

9.0 IMPLEMENTATION STRATEGY

This section describes a schedule and strategy for implementing the recommended actions described in Section 9.0. Implementation of actions outlined in this Management Plan is dependent on the availability of financial and staff resources, and will be affected by the needs of other parks in the Burnaby Parks System. Approval of this plan does not constitute automatic approval of funding for implementation of all actions.

Responsibility for implementation of the actions recommended in the Management Plan is with the City of Burnaby Parks, Recreation and Cultural Services Department. There will be opportunities for community involvement and/or private sector participation during implementation of some actions.

9.1 Phasing

Key to the successful implementation of the Management Plan is the concept of phasing, whereby individual action items are categorized according to the expected time-frame under which they are likely to be undertaken. This incremental approach allows for the immediate implementation of priority items, while budgeting to allow for non-priority recommendations to be carried out over a number of years as dictated by the implementation strategy.

All recommendations which appear in the plan fall under one of four categories:

- Phase I Priorities:** Action items that require immediate attention (i.e., within the next 1 to 2 years).
- Phase II Short-term Recommendations:** Actions that should be undertaken in the short-term based on the availability of financial and staff resources (i.e., within the next 1 to 5 years).
- Phase III Long-term Recommendations:** Future actions that are supported by the plan, but which may not be required for a number of years (i.e., within the next 5 to 10 years or beyond).
- Ongoing Actions:** Actions that should be initiated as soon as possible and undertaken on a regular schedule (i.e., initiated within the next 1 to 2 years).

The four phases of implementation are described below. In cases of field-level implementation, all physical works should be undertaken according to approved environmental and safety standards for the City, Province or, in the case of certain watercourses, to standards approved by the Department of Fisheries and Oceans.

9.1.1 Phase I – Priorities for Implementation

In the immediate future, recommendations for Burnaby Mountain Conservation Area favour improvements for preserving and enhancing the biophysical environment while allowing recreational use to occur in designated areas. Table 9-1 summarizes

the recommendations that have been identified as priority items for implementation. The priority statements are listed in the order of importance, as determined by responses to the Second Open House Questionnaire.

Table 9-1. Priorities for Implementation

<i>Priority Statement</i>	<i>Ranking¹</i>
Trails that are highly prone to erosion will be upgraded, where appropriate	1
A Vegetation Management Plan will be developed	2
Damage from trail use in more ecologically sensitive areas will be prevented	3
Mountain bike evaluation criteria will be finalized	4
Protection of watercourses and wildlife habitat ²	5
Directional signs, maps, and trail use/allocation signs will be erected	6
A Burnaby Mountain Public Advisory Committee will be established	6
Trails near watercourses will be upgraded or re-routed	7
The Trans-Canada Trail route will be upgraded	8
Decommissioned trails will be closed	9
An Education and Interpretation Plan will be developed	9
Research priorities for biophysical and recreation use studies will be identified	9
Environmental restoration of the former target range sites will begin	10
All trails will be re-named according to City of Burnaby standards and criteria	11

Notes:

- 1 Respondents were asked to list their top three priority items from the list provided.
- 2 Not included on original display list

Table 9-2 summarizes recommendations that are considered priorities for implementation based on analysis of baseline information and on public input received throughout the planning process. These recommendations should be undertaken within one month to two years following approval of the Conservation Area Management Plan.

9.1.2 Short-term Recommendations

Short-term recommendations will be initiated within 1 to 5 years of approval of the Conservation Area Management Plan. The timing of these recommendations is more flexible and may be spread out over a longer time frame depending on demand for the action, available budget, and successful implementation of Phase I recommendations. Short-term recommendations are summarized in Table 9-3.

9.1.3 Long-term Recommendations

Long-term recommendations generally apply to future options which are supported in the Management Plan, but which may or may not be implemented during the life of the plan. The development and phasing of major physical works, for example,

Table 9-2. Summary of Phase I Recommendations

Task	Year			
	0-1	1-2	2-5	5-10
Conduct an assessment of hazard trees following protocols established for other City of Burnaby parks.	X			
Commission a detailed survey and mapping of all trails	X			
Decommission all trails subject to closure using physical barriers, signs, enforcement and public education.	X			
Construct adequate stream crossings over all formal trails which cross watercourses or major ravines.	X			
Assess all trail sections that fall within 15 metres of a major watercourses to determine feasibility for re-routing.	X			
Treat all trails or trail sections identified as requiring site-specific improvements such as slope stabilization and grading, and in accordance with user requirements.	X			
Complete sections of the Trans-Canada Trail within Burnaby Mountain Conservation Area.	X			
Undertake immediate revegetation and stabilization of stream banks where trails have been closed or re-routed.	X			
Restore vegetation in areas where significant trail closures have been realized to stabilize slopes and re-establish vegetation.	X			
Complete studies on the condition of the former target range site and the projected costs for site rehabilitation.	X			
Rehabilitate the former target range site, including contaminated soils and watercourses.	X			
Complete heritage study and conservation plan for the 1912 house located at the former Barnet Rifle Range.	X			
Secure financial and human resources to ensure continued operation of the salmon rearing facilities at the former target range site.	X			
Erect safety signs and restrictive barriers along steep slopes and trails, as needed.	X			
Provide directional maps and signs, including signs denoting designated uses of each trail.	X			
Erect signs denoting the boundaries of protected habitat areas, or in pedestrian-only areas, signs explaining the rationale for restricted access.	X			
Establish a Public Advisory Committee and finalize their role and responsibilities.	X			
Finalize criteria for mountain bike conditional review period and initiate review program following implementation of necessary trail improvements and recommendations for education and enforcement.	X			
Evaluate mountain bike use of trails after one-year period.		X		
Complete the trail loop below the SFU Ring Road.		X		
Implement sections of the planned Urban Trail Network in the vicinity of Burnaby Mountain Conservation Area.		X		
Develop a comprehensive Vegetation Management Plan and related Fire Management Plan as specified in section 9.2.		X		
Develop an Interpretive Plan and related implementation strategy.		X		

may be dependent upon demand for additional facilities or on the availability of funds. Some long-term recommendations will require further study of their feasibility. A summary of proposed long-term recommendations is provided in Table 9-4.

Table 9-3. Summary of Phase II Recommendations

<i>Task</i>	<i>Year</i>			
	0-1	1-2	2-5	5-10
Initiate a program to inventory and map aquatic species and habitats found in and along major watercourses in Burnaby Mountain Conservation Area.		X		
Consider additional parking in existing clearings (may require cooperation with land owners, MOTB, or other facilities such as the Harry Jerome Sports Centre).		X		
Conduct ground-truthing and mapping of the existing 'J' Trail and of any sections of the trail which may require a parallel route. Map the location(s) of the proposed new route and conduct necessary geotechnical and environmental studies.		X		
Clear the section of the Hydro right-of-way (Trail 'M') which links the former target range sites to the right-of-way and other trails on the east side of the mountain.		X		
Construct, in phases if necessary, sections of single-use trail to parallel Trail 'J'.			X	
Develop former target range sites as a parking and staging area for conservation area visitors.			X	
Work with SFU and MOTB to review existing crossing signals to other parks and neighbouring communities, and identify potential sites to provide safe crossings over Gagliardi Way and portions of the Ring Road.			X	
Consider the need for small-scale facilities, such as washrooms, at locations other than Centennial Pavilion. Implement if necessary.		X	X	
In accordance with recommendations and specifications of the Vegetation Management Plan (Phase I), initiate vegetation and habitat enhancement programs such as enrichment plantings or experimental browse areas for deer.		X	X	

9.1.4 Ongoing Actions

Ongoing actions refer to recommendations that should be implemented soon after approval of the Conservation Area Management Plan, and then continually or regularly undertaken in subsequent years. All ongoing actions are expected to be initiated with the first year of implementation.

Table 9-5 summarizes the ongoing actions and provides guidelines for how frequently each action should be undertaken.

Table 9-4. Summary of Phase III Recommendations

<i>Task</i>	<i>Year</i>			
	0-1	1-2	2-5	5-10
Conduct ground-truthing and mapping of the proposed lower loop connection between the former target range site and the Harry Jerome Sports Centre, and conduct necessary geotechnical and environmental studies.				X
Develop a small Nature Interpretive Centre at the restored target range site.				X
Upgrade the children's play area near the Centennial Pavilion if warranted by demand by conservation area users and SFU residents.				X
Pending favourable evaluations, consider expanding mountain bike access to other trails or sections of the conservation area.				X
Work with MOTB to study, and potentially construct, an underpass beneath the Barnet Highway for pedestrians and wildlife passage.			X	X

Table 9-5. Summary of Ongoing Actions

<i>Ongoing Action</i>	<i>Frequency Guide</i>
Acquisition of privately-owned parcels of land within the boundary of the conservation area.	As properties become available.
Monitoring of mountain bike activities according to evaluation criteria.	Annual or as needed.
Monitoring and repair of trail conditions.	As needed.
Research, data collection and monitoring of biophysical conditions.	Priorities for research are outlined in section 9.11 of the Management Plan. The duration and scope of individual research projects will depend upon data requirements and availability of funds.
Research, data collection and monitoring of recreational use.	Trails in sensitive areas and trails identified for extensive improvement (e.g., to minimize user conflicts) will be given priority.
Vegetation and habitat management actions.	As dictated by the Vegetation Management Plan.
Educational programs.	As dictated by the Interpretive Plan, or at the initiative of Burnaby staff or community groups.
In-park enforcement.	Dictated by the availability of staff or volunteers. Enforcement should be concentrated during peak use periods.
Public Advisory Committee meetings.	Every six months or as needed to respond to specific issues.
Regional cooperation (i.e., with SFU, industry neighbours, residents or other interest groups).	Regular communication is recommended through signage and activities, newsletters, or meetings as required.

9.2 Preliminary Costing

The estimated costs to construct the various elements as recommended by the Management Plan are based on planning level information only. They are broadly based on the anticipated scope of works and do not consider specific detail design issues. They are generally based on unit costs as derived from similar projects elsewhere. Soft costs (design fees, staffing costs, administration) and contingencies are not included. These costs are based on 1998 prices.

9.2.1 Trails

Estimated costs of construction, remediation or closure of each trail is presented in Table 9-6. These estimates are based on a classification of level of work required as follows:

Key for Table 9-6

C	Close/Reclamation	\$70 / m ²
L	Low level of improvement - minor drainage, surfacing	\$50 / m ²
M	Medium level of improvement - drainage, surfacing, grading	\$75 / m ²
H	High level of improvement - re-routing - bridges - grading - reclamation	\$125 / m ²
N	New trail	\$200 / m ²

Sources for trail cost estimates:

- West Vancouver Lawson Creek Trail
 - \$225 / linear metre @ 1.0 m width
 - New trails
 - Boardwalks, timber steps and walls, grading, gravel surface, remedial seeding, drainage, sections of boardwalk
 - Steep banks
- North Shore Hikers / District of West Vancouver Parks and Recreation
 - \$200 / m² - New trails with wood chips on top of crushed stone
 - \$30-41 / m² for trail remediation and planting
- British Properties Trails, West Vancouver
 - Trail remedial works - \$40 / m²
 - New construction trails, less complicated than item 1 - \$160 / m²

Table 9-6. Estimated Costs for Burnaby Mountain Conservation Area Trail Improvements

<i>Trail</i>	<i>Length</i>	<i>Improvements</i>	<i>Width</i>	<i>Type</i>	<i>Estimated Costs</i>
B1	916 m	Drainage Surface Width 2 m	2 m	M	137,400
B2	909 m	Surface Drainage Width 1 m Existing road (W)	1.5 m	L	68,175
B2 prop.	595 m	New construction Width 2.44 m	2.44 m	N	285,600
C	778 m	Drainage Surface	1 m	L	38,900
A	1300 m	Stairs Grading Surfacing Clearing	1 m	H	162,500
D1	1030 m	Surfacing Reclamation Drainage	1 m	L	51,500
D	336 m	Decommission Barriers Reclamation	1 m	C	23,520
E1	2500 m	New trail Grading Clearing Drainage	1.5 m – 3.0 m	N	500,000 – 1,000,000
F	2300 m	Improvements underway	2.5 m	–	-----
G	1900 m	Improvements underway	2.5 m	–	-----
H	355 m	Improvements underway	2.5 m	–	-----
J	2200 m	Grading Drainage Re-routing	1 m	M	165,000
	100 m	Closure		C	
J2	1800 m	New trail Clearing Grading Drainage Bridges	1 – 2 m	N	360,000 – 460,000
K	290 m	Grading Widening	1 m	C	20,300
N	675 m + 298 m	Switchbacks Grading Surface	1 m	M	72,975

<i>Trail</i>	<i>Length</i>	<i>Improvements</i>	<i>Width</i>	<i>Type</i>	<i>Estimated Costs</i>
N ₁	675 m	New trail Grading Clearing	1 – 2 m	N	135,000 – 270,000
O	185 m	Grading Drainage	1 m	L	9,250
M	917 m	Major bridge and trail	1 m	N	183,400
	400 m	Bridges and trail	1 m	N	80,000
	3300 m	Existing road	1 m	C	— — — —
Q	1400 m	Drainage Surface Grading Re-routing Bridges	1.5 m	M	157,500
U	687 m	Drainage Surface	1 m	L	34,350
V	818 m	Drainage Re-routing	1 m	L	40,900
X	937 m	Reclamation Re-routing	1 m	H	117,125
Y	706 m	Reclamation Re-routing	1 m	H	88, 250
Z	1300 m	Re-routing Drainage Grading Bridge (Stoney Creek)	1 m	H	162,520
AA	687 m	Closure Reclamation Stream work	1 m	C	48,090
S	908 m	Closure	1 m	C	63,560
I	1300	New trail Clearing Grading Drainage	1- 2 m	N	260,000 – 520,000

Note: Where new trail widths are expressed as a range, the narrow width is recommended in the short-term, with possible widening in the longer-term as demand warrants.

9.2.2 Parking Areas

Improvements to parking are recommended for several areas.

North Road:

- a) at trail Q - upgrade shoulder where existing parking 30,000

- b) at north end of North Road
- create a small lot for 20 cars
 - gravel
 - \$3,000 / space
- 60,000

Former Target Range site:

- 50 car gravel lot within existing infrastructure
 - \$3,000 / space
- 150,000

9.2.3 Signage

A signage system is recommended throughout the conservation area. This will require developing a signage graphic system, determining specific locations and construction. An allowance has been identified, however, actual cost will depend on scope, materials, phasing and quantity. Estimated costs are presented in Table 9-7.

Table 9-7. Estimated Costs for Signage for Burnaby Mountain Conservation Area

<i>Item¹</i>	<i>Quantity</i>	<i>Estimated Unit Cost</i>	<i>Cost</i>
1. Kiosk: orientation signage with maps located at major path entry points; wood structure with cover (supply and installation costs)	8	5,000	40,000
2. Signs: maps and interpretive signage; wood and enamel (supply and installation costs)	20	1,000	20,000
3. Posts: wood posts with enamel symbols/keys or trail names (supply and installation costs)	100	500	50,000

Notes:

- 1 All items to be designed in-house.

