

TABLE OF CONTENTS

Part I: The Conservation Area and the Planning Process

1.0 INTRODUCTION	1
1.1 Introduction to the Management Plan.....	1
1.2 History of Establishment.....	1
1.3 Highlights of the Conservation Area	2
1.4 Objectives of the Management Plan	4
2.0 PROCESS AND METHODOLOGY	7
2.1 Public Consultation	7
2.1.1 Informal Meetings	7
2.1.2 Public Open Houses.....	7
2.1.3 Workshops	8
2.2 Biophysical Inventory and Analysis	8
2.2.1 Plots for Vegetation and Soils.....	8
2.2.2 Wildlife Surveys	10
2.2.3 Bird Surveys	10
2.2.4 Bat Surveys.....	10
2.2.5 Habitat Suitability Models	12
2.2.6 Watercourses	12
2.2.7 Assessment of Critical Ecological Components	12
2.3 Inventory of Historical, Cultural and Visual Resources.....	14
2.3.1 Historical and Cultural Inventory and Analysis	14
2.3.2 Visual Inventory and Analysis	14
2.4 Inventory of Facilities and Trails	15
2.5 Concept Design Plans.....	15
3.0 THE CONSERVATION AREA ENVIRONMENT	17
3.1 Climate and Microclimate	17
3.2 Terrain.....	17
3.2.1 Geology and Soils	17
3.2.2 Soil Erosion	18
3.2.3 Slope Stability	20
3.2.4 Public Safety Issues	20
3.3 Vegetation	22
3.3.1 Vegetation Species.....	22
3.3.1.1 Common Plants Found on Burnaby Mountain.....	22
3.3.1.2 Rare Plants	23
3.3.1.3 Exotic and Invasive Species.....	25
3.3.2 Vegetation Communities	25
3.3.3 Forest Structure and Succession	28
3.3.4 Forest Health and Diversity	29
3.3.5 Vegetation Management Issues	30
3.3.5.1 Human Disturbance	30
3.3.5.2 Fire Management.....	30
3.3.5.3 Hazard Trees	31
3.3.5.4 Maintenance of Scenic Views	31

3.3.5.5 Utility Corridors	31
3.4 Wildlife and Habitat	31
3.4.1 Wildlife Species	32
3.4.1.1 Common Species Found on Burnaby Mountain.....	32
3.4.1.2 Provincially-Listed Species.....	33
3.4.1.3 Introduced Species	34
3.4.2 Habitat Types	36
3.4.2.1 Forested Habitats	36
3.4.2.2 Grasses and Disturbed Landscapes.....	38
3.4.2.3 Aquatic Habitats	40
3.4.2.4 Habitat Diversity and Connectivity.....	40
3.4.3 Wildlife Issues.....	41
3.4.3.1 Habitat Loss and Fragmentation	41
3.4.3.2 Human Disturbance	42
3.4.3.3 Black-tailed Deer Management	42
3.4.3.4 Regional Wildlife Issues.....	43
3.5 Watercourses	43
3.5.1 Distribution.....	43
3.5.2 Groundwater	44
3.5.3 Brunette Watershed.....	44
3.5.4 Burrard Inlet Watershed	46
3.5.5 Aquatic Habitat Types	47
3.5.5.1 In-Stream Aquatic Habitat	47
3.5.5.2 Riparian Vegetation Habitat	48
3.5.6 Issues Affecting Watercourses	48
3.5.6.1 Human Disturbance	48
3.5.6.2 Future Development at SFU.....	49
3.5.6.3 Water Quality	49
3.5.7 Stream Stewardship	50
3.6 Environmentally and Ecologically important areas	50
3.6.1 Regional Significance.....	50
3.6.2 Locally Significant Areas.....	50
3.6.3 Human Disturbance	52
3.7 Historical, Cultural and Recreational Resources	53
3.7.1 Historical Resources	53
3.7.2 The Centennial Pavilion area.....	53
3.7.3 The Former Target Range Sites.....	54
3.7.4 Recreational Facilities	54
3.7.5 Protection of Significant Historical and Cultural Resources.....	56
3.8 Visual Resources	56
3.9 Recreation	58
3.9.1 Opportunities and Use	58
3.9.2 The Trail Network	59
3.9.3 Activity Profiles	59
3.9.3.1 Pedestrian Use	59
3.9.3.2 Mountain Biking	62
3.9.3.3 Equestrian Use	63

3.9.3.4 Off-Leash Dogs	63
3.9.3.5 Other Uses of the Conservation Area	64
3.9.4 User Conflicts	64
3.9.5 Impacts of Increased Use of the Conservation Area	65
3.9.6 Access	65
3.9.7 Links to Other Parks and Greenspaces	65
3.10 Education and Interpretation	67
3.11 Research and Monitoring	68
3.12 Conservation Area Administration	68
3.13 Regional and Community Cooperation	69
3.13.1 Community Outreach	69
3.13.2 Cooperation with SFU	70
3.13.3 Cooperation with Landowners and Lease Holders	70

Part II: The Management Plan

4.0 CONSERVATION AREA VISION AND POLICY	73
4.1 Conservation Area Mandate	73
4.2 Conservation Area Vision	73
4.3 Appropriate Activities	73
4.4 Conservation Area Policy	74
4.4.1 Conservation Policy	74
4.4.2 Recreation Policy	74
4.4.3 Land Use Policy	75
5.0 MANAGEMENT GUIDELINES	77
5.1 Terrain	77
5.2 Vegetation	77
5.3 Wildlife and Habitat	78
5.4 Watercourses	79
5.5 Environmentally and Ecologically Important Areas	79
5.6 Cultural and Heritage Resources	80
5.7 Visual and Scenic Resources	80
5.8 Access and Linkages	81
5.9 Recreation Management	81
5.10 Conservation Area Facilities	82
5.11 Education and Interpretation	82
5.12 Research and Monitoring	83
5.13 Regional and Community Cooperation	83
6.0 OBJECTIVES AND RECOMMENDATIONS	85
6.1 Terrain	85
6.2 Vegetation	86
6.3 Wildlife and Habitat	88
6.4 Watercourses	92
6.5 Environmentally and Ecologically Important Areas	93
6.6 Historical and Cultural Resources	93
6.7 Visual and Scenic Resources	94

6.8	Access and Linkages.....	94
6.9	Recreation Management	95
6.10	Conservation Area Facilities	97
6.11	Education and Interpretation	98
6.12	Research and Monitoring	100
6.13	Regional and Community Cooperation	101
7.0	DESIGN CONCEPTS.....	103
7.1	Habitat Blocks	103
7.2	Trail Concept Plan.....	103
7.2.1	Trails for Pedestrians (Hikers)	103
7.2.2	Trails for Cyclists (Mountain Bikers)	104
7.2.3	Equestrian Trails	104
7.2.4	Loop Trails	104
7.2.5	Summary of Trail Concepts	106
7.3	Parking Opportunities	106
7.4	Clearings in the Conservation Area	108
7.5	Long-term Potential Options.....	108
7.6	Design Parameters	110
7.6.1	Design Parameters for Trails	110
7.6.1.1	Multi-Use Pedestrian / Cycling / Equestrian Trails	110
7.6.1.2	Pedestrian / Cycling / Trans-Canada Trail	110
7.6.1.3	Pedestrian /Cycling Trail.....	112
7.6.1.4	Pedestrian Only Trail.....	112
7.6.1.5	Cycling Only Trail	112
7.7	Design Parameters for Signage.....	112
7.7.1.1	Entry Signage	112
7.7.1.2	Park Orientation Maps.....	112
7.7.1.3	Trail Signs	112
7.7.1.4	Interpretive Signage.....	113
8.0	CONSERVATION AREA PROGRAM ELEMENTS	125
8.1	Mountain Bike Conditional Review	125
8.2	Public Advisory Committee	125
8.3	Interpretive Program.....	126
8.4	Educational Programs	126
8.5	Enforcement Program.....	127
8.6	Public Safety Program	127
8.7	Research Programs	128
8.8	Special Events	128
8.9	Maintenance Program.....	129
9.0	IMPLEMENTATION STRATEGY	131
9.1	Phasing	131
9.1.1	Phase I – Priorities for Implementation.....	131
9.1.2	Short-term Recommendations.....	132
9.1.3	Long-term Recommendations.....	132
9.1.4	Ongoing Actions	134
9.2	Preliminary Costing	136
9.2.1	Trails	136

9.2.2	Parking Areas	138
9.2.3	Signage.....	139
10.0	CONCLUSIONS	141
10.1	Framework for Future Conservation Area Planning.....	141
10.2	Review of the Management Plan	141
11.0	BIBLIOGRAPHY	143

LIST OF FIGURES

Figure 0-1.	Trail Concept Plan	ix
Figure 1-1.	Regional Setting of Burnaby Mountain Conservation Area.....	3
Figure 1-2.	Burnaby Mountain Conservation Area.....	5
Figure 1-2a	Covenant Area Burnaby Mountain Conservation Area	6
Figure 2-1.	Burnaby Mountain Conservation Area Management Planning Process ...	9
Figure 2-2.	Field Sampling Locations	13
Figure 3-1.	Elevation and Contours of Burnaby Mountain Conservation Area	19
Figure 3-2.	Geology of Burnaby Mountain Conservation Area	21
Figure 3-3.	Vegetation Communities on Burnaby Mountain Conservation Area	27
Figure 3-4.	Habitat Suitability for Black-tailed Deer	35
Figure 3-5.	Habitat Suitability for Pileated Woodpecker	37
Figure 3-6.	Habitat Suitability for Bats	39
Figure 3-7.	Major Watercourses of Burnaby Mountain Conservation Area	45
Figure 3-8.	Relative Sensitivity According to Vegetation, Habitat and Watercourses.....	51
Figure 3-9.	Cultural and Recreational Resources.....	55
Figure 3-10.	View Opportunities on Burnaby Mountain Conservation Area.....	57
Figure 3-11.	Burnaby Mountain Conservation Area Activity Participation.....	61
Figure 3-12.	Linkages between Burnaby Mountain Conservation Area and Other Parks and Greenspaces.....	66
Figure 7-1.	Habitat Blocks.....	105
Figure 7-2.	Trail Concept Plan	107
Figure 7-3.	Major Loop Trails	109
Figure 7-4.	Sketch Plan of the Former Target Range Area	111
Figure 7-5.	Trail Hierarchy Sketches.....	114
Figure 7-6.	Trail Signage.....	115
Figure 7-7.	Trail Construction and Stabilization.....	119
Figure J-1.	North Side Options.....	199
Figure J-2.	West Side Options	201
Figure J-3.	South Side Options.....	203
Figure J-4.	East Side Options	205

LIST OF TABLES

Table 2-1.	Data Collected during Biophysical Inventory of Burnaby Mountain.....	11
Table 3-1.	List of Provincially Rare and Endangered Plant Species Known or Expected to occur in the Vicinity of Burnaby Mountain	24
Table 3-2.	Vegetation Communities of Burnaby Mountain Conservation Area	26
Table 3-3.	Standard Codes for Vegetation Species	28
Table 3-4.	Provincial Classifications for Listed Species of Wildlife	34
Table 3-5.	Provincially-Listed Wildlife Species which may be Found within Burnaby Mountain Conservation Area.....	36
Table 3-6.	Main Trails and Current Trail Uses within the Burnaby Mountain Conservation Area	60
Table 9-1.	Priorities for Implementation	132
Table 9-2.	Summary of Phase I REcommendations.....	133
Table 9-3.	Summary of Phase II Recommendations	134
Table 9-4.	Summary of Phase III Recommendations	135
Table 9-5.	Summary of Ongoing Actions	135
Table 9-6.	Estimated Costs for Burnaby Mountain Conservation Area Trail Improvements	137
Table 9-7.	Estimated Costs for Signage for Burnaby Mountain Conservation Area	139

LIST OF APPENDICES

A. Covenant for Establishing Burnaby Mountain Conservation Area	157
B. Planning and Design Principles for Environmentally Sensitive Areas (ESAs) in the City of Burnaby	163
C. Summary Results from Public Open Houses	165
D. Models for Determining Habitat Suitability	169
E. Ecological Sensitivity Analysis based on Vegetation, Habitat and Watercourse Values (VHW).....	173
F. Trail Condition and Use Chart.....	177
G. List of Vegetation Species found on Burnaby Mountain	181
H. Potential and Confirmed Fish, Mammal and Herptile Species on Burnaby Mountain	185
I. Potential and Confirmed Bird Species on Burnaby Mountain	191
J. Conceptual Options Considered for Burnaby Mountain Conservation area.....	197
K. Maintenance Checklist for Trails within Burnaby Mountain Conservation Area	209

