy Rogers parking lot
- Off channel habitat idea good

Any Other thoughts?

- I'd like to see a field for dogs to play in although stream protection is important.(1,1,1)
- Use managed trees instead of poles for pole forest area (1,1)
- Pervious paving parking lot good (1,1)
- More than one picnic shelter (1,1)
- Retain wilderness feeling
- No lighting
- Consider shading parking lot to reduce 'radiant heat'
- Use renewable energy in water management such as rain water harvesting for toilets
- Provide more seating areas
- Deal with knotweed/invasives right away
- Consider contracting with first nations to improve trails and managed vegetation
- Ensure there is an opportunity to maintain contact with Mackay creek and view the returning salmon
- Paved sidewalk along Hamilton Street important
- Add more garbage cans around perimeter of the park
- If possible use pine beetle wood in construction of buildings
- Add a vertical wall to throw/kick balls at for practice
- Avoid encouraging ball play near Marine Drive as it presents a safety hazard
- Please keep in mind this is a neighbourhood park, not a community park
- Buffer noise from Marine Drive
- Picnic tables with hibachi stands
- Maintain vegetative buffer along Marine
- Use existing bridges where possible rather than build new ones
- Like stormwater treatment/constructed wetlands for playfields
- What about quiet rest areas? Interpretive signage?

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