Parks Canada Parcs Canada

Model Class Screening Report for Commercial Guiding Activities in the Northern National Parks of Canada

Aulavik National Park of Canada and Tuktut Nogait National Park of Canada

March 2011

Canada

Model Class Screening Report for Commercial Guiding Activities in the Northern National Parks of Canada

Aulavik National Park of Canada and Tuktut Nogait National Park of Canada

Parks Canada Agency
March 2011

Table of Contents

List of Figures

List of Tables

Acronyms

CEA – Cumulative Effects Assessment

The Act – *Canadian Environmental Assessment Act*

CEAR/ The Registry – Canadian Environmental Assessment Registry

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

CSPR – Class Screening Project Report

EA – Environmental Assessment

ESA – Ecologically Sensitive Area

ESS – Ecologically Sensitive Site

FA – Federal Authority

LMU – Land Management Units

RA – Responsible Authority as defined under the *Canadian Environmental Assessment Act*

MCSR – Model Class Screening Report

The Agency – The Canadian Environmental Assessment Agency

1. Introduction

This model class screening report (MCSR) will address commercial guiding services in two northern national parks: Aulavik National Park of Canada (Aulavik), and Tuktut Nogait National Park of Canada (Tuktut Nogait). Commercial guiding services in these parks provide a number of benefits to park visitors, park staff and the park environment. The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably visit and appreciate more remote parks or areas of parks. Guides often take the opportunity to inform clients about the region's physical and cultural characteristics, as well as educate them on issues related to ecological integrity, good environmental practices, and park management. Many guiding operations have a strong focus on outdoor skill development and safety leading to an increase in the number of experienced and skilled backcountry users, which in turn, results in fewer incidents that may require park rescue services. Finally, the presence of skilled, professional guides provides an additional measure of safety for backcountry visitors, even for independent users.

Uncontrolled commercial guiding activities may also have negative impacts on the park environment. The activities of commercial guiding operations may increase user numbers in sensitive areas that would otherwise see lower use. Some, although not all, guiding operations are associated with large group sizes, and seasonal or repetitive use patterns, that may result in increased disturbances to vegetation, wildlife and visitor experience.

As a prerequisite to obtaining a business licence, commercial guiding operators within a national park are required to conduct an environmental assessment pursuant to the *Canadian Environmental Assessment Act* (the *Act*) of their current and projected future guiding activities. The class screening process under the *Act* provides an efficient, effective, flexible and consistent approach to the environmental assessment of commercial guiding activities. A class screening approach can also be readily adapted over time to accommodate both park and business operational changes, and new information related to changing patterns of visitor use or visitor use issues.

1.1. Management of national parks

National parks are "dedicated to the people of Canada for their benefit, education and enjoyment ... and shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations" *(Canada National Parks Act* 2000). The approach taken to the environmental assessment of commercial guiding activities recognizes the benchmarks of ecological and commemorative integrity that are mandated to the Parks Canada Agency (Parks Canada) for the management of national parks and historic sites. The approach also recognizes that outdoor recreation in national parks is considered to be an appropriate use in accordance with Parks Canada policies and that the quality of the visitor experience is an important consideration in management decisions.

1.1.1. Managing for ecological integrity

The *Canada National Parks Act* section 8(2) identifies the importance of protecting park resources in relation to visitor use by stating "the maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks".

The *Canada National Parks Act* section 2(1) states "ecological integrity means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes".

Operationally, ecosystems can be characterized in terms of composition, structure and processes. An ecosystem can be considered to have integrity when native components (plants, animals and other organisms), physical structure (such as habitat connectivity or vegetation patterns) and processes (such as interspecies competition and predation) remain intact and function unimpaired by human activities. Conversely a loss in ecological integrity can be characterized by changes to physical structure, or interference with ecosystem processes as a result of human activity, that result in a loss of native species biodiversity.

Indicators of, and stressors affecting, ecological integrity as identified in park management plans were reviewed to identify the environmental components most likely to be affected by commercial guiding activities.

1.1.2. Managing cultural resources

A key mandate of Parks Canada is to ensure cultural resources within national historic sites, national parks, historic canals and national marine conservation areas are protected, preserved, and presented for the benefit of all Canadians.

A cultural resource is defined as "a human work, or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has been determined to be of historic value" (Canadian Heritage Parks Canada 1994). Within national parks, cultural resources are inventoried and assigned a value based on the particular qualities and features that make up their historic character. Resources are evaluated for their historical associations, their aesthetic and functional qualities, and their relationships to social and physical environments (Canadian Heritage Parks Canada 1994). National historic sites are assessed for their commemorative integrity, a condition which occurs when the resources that represent a site's importance are not impaired or under threat. National historic sites located within the national parks and other cultural resources are considered to be potentially sensitive sites for the purposes of the environmental assessment of commercial guiding activities.

1.1.3. Managing for visitor experience

The *Canada National Parks Act* states that "The national parks of Canada are hereby dedicated to the people of Canada for their benefit, education and enjoyment...". To

fulfill Parks Canada's mandate of facilitating the education and enjoyment of national parks by the public, a variety of outdoor recreation opportunities are permitted consistent with direction provided by *Parks Canada Guiding Principles and Operational Policies* (Canadian Heritage Parks Canada 1994). Outdoor activities that promote the appreciation of a park's purpose and objectives, and respect the integrity of the ecosystem, are intended to serve visitors of diverse interests, ages, physical capabilities and skills. The private sector and non-governmental organizations are encouraged under Parks Canada policies to provide skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks. Individual park management plans specify the types and ranges of both new and existing appropriate outdoor recreation activities and their supporting facilities. Parks Canada, working in cooperation with others, is committed to offering high-quality visitor services by ensuring that park resources do not deteriorate and that quality visitor experiences are not diminished.

The contribution of the private sector in the delivery of "skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks" is recognized under Section 4 of *Parks Canada Guiding Principles and Operational Policies.* Commercial guiding activities provide a number of benefits to park visitors, park staff and park residents including:

- Safe access for unskilled or inexperienced visitors;
- Visitor education on the physical, biological, and cultural resources and ecological integrity of the national parks;
- Outdoor skills development and safety training;
- Skilled resource pool for dealing with emergencies and rescues; and
- Job opportunities and economic benefits.

1.1.4. Park management plans

In order to fulfill the mandates for ecological integrity, cultural resources and visitor experience, management plans are developed for each park and reviewed every five years. These documents are tabled in parliament and contain "a long-term ecological vision for the park, a set of ecological integrity objectives and indicators and provisions for resource protection and restoration, zoning, visitor use, public awareness and performance evaluation" *Canada National Parks Act* section 11(1). Management plans provide the direction for all activities within the park. Based on the management plan, human use strategies and other plans can be developed to further direct activities within the parks.

The park management planning process includes public input and review, strategic environmental assessment and Ministerial approval prior to being tabled in parliament. As a result of the intensive management planning and review process, issues related to the cumulative impacts of overall management of human use are addressed more appropriately within the scope of the management planning process including:

- Appropriate use of park lands and facilities (e.g. Winter use of specific areas)
- Management and maintenance of park facilities

- Management of overall visitor use levels
- Commercial business licence allocations or restrictions
- Area closures, visitor use restrictions or zoning.

1.1.5. Cooperative management

Both of the parks covered by this environmental assessment are cooperatively managed. In Aulavik, the Member Organizations have established an Advisory Board as a forum to cooperatively manage the Park in accordance with the *Agreement for the Establishment of a National Park on Banks Island* (1992). In Tuktut Nogait, a management board has been established as per *The Tuktut Nogait Agreement* (1996). Management boards perform an important role in providing feedback and guidance for management direction. The park establishment agreements affirm aboriginal rights relating to access and harvesting. As a result of these provisions, the use of "visitor" in this report does not refer to Aboriginal people covered by the land claim for that park. Another provision that is common in the various agreements is the priority basis for business opportunities in the park to be offered to Aboriginal people first or to have a certain percentage of licences reserved for Aboriginal and/or local people (provisions vary; please check the individual agreements for details).

1.2. Class screening and the *Canadian Environmental Assessment Act*

The *Canadian Environmental Assessment Act* (the Act) and its regulations set out the legislative basis for federal environmental assessments. The legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The Act applies to projects which require a federal authority (FA) to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or license). The FA then becomes a responsible authority (RA) and is required to ensure that an environmental assessment of the project is carried out prior to making its decision or taking action.

Most projects are assessed under a screening type of assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need to modify the project plan or recommend further mitigation to eliminate adverse environmental effects or minimize the significance of these effects.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate any significant adverse environmental effects. The Agency may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A model class screening consists of two reports:

- A model class screening report (MCSR) that defines the class of projects and describes the associated environmental effects, design standards and mitigation measures; and
- A class screening project report (CSPR) that describes any additional information (e.g. environmental setting, environmental effects, design standards and mitigation measures, and follow-up) needed for each project assessed under the MCSR, and a determination regarding the significance of environmental effects of that project.

1.3. Model class screening and the project class

The MCSR meets the requirements of a class screening as outlined below:

- *Well-defined projects;*

Guided activities are a well-defined class of project. They are all similar in that the business licence involves an authorization to operate a business offering guided activities in a national park. Although covering many different activities, the activities all involve guiding visitors on an experience in a northern national park.

- *Well-understood environmental settings;*

Guided activities take place in well-understood environmental settings and often follow similar routes and rivers, making the environmental setting more predictable on a local scale.

- U*nlikely to cause significant adverse environmental effects, taking into account mitigation measures;*

Guided activities are unlikely to cause significant adverse environmental effects, taking into account mitigation measures. These activities have the potential to only impact the environment in small ways. Given the common characteristics of these activities and minimal impacts after mitigation is implemented, the adverse environmental effects are not likely to be significant.

- *Follow up*

Guided activities do not require follow-up because there is no new/unproven mitigation measures, the setting is familiar, and no new technology is being used.

- *Effective and efficient planning and decision making;*

Guided activities are subject to the management planning process as established by the *Canada National Parks Act*. This process is used to provide management direction for all activities within a national park and address cumulative effects at the park scale. The management plan can set limits or restrictions on commercial guiding activities if they are necessary to protect ecological integrity or visitor experience. All projects are required to comply with management plan directions and restrictions. Furthermore, these activities take place on federal land administered by Parks Canada and do not require any other authorization from another federal department. As a result, federal referrals will not be necessary.

- *Unlikely to elicit public concern.*

Public concerns are unlikely because the management planning process includes an extensive public consultation program and provides the management context for this activity.

1.4. Key issues and challenges

A number of key issues and challenges exist related to the environmental assessment of commercial guiding activities.

- Many impacts of guided activities are typically mitigated through the application of standardized mitigation. However site-specific environmental concerns exist that may not be mitigated through standardized mitigation. A key challenge of the assessment is to apply an appropriate level of detail to the evaluation and mitigation of site-specific environmental issues.
- Guided recreational use is only a portion of the activities taking place within the parks. A key challenge is identified in terms of specifying and justifying realistic, effective and fair mitigation measures given the relative contribution of guided activities to cumulative environmental effects in a given area.
- There is a lack of information on the effects of human disturbance on the sensitive arctic ecosystems in the parks. Relatively little research on recreational impacts has been conducted in the arctic environment; therefore, typical impacts in other ecosystems need to be extrapolated to this environment. However, the formal research and information about these parks is still greater than most other northern locations. In addition, extensive experience of Parks Canada staff in these parks provides sufficient informal qualitative knowledge to conduct the assessment.
- A key environmental assessment challenge is to link mitigation and management of commercial guiding to the broader visitor use management picture including guidelines and thresholds established by Parks Canada. This challenge will be addressed through the integration of the management planning process with the cumulative effects analysis.
- Patterns of visitor use, the type, number, size and nature of commercial operations, and priority environmental issues may be considered to be dynamic over time. A key environmental assessment challenge is the development of an adaptive management process that can identify, evaluate and address changes to commercial operations and incorporate new information over a regular period of time. This challenge is addressed through the use of the CSPR to identify any recent or site-specific concerns and through the adaptive management approach to cumulative effects identification and management.

The class screening process for commercial guiding activities has been developed to address the requirements of the *Canadian Environmental Assessment Act* and the key issues and challenges presented above. To a large degree, key challenges are related to current limitations in the available data and information base. Expanding the available information base will require the development of monitoring and information gathering programs targeted at filling designated information gaps. However in the interim, the available data and the expert knowledge of Parks Canada staff provide adequate

information for the conclusions outlined in the MCSR. In addition, Parks Canada will be able to respond to new information through the CSPR process and links to the management planning processes outlined in the MCSR.

The class screening process:

- Provides a consistent, scientific approach across the northern parks to the identification, evaluation and mitigation of environmental effects related to commercial guiding activities;
- Addresses site-specific and cumulative environmental effects and mitigation;
- Provides an assessment tool that is consistent and fair to operators and recognizes the responsibility shared by Parks Canada to mitigate the cumulative environmental effects of all visitor impacts;
- Provides an adaptive management process by which the environmental assessment of commercial guiding activities can be evaluated and improved over time; and,
- Is consistent with management direction provided by the *Canada National Parks Act*, Parks Canada's policies and park management plans.

1.5. Application of the MCSR to the business licence process

1.5.1. Integration of environmental assessment and business licence administrative process

The business licensing process and the environmental assessment process are individual legal requirements mandated by separate legislative requirements under the *Canada National Parks Act* and the *Canadian Environmental Assessment Act.* However, the requirements for issuing a business licence encompass the requirements for environmental assessment under the *Act.* In order to ensure operational efficiency and consistency, and to facilitate cumulative effects assessment, the environmental assessment process has been integrated into the overall business licensing process.

The national parks' business licence administrative process will continue to operate, as it has in the past, on an annual basis. The issuance of licences, collection of licence fees, and reporting requirements will be completed annually. Application for new, expanded or altered commercial guiding operations will also be considered on an annual basis. The licensing process can be divided into three stages as illustrated in Figure 1:

- licence pre-screening
- licence application and review
- monitoring and annual reporting

Environmental assessment requirements are incorporated within the licence application and review stage. A brief description of the stages is outlined below.

1.5.1.1. Licence pre-screening

At this stage, applications for new, expanded or altered licences for commercial guiding operations are reviewed by Parks Canada against existing appropriate use, policy, and

management plan direction. Applications that are not consistent with policy and management plan direction may be rejected or returned to the applicant for modification. Applications that are considered to be compatible with policy and management plan direction may proceed to the licence application stage.

1.5.1.2. Licence application and review

There are two streams to the licence application stage - the licence application itself and the environmental assessment process. The licence application deals with the nature and administration of the business including collection of information on contacts, management, office location, business size, nature of the business, etc. Stipulations on group size, guide/client ratios, public safety, and certification requirements are applied based on approved and standardized business licensing policies and procedures. The environmental assessment process may take the form of either a class screening as outlined in this MCSR, or a regular screening under the *Act*. Both the licence application and the environmental assessment must be completed and reviewed by business administration, public safety and environmental assessment staff of Parks Canada prior to proceeding to the next stage. Licence applications are received and reviewed by Parks Canada staff in the spring of every year. The review includes the identification of additional site-specific issues and mitigation, the identification of cumulative effects issues and mitigation, and potential impacts to park facilities, budgets and public safety.
At any point in the review it may be necessary for Parks Canada to request additional information from the applicant in order to properly assess the application.

Mitigations required by the environmental assessment are attached as a condition of the business licence. Failure to reasonably comply with the mitigation could result in the cancellation of the business licence by the park superintendent. Additional stipulations and mitigations may be attached to the business licence for an individual operation to deal with site-specific or cumulative effects, or other operational concerns as required. A recommendation will be made to the park superintendent with respect to licence approvals.

1.5.1.3. Annual reporting and monitoring

Annual monitoring of multi-day use in Aulavik and Tuktut Nogait occurs through a permitting system that tracks all parties. As a result, business licence holders offering multi-day trips in these parks are not required to submit annual reports.

For both parks, business licence holders who fish during their trip must report the catch (species and approximate size) of fish after each trip. Bear sightings must also be reported after each trip. Reports are submitted to and held in an electronic database that can be used to confirm and evaluate patterns of commercial use over time. Annual reports are used as baseline information for Parks Canada review and for the identification of cumulative effects issues and mitigation.

1.5.2. Application of section 13.1 *Inclusion List Regulations*

In accordance with section 13.1 of the *Inclusion List Regulations*, completed and

approved environmental assessments conducted through the class screening process will be considered valid unless the scope and nature of the business changes. Commercial guiding operations that do not plan to significantly alter or expand commercial operations would not require a new or updated environmental assessment until the scheduled five-year management plan review. Every five years following the completion of the park management plan review in each park, all commercial guiding operations would be re-evaluated and notified with respect to the need for a new or updated environmental assessment.

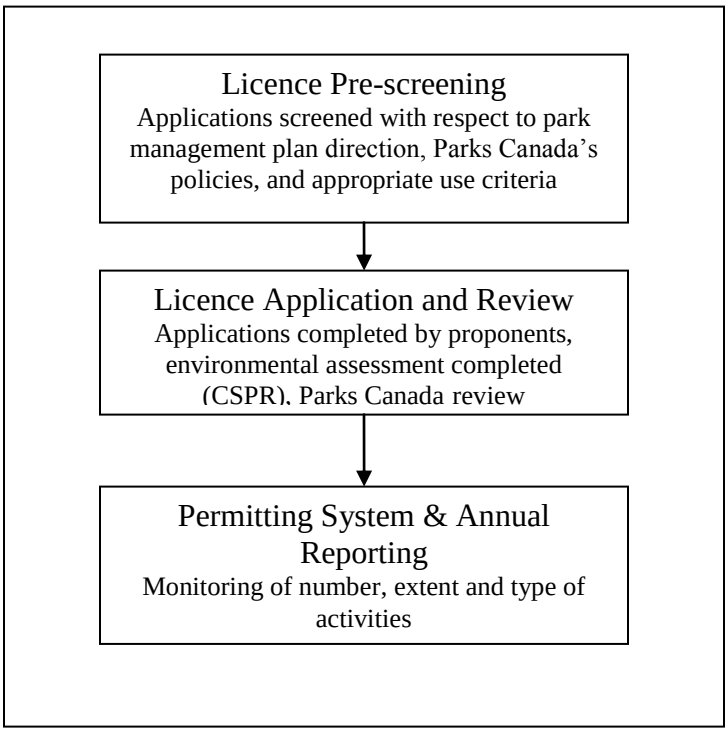

Figure 1: Business licence process overview

1.5.3. Class Screening Project Report

The Class Screening Project Report (CSPR) functions as the environmental assessment documentation for business licence applications that are assessed using the class screening process. Sections of the CSPR that document the proposed business activities are completed by the applicant. Sections of the CSPR that evaluate the environmental impacts of the proposed business activities are completed by Parks Canada. The CSPR for Guided Activities may be found in Appendix A.

The class screening project report is divided into eight sections:

- Section 1 provides proponent identification and references the business licence application number.
- Section 2 provides information to ensure the class screening applies to the proposed

activity.

- Section 3 describes the activities being proposed and identifies the standard mitigation requirements for activity-specific and site-specific environmental impacts.
- Section 4 identifies any additional environmental effects and mitigation required with respect to the proposed activity.
- Section 5 identifies potential cumulative effects associated with the proposed project and specifies cumulative effects mitigation as required.
- Section 6 identifies the potential for effects to species at risk.
- Section 7 describes any monitoring or follow-up that is required.
- Section 8 records the decision statement and signature of the Responsible Authority.

1.5.4. Roles and responsibilities

Parks Canada is the sole responsible authority under the Act as well as the sole business licensing authority in national parks. Parks Canada will be responsible for reviewing completed CSPRs submitted as part of a business licence application, for making a determination of significance of environmental effects, and for incorporating the appropriate mitigation measures as outlined in the MCSR as conditions of a business licence approval.

Business licence applicants will be responsible for submitting appropriately completed CSPRs along with their business licence application. Licence holders will be responsible for notifying Parks Canada in the event that their business operations are expanded beyond the scope of activities approved in the business licence and assessed under the class screening process. Licence holders who wish to expand their operations may be required to reapply for a new licence and complete a new CSPR at the discretion of Parks Canada.

It should be noted that since the RA is Parks Canada, the MCSR can be applied, where appropriate, by Parks Canada until such time as the Agency declares the MCSR not to be a class screening report or the declaration period expires.

It will be the responsibility of Parks Canada to:

- ensure that projects are properly identified as class-applicable;
- ensure that applicable mitigation is implemented;
- place a regular statement on the Registry Internet site describing the extent to which the MCSR has been used, as identified in section 4.6;
- maintain the Registry project file, ensure convenient public access to it, and respond to information requests in a timely manner; and
- indicate, in each CSPR, information on the cumulative effects assessment for the project to which that CSPR applies and notify the Agency if a follow-up program is required.

1.5.5. Other environmental assessment regimes

As the result of a land claim agreement, an additional environmental assessment regime applies in the two parks included in this RCSR. Tuktut Nogait and Aulavik are within the Inuvialuit Settlement Region. Therefore the "The Western Arctic Claim: The Inuvialuit Final Agreement" (IFA) (Indian and Northern Affairs Canada 1984) applies, which requires an environmental assessment for "every proposed development or consequence to the Inuvialuit Settlement Region that is likely to cause a negative environmental impact" section 13(7). Business licences covered by this RCSR are required to undergo an environmental assessment through the IFA process as well.

1.6. Projects subject to the model class screening

1.6.1. Projects subject to the *Canadian Environmental Assessment Act*

All commercial guiding operations in national parks (other than in the town of Banff) require a business licence in accordance with direction provided by section 3 of the *National Parks of Canada Businesses Regulations* 1998. Section 13.1 of the *Inclusion List Regulations* under the *Act* defines recreational activities that take place outdoors in a national park, outside of a town or visitor centre, as projects under the Act. Because a permit is required pursuant to section 4.1 of the *National Parks Businesses Regulations* 1998 (included in section 24.1 (Schedule I, Part II) of the *Law List Regulations* under the *Act*), the issuance of this authorization triggers the *Act* and an environmental assessment is required. Subsection 5(1) of the *National Parks Businesses Regulations 1998* requires that a superintendent consider the effects of a business on:

- the natural and cultural resources of the park;
- the safety, health and enjoyment of persons visiting or residing in the park;
- the safety and health of persons availing themselves of the goods or services offered by the business; and
- the preservation, control and management of the park.

1.6.2. Projects excluded from the *Canadian Environmental Assessment Act*

The *Exclusion List Regulations* under the *Act* make no provision for excluding any type of commercial guiding activity from assessment. Proposed commercial guiding activities that have been previously assessed either under the *Act* or under the Federal Environmental Assessment and Review Process Guidelines Order may be exempted from further environmental assessment in accordance with provisions in section 13.1 of the *Inclusion List Regulations*.

1.6.3. Projects subject to the MCSR

Commercial guiding activities included within the scope of the model class screening report include all guided activities in the following subclasses in areas of Aulavik and Tuktut Nogait (Figure 2). Specific activity subclasses include:

- hiking (informal trails, routes, large tour groups and smaller backcountry groups)

- cross-country skiing
- overnight use (camping, bivouacs, food handling, waste disposal)
- non-motorized boating (rafting, canoeing, kayaking)
- dog-sledding
- recreational fishing
- over snow vehicles

These subclasses are not meant to be mutually exclusive. Rather, activities were separated to make it easier to analyze the activities for environmental effects and identify mitigations. The list of specific activities covers most commercial guiding services known to be currently operating in the two northern parks or could in the future. The list does not include all recreational activities that may occur in national parks, only those that are the focus of current guiding services and which compose the class of projects for this MCSR.

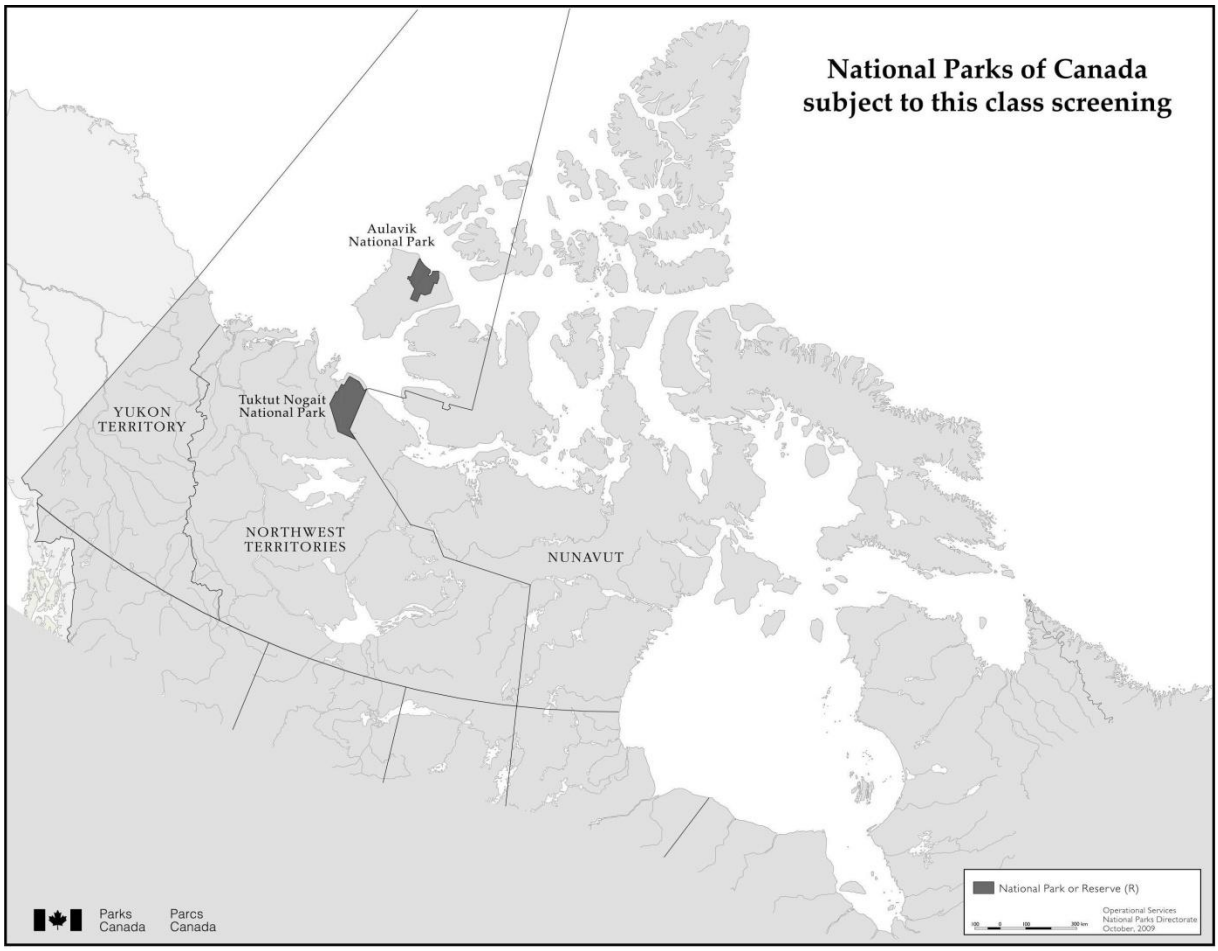

Figure 2: Location map

1.6.4. Projects not suited to the MCSR

Limitations to the scope of the project were identified to address pragmatic environmental assessment purposes. Some commercial guiding activities conducted in the parks do not meet the requirements of being routine, repetitive activities with known, environmental effects that can be easily mitigated. Activities that fall outside these categories are not included within the scope of the MCSR. Specific projects that are not included within the scope of the MCSR include:

- Activities that require a lease or licence of occupation;
- One-time, occasional or annual special events such as military exercises, sporting events, or festivals;
- Activities that require permanent or semi-permanent backcountry camp for the season; and
- Cruise ships and other large scale operations.

In addition to the above list, new types of guided activities, and those not listed in Section 1.6.3, are not included within the scope of the MCSR and must undergo an individual environmental assessment.

If infringement upon Aboriginal rights is suspected or brought to Parks Canada's attention at a later time, the project under consideration would not apply to the MCSR and/or and all matters related to the undertaking will cease and the environment remediated.

1.7. Scope of the environmental assessment

The scope of the environmental assessment for commercial guiding activities must remain consistent with management directions already initiated with respect to ecological and commemorative integrity and the quality of visitor experience as outlined and assessed in individual park management plans. Existing management direction is used to focus the environmental assessment on the most relevant management issues. The mitigation identified within the MCSR and CSPRs will be consistent with the management plans, human use strategies and any other appropriate guiding documents.

1.7.1. Scope of factors to be considered

The environmental assessment of commercial guiding activities is based on factors as outlined in section 16(1) of the Act. Management plan direction is used to focus the environmental assessment on the most relevant management issues through identification of valued ecosystem components. Section 1.7.2 describes the valued ecosystem components that will be the focus of the MCSR.

The park management planning process includes public input and review, strategic environmental assessment and Ministerial approval prior to being tabled in parliament. As a result of the intensive management planning and review process, issues related to the cumulative impacts of overall management of human use are addressed more appropriately within the scope of the management planning process including:

- Appropriate use of park lands and facilities (e.g. Winter use of specific areas)
- Management and maintenance of park facilities
- Management of overall visitor use levels
- Commercial business licence allocations or restrictions
- Area closures, visitor use restrictions or zoning.

1.7.2. Valued ecosystem components

Valued ecosystem components (VECs) were selected based on issues of concern and ecological integrity indicators identified in the park management plans. The VECs selected represent ecosystem components that are particularly vulnerable to disturbance and/or are likely to be impacted by the activities covered by this MCSR. The selected VECs serve as the focus of the environmental effects analysis. Concerns with respect to air quality that are considered to be primarily aesthetic are addressed under the visitor experience VEC.

1.7.2.1. Vegetation and soils

Native vegetation species, community and genetic diversity could be affected by these activities. Guides and clients could contribute to the introduction and spread of non-native plant species that may in turn affect the functioning of natural ecosystems and integrity of native plant communities. Soil structure could be impacted through compaction or erosion. There are no vegetation species at risk in the areas affected by this class screening.

1.7.2.2. Wildlife

Impacts (disturbance, displacement, and habituation) to all wildlife species will be considered, although special consideration will be given to species highlighted in management plans and species at risk.

1.7.2.3. Aquatic resources

Water quality could be impacted by pollution, human waste or erosion. Impacts to water quality may result in subsequent impacts to aquatic wildlife and vegetation species. Native fish species could be negatively affected by fishing. Guides and clients could contribute to the introduction and spread of exotic aquatic plant and animal species that may in turn affect the functioning of natural ecosystems and integrity of native plant communities. The spread of fish diseases is also a concern. Impacts to species at risk and other aquatic species must also be considered.

1.7.2.4. Cultural resources

Parks Canada policy states that "Parks Canada will assess effects on cultural resources whether or not they flow from bio-physical effects" (Parks Canada 1998). To address the requirements of the Act and Parks Canada policies, direct impacts to cultural resources will be assessed in addition to indirect impacts caused as a result of changes in the environment.

1.7.2.5. Aboriginal land use

Traditional activities are protected by land claims and valued as part of ecological integrity of these national parks. As a result, direct and indirect effects of activities on Aboriginal land use will be considered. Visitors could interfere with the direct use of resources or indirectly affect Aboriginal use by, for example, negatively affecting wildlife populations, thereby decreasing hunting opportunities.

1.7.2.6. Visitor experience

As described in Section 1.1.3, Parks Canada also has a mandate to facilitate the education and enjoyment of the parks by the public. To address this mandate, direct impacts to visitor experience will be assessed in addition to indirect impacts caused as a result of changes in the environment.

1.7.3. Identification of potential environmental effects and standard mitigation practices

The environmental impact analysis of commercial guiding activities is based upon a three-tiered assessment approach organized into activity-specific, site-specific and cumulative effects analysis (Figure 3). The three-tiered environmental assessment approach is designed to address the requirements of the *Canadian Environmental Assessment Act,* and to be consistent with guidance provided by the *Canada National Parks Act, Parks Canada: Guiding Principles and Operational Policies* (Canadian Heritage Parks Canada 1994) and northern park management plans.

First, the ***activity-specific*** environmental assessment describes the project activities and evaluates the environmental impacts associated with each specific category of commercial guiding activity covered under the scope of the model class screening: hiking, winter use, overnight use, non-motorized boating, dog-sledding, fishing and over-snow vehicles. Mitigation measures associated with each activity were researched, reviewed and selected for their application to a northern park setting. The inclusion of mitigation as a condition of a business licence is intended to ensure that operators in the field implement appropriate environmental practices in a consistent fashion. The activity-specific environmental assessment and mitigation is completed within the scope of the MCSR.

Second, the ***site-specific*** environmental assessment identifies and evaluates environmental or culturally significant sites with unique characteristics that may be considered vulnerable to the impacts of commercial guiding activities. Special preservation zones and environmentally sensitive sites as identified through park management plans, culturally sensitive sites, and other sites identified by Parks Canada are evaluated for environmental sensitivities and potential impacts that may not be effectively mitigated through the application of the standard mitigation. Low visitation rates at the parks means few areas have become sensitive due to overuse and/or the sensitivity has not become evident. Site-specific mitigation for commercial operators

using these areas is identified as appropriate. The site-specific environmental assessment and mitigation is completed within the scope of the MCSR.

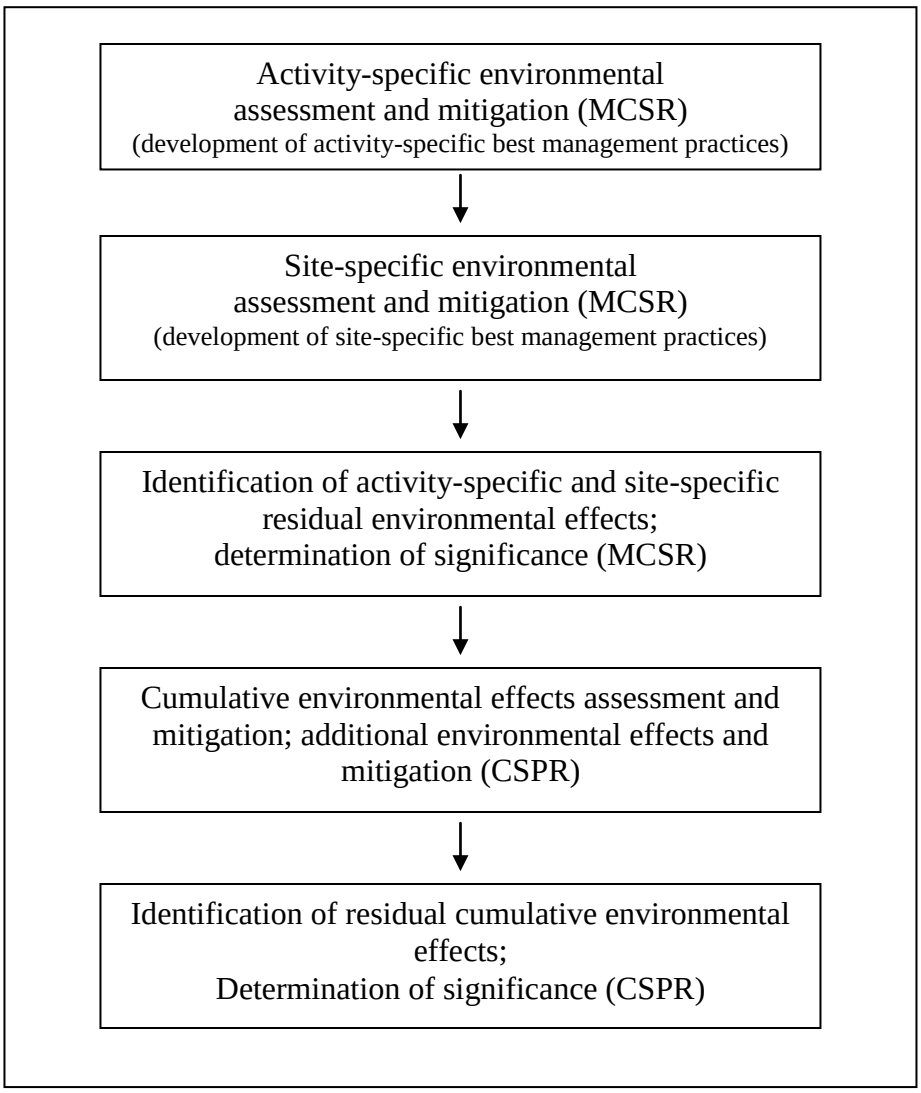

Figure 3: Environmental assessment process

Third, the ***cumulative effects*** assessment (CEA) describes and evaluates the impacts of commercial guiding activities in combination with other past, present and future human use impacts. The approach to the CEA of commercial guiding activities has been aligned with the approaches and direction taken to human use management in the various park management plans. The CSPR provides the opportunity to identify any additional activity-specific or site-specific environmental effects that may not have been addressed within the scope of the MCSR.

1.7.4. Definition and evaluation of significant environmental effects

Responsible Authorities are required to make a decision on the significance of adverse environmental effects of a proposed project pursuant to section 20 of the Act. A determination of the significance of effects is required for all VECs identified in Section 1.7.2.

Significant adverse environmental impacts to ecological integrity are considered to be those likely to threaten the continued existence of native species or biological communities. Adverse impacts to cultural resources are evaluated in terms of risk to the integrity and context of the site in consultation with Parks Canada cultural resources experts. Potential impacts to the use of cultural resources or impacts to related functions of other governments, communities or Aboriginal peoples will also be considered. (National Historic Sites Directorate et al. 1993). Adverse impacts to Aboriginal land use will be evaluated in terms of potential effects to harvest success rates and traditional use experience. Adverse impacts to visitor experience are evaluated in terms of potential effects to visitor satisfaction.

The criteria of magnitude, geographic extent, duration, frequency, and reversibility will be used to evaluate the significance of environmental impacts. Significance is determined at the activity-specific and site-specific scale in the MCSR and again, with respect to additional and cumulative environmental effects, through the CSPR process.

Table 1: Criteria for determining significance

	Level of Effect		
Criterion	**Negligible**	**Minor**	**Considerable**
Magnitude	Effect results in disturbance	Effect results in damage	Effect results in destruction
Geographic Extent	Effect is limited to the activity footprint and adjacent areas	Effect is likely to have impacts at an ecosystem scale	Effect is likely to have impacts at a regional scale
Duration of Activity	Minutes to hours	Days to weeks	Months or longer
Frequency	Effects occur on a monthly basis or less	Effects occur on a weekly basis	Effects occur on a daily basis or more often
Reversibility	Effects are reversible over a short period of time without active management	Effects are reversible with active management over a short period of time or if active management is not possible, effects are reversible over a season	Effects are reversible with active management over an extended period of time or if active management is not possible, effects are permanent

2. Environmental Setting

Section 2 describes the environmental setting within Aulavik and Tuktut Nogait that commercial guiding activities take place in. The section is broken down into two main subsections: a discussion of land use and management within the national parks (2.1) and; a description of the natural and cultural resources of the national parks broken down by VEC and by park (2.2).

To obtain information on species at risk, beyond what is outlined below, please consult the following:

- Parks Canada Species at Risk site: http://www.pc.gc.ca/nature/eep-sar/index.aspx
- NatureServe Canada: http://www.natureserve-canada.ca/en/index.html
- COSEWIC: www.cosewic.gc.ca
- SARA Registry: www.sararegistry.gc.ca

2.1. Land use and management in national parks

An understanding of the land use and management system in the national parks is fundamental to the analysis and evaluation of environmental impacts. The discussion on land use and management in the northern national parks is divided into discussions on Aboriginal land use, the national park zoning system (2.2.1), and visitor use of the parks.

2.1.1. Aboriginal land use

Under the land claim agreements with authority in these parks, Aboriginal people are given access to the parks for traditional activities (see individual agreements for details). Traditional activities can include travel, camping, gathering, hunting and trapping. In some cases these activities take place near areas used by visitors. Informal communication between Aboriginal groups and park staff is used to try to minimize the number of conflicts between visitors and traditional users. References to "visitors" within this environmental assessment do not refer to Aboriginal people.

2.1.2. National park zoning system

The national parks zoning system is an integrated approach to the classification of land and water areas in the national parks. Areas are classified according to the need to protect the ecosystem and the parks' cultural resources. The capability and suitability of areas in terms of providing visitor-use opportunities is also a consideration in making decisions about zoning.

The zoning system generally addresses the appropriate types and intensity of visitor use in a given area and should be considered in the assessment and management of aircraft landing activities. In addition to five zoning categories, Parks Canada policy provides for the designation of Culturally and Environmentally Sensitive Areas (Canadian Heritage Parks Canada 1994).

Zone I – Special Preservation
Zone I lands deserve special preservation because they contain unique, threatened, or endangered natural or cultural features and are excellent examples of representative natural regions. Aircraft access is not permitted in these small areas.

Zone II – Wilderness
Zone II contains extensive areas that are good representations of a natural region and are conserved in a wilderness state. The perpetuation of ecosystems with minimal human interference is the key consideration. Motorized access is not permitted, although strictly controlled air access to remote areas may be permitted.

Zone III – Natural Environment
In Zone III areas, visitors experience the park's natural and cultural heritage through outdoor recreational activities that require minimal services and facilities of a rustic nature.

Zone IV – Outdoor Recreation
Zone IV accommodates a broad range of opportunities for understanding, appreciation and enjoyment of the park's heritage. Direct access by motorized vehicles is permitted. Zone IV generally includes front country facilities and the rights-of-way along park roads. Zone IV nodes also exist at various locations with intensive tourism and recreation facility development such as campgrounds, visitor centers and day use areas.

Zone V – Park Services
Zone V is for park communities such as Banff and Jasper and major service or park administrative centres.

Culturally and Environmentally Sensitive Areas
The Culturally Sensitive Areas (CSA) or Environmentally Sensitive Areas (ESA) designation applies to areas with significant and sensitive features that require special protection. Sensitive Area designation is useful for focusing and communicating objectives for research, protection and visitor experience for particular areas.

Land within Tuktut Nogait has not yet been zoned. In Aulavik, all land is currently Zone II – Wilderness, and includes three Culturally Sensitive Areas. All designated landing areas in Aulavik are well away from the Culturally Sensitive Areas.

2.1.3. Visitor use

Canoeing, kayaking, and hiking are the primary visitor activities in both Aulavik and Tuktut Nogait. Visitors paddle the Thomson River in Aulavik and the Hornaday River in Tuktut Nogait. There are no established trails for hiking but the terrain is such that hiking can occur almost anywhere. Other potential opportunities include skiing, dogsledding, and in Aulavik, guided snowmobile trips. Fishing may occur during any trip into the park.

Table 2: Total number of visitors to parks from 2004-2009

Year	Aulavik	Tuktut Nogait
2004-2005	36	11
2005-2006	80	57
2006-2007	25	23
2007-2008	5	12
2008-2009	39	13

Commercial guided activities only represent a portion of the visitors to the parks (Table 2). Table 3 shows that from 2004-2009, 49% of visitors to Aulavik were guided. Tuktut Nogait did not have any guided visitors over this time. Commercially guided groups can be larger in size and account for a higher proportion of people being taken into the backcountry. The remote locations of the parks lead many groups to use commercial operators.

Table 3: Percentage of groups[a] and visitors that were commercially guided[b] from 2004-2009

Park	Activities	Commercially guided groups	Commercially guided visitors
Aulavik	canoeing	39%	49%
Tuktut Nogait	hiking	0	0

[a] Groups of visitors who travel and participate in the activity together, usually as a result of prior arrangements.

[b] Percentages of visitors is higher because commercially guided groups have larger group sizes.

2.2. Description of natural and cultural resources

2.2.1. Vegetation and soil

Aulavik and Tuktut Nogait include land from within the Southern Arctic and Northern Arctic ecoregions. The parks will be described individually based on the description of the ecoregion they fall within. The descriptions of ecoregions are taken from *A National Ecological Framework for Canada* (Ecological Stratification Working Group 1996). No vegetation species at risk have been identified in these parks; however no comprehensive field studies have been conducted.

2.2.1.1. Aulavik

Aulavik is found in the Banks Island Lowland Ecoregion. Moss with low growing herbs and shrubs such as purple saxifrage, *Dryas spp.*, arctic willow, kobresia, sedge and arctic poppy is the main vegetation cover. Turbic Cryosols soils cover hills of glacial deposits.

The permafrost is deep and continuous with high ice content. Wetlands include fens, elevated peat mound bogs and marshes along the coast.

2.2.1.2. Tuktut Nogait

Tuktut Nogait is found in the Coronation Hills and Bluenose Lake Plain ecoregions. Dwarf birch, willow, northern Labrador tea, *Dryas spp*., and *Vaccinium spp.* form an almost continuous vegetation cover. Warmer sites can have tall dwarf birch, willow and alder and wetter sites have willow and sedges. Continuous permafrost with medium ice content underlies the area. Organic Cryosols and Turbic Cryosols cover undulating glacial tills, fluvioglacial and marine deposits.

2.2.2. Wildlife

Wildlife in Aulavik and Tuktut Nogait can be harvested by Aboriginal people for subsistence use. The regulation of this activity and the management of wildlife populations is the responsibility of cooperative management boards established under land claim agreements. In the Western Arctic, the Wildlife Management Advisory Council and Fisheries Joint Management Committee have these responsibilities for Aulavik and Tuktut Nogait. In all cases the boards work cooperatively with hunters and trappers committees/associations, the territorial government, other federal departments and Parks Canada.

The birds and mammals will be described for each park. Marine mammals will be described in Section 2.2.3.1.

2.2.2.1. Aulavik

Aulavik is home to a large population of muskox that has grown exponentially in the latter part of the 20th century. A 2005 survey put the muskox population at 47, 209. Peary caribou during this same period have shown a sharp decline in population to about 929 individuals in 2005. The Banks Island population of Peary caribou has been listed as endangered on Schedule 2 of *SARA*. Visitors to the Thomsen River corridor commonly see arctic wolves. Other common mammal species include lemmings, arctic fox, and arctic hares. The only mammal species of special concern in Aulavik is the polar bear on Schedule 3 of *SARA*.

As with mammals, bird species in Aulavik may be limited in diversity but high in density. There are a total of 43 known species recorded for Aulavik of which only the raven and the ptarmigan are year-round residents. The most significant bird population is lesser snow geese. The largest concentration of lesser snow geese in the Western Arctic breeds and moults in the area. The Thomsen River and Castel Bay area was created as a bird sanctuary for protection in 1961 (Grayhound Information Services 1997). Other common species include: loons, gulls, Brant geese, sandhill cranes, ptarmigan, and Lapland longspur. The only bird species of special concern in Aulavik is the peregrine falcon (*Falco peregrinus tundrius*), Schedule 3 of *SARA*.

2.2.2.2. Tuktut Nogait

Tuktut Nogait was created to protect the calving grounds of the Bluenose-West herd of barren ground caribou. A 2009 population estimate of the herd is 17,200 animals. This represents a significant decline over the last decade as the herd was estimated at over 70,000 individuals in 2000. The Bluenose-East caribou herd is also thought to use habitats in the southern area of the park and areas immediately east of the park. This herd has also declined in recent years, and was estimated at 66,750 animals in 2009, down from close to 120,000 in 2000. Wolverine, grizzly bear, fox, lemming, and voles are also common to the park.

There are 74 known bird species for Tuktut Nogait with a wide variety of waterfowl, shorebirds, raptors, and songbirds. The Park is known for concentrations of raptor nesting habitat along the canyon and cliff walls. Species of special concern on Schedule 3 of *SARA* in Tuktut Nogait include the grizzly bear, wolverine, short-eared owl and peregrine falcon (*Falco peregrinus tundrius*).

2.2.3. Aquatic resources

2.2.3.1. Marine

The boundaries of Aulavik contain salt-water bays and other marine components. Marine mammals, anadromous fish and marine fish live in these waters. Several species of seals are found in Aulavik.

2.2.3.2. Fresh

Fresh water resources are limited in many of the parks due to low precipitation and permafrost that prevent groundwater storage. Ponding and imperfect drainage are common in areas such as the Arctic Coastal Plain of Aulavik and Tuktut Nogait. Rivers and streams are often fed by glacier melt or snowmelt and therefore have the largest volume in the spring and can vary dramatically in volume. Growth rates and sexual maturity of northern fish populations are often retarded due to short growing season and low nutrient levels. However, seasonal abundance of insects and low metabolic requirements can create an older population of large fish. There is limited diversity of species although there can be large concentrations of resources in specific habitats. Important habitat types include estuaries, aufeis areas, fish holes, and deep lakes. Areas of fish congregation are often also areas of local concern for traditional use and continued success of migratory populations. The fourhorn sculpin found in Aulavik are considered a species of special concern on Schedule 3 of SARA. . The following description focuses on the aquatic resources used or mostly likely to be used for recreation.

Aulavik

Thomsen River and Muskox River

The Thomsen River is the northernmost navigable river in Canada. Entering the park near its headwaters at the south end of the park, it flows through the centre of the park and empties into Castel Bay on the Arctic Ocean. Muskox River is the major tributary, draining a wetland area. The watershed provides habitat for at least six species of fish, possibly the most northern example of multi-species freshwater fish ecosystem (Parks

Canada 2002a). All species, except lake trout, are anadromous. The freshwater form of the fourhorn sculpin is sensitive to human disturbance (Grayhound Information Services 1997). The valley around the Thomsen River is broad, gently undulating and relatively lush (Parks Canada 2002a). The Thomsen River area is identified in the Sachs Harbour Community Conservation Plan under site numbers: 602D (Thomsen River Area), 601C (Offshore and Onshore Banks Island, 612C (Banks Island Migratory Bird Sanctuary No. 2), 613E Aulavik National Park, and 614D (Banks Island Rivers). Community concerns related to this assessment include protection of cultural artefacts and sites, protection of char, trout and cisco, protection of wetlands and goose moulting areas.

Tuktut Nogait

Hornaday River

The Hornaday River is the largest river in Tuktut Nogait with a drainage basin of approximately 14 900 km^2 and the river is 325 km long. Eleven species of fish have been found in the Hornaday. There is ongoing research into the anadromous Arctic char resources of the river (Downie 1995), the population of which sustains an important local fishery for the community of Paulatuk.

2.3. Cultural resources

The cultural resource sites described below were selected because of their sensitivity and vulnerability. Numerous other sites could be disturbed, but there are too many to list and the generic mitigations described will adequately protect them. The following cultural resource information was taken from Parks Canada archaeological databases in Winnipeg.

2.3.1. Aulavik

Head Hill Site 130X88

Head Hill is a muskox kill site with dwelling remains and caches on the crest of a hill on the north side of the Muskox River, west of its confluence with the Thomsen River. The remains of an estimated 800-1000 muskoxen, including 580 skulls are at the site, which stretches nearly 400 m on a north-east/ south-west axis along the hillcrest. The site may have been occupied from as early as A.D. 1600-1771, during a transitional period between Thule and Copper Inuit, and was certainly occupied by the Copper Inuit from A.D. 1851 to 1890.

Nasogaluak Site 130X4

The site is located on a high terrace or bluff overlooking the Thomsen River and valley from the east. The site features are primarily large and well-built caches (up to 40) but also tent rings and artefact surface scatters that are discontinuously spread over an area measuring 20 000 sq. m. Copper Inuit were the likely inhabitants of the site between A.D. 1851-1890 but — like Head Hill— the site may have also been occupied during the earlier 'Intermediate Interval' transition from Thule to Copper Inuit culture.

HMS Investigator Depot Site (M'Clure's Cache Site) 130X107

The site is located about 1.2 km south of Providence Point, about mid-way along the west

shore of Mercy Bay. The site consists of a coal pile and four clusters of barrel staves, boat parts and other artefacts that once formed an emergency depot left by Captain Robert McClure and the crew of HMS Investigator, a vessel sent in search of the lost Franklin expedition between 1851 and 1853. After McClure and his men were rescued, the depot became an important site for the Copper Inuit, who may have made annual visits to the site until the late 19th Century.

Burials and Possible Burial Sites

Isachsen Sands 130X59 (Possible Burials)

This Isachsen Sands Site is about 20 km south of the Head Hill Site, on the east bank of the Thomsen River. The three tool caches found here may be grave goods and are located away from the tent rings and meat caches at the site's main habitation area of the site.

130X14 (Possible Burial)

The site is located on the west side of the Thomsen River on a stony, well-drained terrace about 4 m above the river and 10 m west of the water's edge. A boat-shaped arrangement of stones is considered to be a possible grave.

130X34 (Possible Burial)

The site is on the west side of the Thomsen River on a low ridge in an area dominated by large, thin stone slabs. This extensive site consists of about 80 slab caches, a few dismantled tent rings and a possible grave formed of slabs.

130X38 (Probable Burial)

The site is spread along the east edge of a gravely terrace about 20 m above and 25 m south of a seasonal creek that flows north to the Thomsen River. Two probable graves were recorded consisting of small and large cobbles in approximately parallel lines.

130X111 (Possible Burial)

The site is on the crest of a low hill paralleling a small seasonal stream to the north, draining into a creek on the west side of the site. A possible grave measures 1.5 m by 2.5 m, is roughly oval in shape and consists of small cobbles. No artefacts or bones are associated with the feature.

130X126 (Possible Burial)

A possible grave 3.2 m by 1.2 m in size, covered by heavy vegetation is recorded 750 m west of the Thomsen River. No associated artefacts or bones are present.

130X153 (Possible Burial)

A tent ring, cache and possible grave are located approximately 350 m west of the Thomsen River. The grave is rectangular, measures 2.8 m by 1.3 m and is covered by considerable vegetation.

130X171 (Probable Burial)

The site is located on the east side of the Thomsen River on a terrace/spur 30 m above the

river, offering a commanding view of the river valley. The feature is ovoid in shape measuring 3.0 m by 2.3 m with numerous small, flat stones covering a 1.6 m by 1.0 m area composing the probable grave. Approximately 18 possible human bones and several artefacts are associated with the feature.

130X209 (Possible Burial)
The site is located on the west side of the Thomsen River, north of an unnamed stream and about 7.2 km northwest of Dissection Creek. The possible grave consists of 17 small rocks and measures 1.8 m by 1.1 m and appears to be untouched. No associated artefacts or bone was observed.

130X213 (Possible Burial)
The site is located about 400 m west of the Thomsen River, near site 130X29. The possible grave is rectangular shaped, its long axis oriented north-south. It is noted as being an appropriate size and shape for a grave.

130X218 (Possible Burial)
The site is on the west side of the Thomsen River, on the edge of a grassy hill near the head of the outside bend of a large meander in the river, across the river from "Trout Beach". The possible grave, measuring 2.7 m x 2.3 m, is made of large and small boulders. Three caches are also present at the site, but no artefacts or faunal material is associated with the features.

130X229 (Possible Burial)
A possible grave is situated on a small knoll on the north bank of the Muskox River, a short distance from the Thomsen River and about 20 km north of Isachsen Sands. The feature is formed of flat rocks and cobbles covering a 1.0 m by 2.5 m area. A number of artefacts and bone are associated.

2.3.2. Tuktut Nogait

300X189 (Burials)
The site lies on the west side of the Hornaday River, atop the highest bluff in the area, just east of a small lake, and south of a creek. The creek runs eastward down the bluff and into the Hornaday River. A long lake, generally oriented north-south, lies about 1.6 km to the west-southwest, and a very large, unnamed lake lies about 3.7 km to the south-southwest. The site consists of two graves, covered by slabs and boulders, with chambers about 1m square. Pieces of wood are scattered around the perimeter of each grave, which are 10 m apart, centre-to-centre. The graves could relate to either Copper Inuit or Mackenzie Inuit, dating as far back as A.D. 1725.

300X246 (Possible Burial)
This site is on the west bank of the Hornaday River, on east-sloping land about 0.5 km south of La Ronciere Falls. A bare knoll is located about 150 m north of the site. It is speculated to be a grave, based on the similarity of features (made of wood) in Ivvavik (Adams 1999).

300X284 (Burial)
The site is high atop the edge of a rocky outcrop, above the western bank of the Hornaday River. It is just east of a small tundra lake and about 100 m north of a creek, and lies between the large site 300X183 and the graves at 300X189.

300X321 (Possible Burial)
The site is located on a high point of land on the west side of the Hornaday River 1.5 km away, and backing on a small low spot containing a lake and three small ponds feeding the Hornaday River by a stream. The presence of possible grave goods and bone, and the unusual form of the feature suggest it is a possible grave. It rests about 6 m from the northwest corner of the landform in a rock strewn gravel-topped ridge with boulders and some exposed bedrock and light vegetation cover.

3. Analysis of environmental effects

3.1. Description of activities

3.1.1. Non-motorized boating

Guided kayaking/canoeing trips are the most common type of guided trip offered in parks covered by the MCSR. The trips are on river water of varying levels of difficulty and require varying levels of involvement from participants. Trips are multi-day and involve camping overnight. Trips typically take place from June to August. Accessory activities include hiking away from the river.

3.1.2. Hiking

Primary activities include day hiking and interpretive hiking on informal trails and routes.

No established trails exist and hikers follow routes where there is no formal path and Parks Canada does not maintain the route. Hiking is usually overnight. Most hiking occurs in June, July and August.

Hiking groups do more than simply travel from point to point along a trail system. In addition to physical activity, many hikers hope to experience and view wildlife, engage in photography, take food and rest stops, and enjoy scenery. Aesthetics and a sense of solitude are important to many hikers including those in guided groups. Some guided excursions have an educational theme focusing on outdoor skills development and natural or cultural history interpretation. To engage in many of these activities, guided groups or individuals may expand the spatial extent of their activities to areas that are sometimes well beyond that of the informal trails.

3.1.3. Overnight

Overnight use only occurs in association with the other sub-classes (for example groups canoe, hike, ski or raft to the camping location) and the size of groups will depend on which activity occurs around overnight camping. Primary activities associated with

overnight backcountry use include camping at both established and random sites, bivouacs, campfires, food handling, and waste disposal. Users may access an overnight site, whether established or random, through participation in any of the other guided activities.

Overnight users establish camps or bivouacs by setting up tents and tarps and establishing cooking areas. Food is often prepared on-site using camp stoves or campfires in designated areas. Food, food wastes and equipment must be stored at the site. While at camp, individuals and groups often congregate, under tarps, and around the cooking area. Groups may explore the surrounding area, often by using informal trails, or by travelling off-trail.

Cruise ships are not included in this class screening.

3.1.4. Dog-sledding

Dog-sledding provides a unique opportunity to experience the parks and their landscapes at a time of year when few others do. Such trips could be overnight trips, and are most likely to occur in April and May. The number of dogs and sleds depend on the number of people and purpose of the trip.

3.1.5. Cross-country skiing

Cross-country skiing provides a unique opportunity to experience the parks and their landscapes at a time of year when few others do. Such trips could be overnight trips, and are most likely to occur in April and May. Skiing may be a stand-alone activity or be part of a tour that includes other winter activities.

3.1.6. Fishing

Fishing includes both fly-fishing and spin-fishing on lakes, rivers and streams. Fishing occurs on guided trips in that the visitors have Parks Canada sport angling licences, but they are not guided fishing trips. Fly-fishing can take place from the shore and from standing in the water in streams and rivers. Fishing is required, by park regulations, to take place between sunrise and sunset. Fishing occurs on a seasonal basis when the ice is off lakes and rivers.

Accessory activities include:

- obtaining access to fishing locations by using existing camping areas and by going off-trail.

3.1.7. Over-snow vehicles

An over-snow vehicle according to the *National Parks Highway Traffic Regulations* is defined as a vehicle that is designed to:
a) be driven by any means other than muscular power;
b) runs on tracks or skis or both; and
c) operate on snow, ice.
The only over-snow vehicle that can potentially be used for guided trips in Aulavik and

Tuktut Nogait is the snowmobile. Snowmobiles can be used to take visitors into parks to visit points of interest. Snowmobiles can also be used to take visitors from communities near the park into the park so they can hike or ski (over-snow vehicle use is for the day, but trips usually are multi-day). Over-snow vehicle trips may be multi-day.

3.2. Unique characteristics

Several characteristics may make some commercial guiding activities unique when compared to similar activities undertaken by independent park users. This section discusses typical differences between guided activities and the activities of other visitors.

The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably visit and appreciate more remote areas of the parks. Many people would not take part in certain activities in the park without the availability of a guide. As a result, commercial guided activities may, in some cases, have the effect of increasing overall visitor use in areas that would otherwise see lower levels of use. The presence of a guided group may also, in some cases, attract other visitors to sites or locations that would not have otherwise been visited.

One of the primary unique characteristics of commercial activities is the presence and influence of trained professional guides. Guides often take the opportunity to inform clients about the region's physical and cultural characteristics, as well as educate them on issues related to ecological integrity and park management. Many guiding operations have a strong focus on outdoor skill development and safety, leading to an increase in the number of experienced and skilled backcountry users. The presence of skilled, professional guides provides an additional measure of safety for all backcountry visitors including independent users.

Some guided activities typically support larger group sizes than those of independent park users. Commercial groups tend to be between eight to twelve people. Large groups have the potential to result in increased disturbance to wildlife and vegetation and may detract from visitor experience (Monz et al. 2000). It should be noted however, that the potential impacts of large group sizes are countered by a theoretical decrease in the number of actual disturbance events. Larger groups are also less likely to have negative grizzly bear encounters. Commercial groups may also provide different overnight accommodation with more tents (for example common areas/eating) and/or base camps. Yet if commercial guided groups implement mitigations to protect the environment, many of the negative impacts associated with camping in a large group can be avoided (Monz et al. 2000).

3.3. Analysis of environmental effects and mitigation

The activity specific analysis focuses on environmental effects that most commonly occur as a result of commercial guiding activities. A review of literature was used to identify the most common effects of each type of activity on the VECs identified in Section 1.7.2 (see Table 4). Based on literature and existing practices, mitigation

measures were identified to mitigate for environmental effects described. In addition to sources specifically referenced, mitigation was developed and cross-checked against best management practices based on the work of Harmon (Harmon 1994), Klassen (Klassen et al. 1999) and NOLS (NOLS 2002). For each VEC, general environmental effects and mitigation are identified that applies to all activities. If an activity has additional environmental effects requiring mitigation, they are described in separate sections.

In Appendix B full mitigation measures are described to be used by guides when conducting guiding operations. The following represents a summary of those mitigations, referring to them or repeating them where appropriate. The mitigation measures in the following sections apply to all guiding operations included in the scope of the model class screening. The terms "operator" and "operation" refer to the company offering a guiding service. The term "guide" refers to the individuals actually in the park leading visitors on a commercial outing.

In addition to the measures outlined below, business operators and guides are expected to comply with any local park regulations, policies, guidelines, travel restrictions, area closures, established reservation systems or other directives issued by Parks Canada for the purpose of mitigating environmental effects or ensuring public safety. Posted voluntary restrictions on trails should be considered as mandatory restrictions by commercial operators and remain in effect until acceptable trail conditions exist and closures/restrictions are lifted unless, through consultation with Parks Canada, special permission is granted. Business operators and guides are expected to follow other laws and regulations as applicable (i.e. boat safety).

Guides are expected to act as stewards, set proper examples for trail etiquette, and educate guests on the importance of keeping areas pristine. Guides are expected to monitor client actions and ensure that minimal impact practices are implemented.

Table 4: Analysis of potential environmental effects on valued ecosystem components by activity

	Valued Ecosystem Component					
Activity	**Vegetation and Soils**	**Wildlife**	**Aquatic Resources**	**Cultural Resources**	**Aboriginal Land Use**	**Visitor Experience**
All Activities	Vegetation trampling/ soil compaction Collection of plants/ wood Introduction of non-native species Erosion Contamination	Displacement from habitat/movement corridors Habituation Behaviour modification Destruction of nests	Damage to riparian areas Diminished water quality	Damage to cultural resources Removal of cultural resources	Disturbance of Aboriginal land use Diminished visitor experience	Diminished visitor experience
Overnight	Vegetation trampling/ soil compaction Contamination	Habituation Behaviour modification				
Dog-sledding	Tree damage	Disease/virus/ parasite transmission Wildlife disturbance	Contamination of water			
Over-snow vehicles	Vegetation damage/ soil compaction	Wildlife disturbance	Contamination of water Damage to riparian areas			

	Valued Ecosystem Component					
Activity	**Vegetation and Soils**	**Wildlife**	**Aquatic Resources**	**Cultural Resources**	**Aboriginal Land Use**	**Visitor Experience**
Cross-country skiing		Wildlife disturbance				
Fishing		Habituation Behaviour modification	Killing of fish Habitat disturbance Introduction of non-native species Diminished visitor experience/ wildlife attraction			
Non-motorized boating			Disturbance of marine mammals and seabirds			

3.3.1. Vegetation and soils

The following section describes impacts on vegetation and soils that may occur as a result of any of the activities in the MCSR. The environmental effects and mitigation for all activities are first described. If necessary, additional environmental effects and mitigation for specific activities are described. The discussion is generalized for all vegetation types because impacts and mitigation are similar regardless of the vegetation type, particularly with the low numbers of people involved in these activities.

Environmental effect	**Mitigation**
All activities	
Vegetation trampling/compaction	• Extensive mitigations for trampling and compaction are described in Appendix B. Specific mitigations for sensitive sites may also be found in Appendix B.
Collection of plants/wood	• As part of a pre-trip briefing, ensure that all clients are aware of national park regulations on picking or removing vegetation. Brief clients on travel procedures including potential impacts to vegetation and soils prior to departure. Warn clients not to eat any edible plants or berries.
Introduction of non-native species	• Request that clients check for and remove any bur-like seedpods or mud from boots, clothing and pets and dispose in garbage containers prior to departure to reduce risk of new weed infestations.
Erosion	• Extensive mitigations for erosion are described in Appendix B.
Contamination	• Pack out all garbage and food waste. Garbage or food waste shall not be buried or otherwise disposed of in the backcountry.
Overnight	
Soil compaction Vegetation trampling	• Make use of existing designated campgrounds and tent pads where possible. • Select campsites in durable locations where signs of occupation will be minimal, especially for base camps. Disperse tents, avoid repetitive traffic routes and concentrate kitchen and tarp sites where possible on rock, sand or gravel or naturally unvegetated sites. Avoid vegetated areas. • Do not dig trenches around tents or build rock wind breaks. • Do not remove any rocks from any features that look – even remotely – like an archaeological site, for example, tent rings, fox traps and food caches. • If rocks are used to secure tents, return them to their original position and location. • Wear soft shoes around camp to minimize the impact around the campsite.

Environmental effect	Mitigation
	• Concentrate tents and camp kitchens in areas that are established for these purposes or that are already impacted. Avoid making shortcuts between camps or kitchen areas. • Do not "clean" sites of organic litter. Renaturalize campsites and rest stops when leaving covering scuff marks, replacing sticks or branches, raking matted grasses etc. • Monitor the impacts around campsites and move or rearrange camp as necessary to avoid permanent damage to vegetation or soils.
Contamination	• Before leaving ensure the site is as clean as or cleaner than it was found.
Dog-sledding	
Tree damage	• Do not allow dogs to run free around camp. They must be in their harnesses or picketed. They must not be tied to trees, but to self carried anchors or to a rope that is stretched between two trees. Trees must not be limbed to make beds.
Over-snow vehicles	
Vegetation damage and soil compaction	• Where over-snow vehicle trails exist from previous trips, use the same trails. • Avoid vegetation as much as possible. • Ensure the depth of snow is adequate to prevent damage to underlying vegetation.

3.3.2. Wildlife

The following section describes impacts on wildlife that may occur as a result of any of the activities in the MCSR. The environmental effects and mitigation for all activities are first described. If necessary, additional environmental effects and mitigation for specific activities are described.

Little research has been conducted on the impacts of recreational activities on arctic wildlife. As a result, the following discussion addresses impacts in all parks, but is based on the information available from Kluane National Park. Effects of guided recreational activities on wildlife can include physical displacement from an area, disruption of the animal's activities through fragmentation of habitat, and habituation and interactions with humans. The extent of these impacts varies with the number of people and activities in an area. The following analysis is general to all areas of both parks (unless otherwise specified).

Environmental effect	Mitigation
All Activities	
Displacement from habitat/ movement corridors	• Follow wildlife viewing protocols and site-specific mitigations described in Appendix B.

Environmental effect	**Mitigation**
Habituation	• Follow proper food and smell management practices described in Appendix B.
Destruction of nests	• Maintain a distance of at least 300 metres from known wildlife den sites, calving areas and nest sites. Minimise close contact with nesting birds or young animals. • Watch for bird nests and chicks so as not to step on them; many arctic birds are ground nesters. Section 6(a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy nests or eggs of migratory birds. • Leave the area immediately in the event that dens, nests or young animals are accidentally encountered.
Over-snow vehicles	
Wildlife disturbance	• Educate clients on the potential impacts of winter recreation and on minimum impact practices as applied to winter activities. • Minimise the number of individual over-snow vehicle tracks established into an area. Do not follow wildlife tracks in order to ensure or enhance viewing opportunities.
Cross-country skiing	
Wildlife disturbance	• Educate clients on the potential impacts of winter recreation and on minimum impact practices as applied to winter activities. • Minimise the number of individual ski tracks established into an area. • Do not follow wildlife tracks in order to ensure or enhance viewing opportunities.
Overnight	
Habituation/ behaviour modification	• Follow best practices for overnight activities as described in Appendix B.
Fishing	
Habituation/ behaviour modification	• Dispose of entrails properly to reduce the risk of attracting bears and creating a safety hazard for visitors (Parks Canada 2002c). In backcountry areas where bear-proof garbage bins are not accessible, dispose of entrails by puncturing the swim bladder (this allows entrails to sink) and deposit into deep water, using a boat if available (Parks Canada 2002c). • Always clean your catch well away (300 m) from campsites, picnic sites, docks or other facilities.
Dog-sledding	
Disease/virus/parasite transmission	• Ensure all dogs are on leashes or fixed lines at all times. No dogs are allowed to run free. • While in the park and a few days prior to entering the park, feed dogs only commercial dog food. If dogs never eat commercial food, traditional food is acceptable.

Environmental effect	Mitigation
	• Provide Parks Canada with records (with dates) of your de-worming program and vaccinations (for at least distemper, parvo and rabies) signed by a practicing veterinarian.
Disturbance to wildlife	• When storing and managing dog food, follow the same mitigations as for human food.

3.3.3. Aquatic resources

The following section describes impacts on aquatic resources that may occur as a result of any of the activities in the MCSR. The environmental effects and mitigation for all activities are first described. If necessary, additional environmental effects and mitigation for specific activities are described. The following analysis is general to all areas of all parks, unless otherwise specified. The impacts to salt water and fresh water are not differentiated because they would be similar.

Environmental effects	Mitigation
All activities	
Damage to riparian areas	• Advise clients to bring their own water where feasible. • When group water resources must be refilled, select access points on durable materials or use crossing structures wherever possible. All water should be considered potentially contaminated and should be boiled, or filtered and treated chemically to eliminate water-borne pathogens. • Avoid deviating from trails and rest stops adjacent to streams and lakes, unless durable surfaces or dry surfaces are used. Rest stops and campsites should be placed on high dry ground away from the water's edge. • Use bridges where available (do not construct temporary bridges) to minimize damage to stream banks at water crossings. • Use alternate travel routes to and from the water's edge to avoid the development of new informal trails.
Diminished water quality	• Take measures to prevent and minimize potential water contamination associated with human activities such as washing, bathing, and cooking. • Never deposit garbage, food wastes or wastewater refuse in streams or lakes. • Minimize use of soap and use biodegradable soaps for dishwashing and bathing when soap is necessary. • Bathe or wash away from water sources (50 m) and avoid durable surfaces that lead directly to the water so that gray water may be absorbed and filtered by vegetation and soils before reaching any body of water. Residual soap should not be dumped in lakes or streams. • Dispose of gray water by screening and/or removing all food

Environmental effects	Mitigation
	particles, then dispersing at least 50m (200 feet) away from watercourses and sleeping areas. • Treat drinking water by filtering, boiling or use of iodine to prevent disease. • Store fuel in leak proof containers and use a funnel when pouring fuel from a container into a stove to reduce spillage. Refuelling of camp stoves should occur 100 m from the high water mark of any water body, and an absorbent cloth should be used to catch minor spills. • Do not dispose of excess fuel, food or materials anywhere in the backcountry – any excess food fuels or materials must be packed out and disposed of at an approved facility. Cigarette butts, candy wrappers and twist ties must also be packed out. • Minimize the amount of food, cans, bottles and tin foil taken into the park to reduce litter. • On your way out – when your pack is lighter – try to pick up any litter left by others. Report any large accumulations or large items, such as empty fuel drums, to park staff. • Follow the mitigation for management of human waste and site-specific concerns as described for each park in Appendix B.
Fishing	
Killing of fish	• Follow the catch and release and fishing mitigation identified in Appendix B.
Habitat disturbance	• Avoid wading in rivers, creeks or steams when fish are spawning in that particular area. This requires knowledge of species diversity in the different streams, rivers and creeks as well as their biology.
Introduction of non-native species	• Always rinse all mud and debris from all waders and gear that will enter the water to avoid introducing exotic species. If waders or equipment are known to come from an area heavily affected by whirling disease, disinfect the equipment with bleach (1 part chlorine to 9 parts water for 10 minutes), rinse and let dry in the shade (The Whirling Disease Foundation).
Diminished visitor experience/wildlife attraction	• Fish entrails should be sunk in the middle of the lake, river, or stream after puncturing the swim bladder or packed out.
Dog-sledding	
Contamination of water	• Stop dog sleds in the same location each trip to encourage dogs to defecate in contained locations. Clean up and transport out of park on a regular basis • Clean-up feces at the trailhead and on the trail on a regular

Environmental effects	Mitigation
	basis as agreed to by Parks Canada. • Tie all dogs at least 100 m from any water body to help control the spread of giardia virus in the park. Dog scats that are on frozen water surfaces should be picked up and moved at least 100 m from the shoreline.
Over-snow vehicles	
Contamination of water	• Ensure vehicle is well maintained and tuned. • Install proper jets for the elevation the vehicle will be operating at and adjust the clutch accordingly to reduce emissions. • Do not use after-market performance "pipes". • Use biodegradable synthetic low-particulate lube oil. • When purchasing new machines, consider more environmentally friendly models. • Fuel should be kept in sealed containers and appropriate nozzles/funnels should be used during refuelling. Refuelling should take place 300m away from rivers, lakes or ponds. Absorbent cloths should be used to catch minor spills.
Non-motorized boating	
Disturbance of marine mammals and seabirds	• Follow the marine mammal and seabird best practices described in Appendix B.

3.3.4. Cultural resources

The following section describes impacts on cultural resources that may occur as a result of any of the activities in the MCSR. The follow environmental effects and mitigation are for all activities. The following analysis is general to all areas of all parks, unless otherwise specified.

Environmental effects	Mitigation
Damage of cultural resources	• Educate clients about the value of cultural resources when at a cultural site. • Do not remove or disturb any rocks from any features that look even remotely like an archaeological site. The common site types, which include cairns, tent rings, fox traps and caches, are usually easily recognizable but some features—such as open hearths, stone flake scatters or caribou drive lanes are often indiscernible to the untrained eye. • Ensure that clients do not deface or write on rocks, outcrops, trees, logs or park infrastructure. • Limit foot traffic to hardened trails as cultural remains can become exposed through trail braiding or the development of informal trails. • Report the discovery of an artefact or cultural site to Parks

Environmental effects	Mitigation
	Canada – do not remove or otherwise disturb the site. • Additional mitigation for specific cultural sites as described in Appendix B must be followed.
Removal of cultural resources	• Ensure that clients do not remove any items from cultural sites nor vandalize sites.

3.3.5. Aboriginal land use

The following section describes impacts on Aboriginal land use that may occur as a result of any of the activities in the MCSR. The environmental effects and mitigation are for all activities. The following analysis is general to all areas of all parks, unless otherwise specified.

Environmental effect	Mitigation
Disturbance of Aboriginal land use	• No interference with traditional activities is permitted. Visitors will not approach aboriginal camps unless invited by the members. Mitigation for protecting cultural resources, vegetation and soil will protect culturally important areas as well. Follow the site-specific mitigation identified in Appendix B.
Diminished visitor experience	• Inform clients about the right of Aboriginal people to participate in harvest for subsistence and the cooperative arrangements in place to ensure this harvest is sustainable.

3.3.6. Visitor experience

The following section describes impacts on visitor experience that may occur as a result of any of the activities in the MCSR. The environmental effects and mitigation for all activities are first described. If necessary, additional environmental effects and mitigation for specific activities are described. The following analysis is general to all areas of all parks, unless otherwise specified.

Environmental effects	Mitigation
All activities	
Diminished visitor experience	• Mitigation for group interactions, vehicle use and good practices is identified in Appendix B. Follow other site-specific mitigation also found in Appendix B.

3.3.7. Effects of environment on all guided activities

Medical injuries and illness, aggressive wildlife encounters, group separation and lost people, and weather related emergencies are public safety issues caused in part by environmental factors that may arise related to any guiding activity. Rugged terrain, difficult weather conditions and remote locations may compound the severity of public safety incidents and the difficulty of search and rescue efforts.

Guide training standards and certification requirements, including first aid certification, are attached as conditions of the business licences. Guide/client ratios and other public safety requirements are also included as business licence stipulations. Parks Canada has a staff team dedicated to the identification and management of public safety issues. No additional mitigation is identified or required as part of this environmental assessment to address public safety concerns. However, guides and operators are responsible to ensure they operate in accordance with the standards and certification requirements identified in their business licence. Guides and operators are also responsible to ensure that guided groups have the appropriate safety equipment for the activity in question.

3.3.8. Effects of malfunctions or accidents from all activities

Guides and operators are responsible to ensure they operate in accordance with the standards and certification requirements identified in their business licence. Guides and operators are also responsible to ensure that guided groups have the appropriate safety equipment for the activity in question.

Direct injury to wildlife, damage to vegetation or destruction of cultural resources may occur accidentally as a result of human use, especially in off-trail situations. Potential direct injury to wildlife is unlikely but possible (e.g., ground nesting birds). Damage to sensitive vegetation such as unknown locations of rare plants is also unlikely but still possible. Rock cultural resources (i.e. tent rings) could be disturbed without visitors knowing they have cultural significance.

Operators using gas motors may spill gas when refuelling or in the case of an accident. Given the standard activity-specific mitigation, it is expected that these types of occurrences would be infrequent and very limited in scale. No additional mitigation is identified or required as part of this environmental assessment to address the potential impacts of direct injury to sensitive vegetation or wildlife.

3.3.9. Effects of changes to the environment on socio-economic conditions from all activities

Commercially guided activities contribute to the economy through employment, either directly or indirectly, accommodation for employees, and local purchases of supplies, equipment and support services. Although all the commercial operators in Tuktut Nogait and Aulavik are from Canada, none are from the areas immediately around the parks, reducing the economic benefits in the nearest communities. Yet economic benefits from tourism are an increasingly important part of the economy in northern communities. For example, tourism strategies for local communities to encourage local business and guiding can be part of cooperative management agreements.

Impacts to the natural environment as a result of guiding activities are not expected to negatively affect the demand for guiding services, the type or scope of other visitor services, the level of visitation by independent users, or the livelihood of people in or around the parks. No additional mitigation is identified or required as part of this environmental assessment to address the potential impacts of changes to the environment

on socio-economic conditions in, or around, the parks.

3.4. Significance and residual impacts

This section of the MCSR evaluates the negative environmental effects of a single project under the MCSR for the significance of environmental effects. As described in Section 1.7.4, ecological effects are considered significant if they threaten the continued existence of native species or biological communities. Effects to cultural resources are considered significant if the integrity or use of the resource is compromised by project activities. Effects on Aboriginal land use are considered significant if harvest success rates and traditional use experience decreased.

Positive residual effects from commercial guided activities include the education and increased respect for environmental and cultural resources that clients gain from their guide. As a result of guide influence, clients are more likely to follow practices designed to mitigate negative environmental effects. Clients may also experience new activities in new locations that they would not experience on their own. The influence of professional guides in many cases is expected to result in improved resource protection and enhanced visitor safety and experience.

The criteria of magnitude, geographic extent, duration, frequency, and reversibility will be used to evaluate the significance of potential negative environmental impacts (see Table 1 for definitions). Each VEC will be evaluated for the significance of residual effects after mitigation, and the results are summarized in Table 5. It should be noted that this section of the MCSR evaluates the significance of impacts that are likely to occur as a result of a single commercial operation. The cumulative impacts of multiple commercial operations are evaluated separately through the CSPR and business licensing review process (see Section 3.5).

Soils and vegetation

The impacts of individual commercial guiding operations to vegetation and soils are expected to be quite localized around areas of high use, and to result in disturbance or damage that may be considered to be reversible over time with vegetation regrowth. Impacts may occur relatively frequently for companies offering regular trips to the same locations. However, as the impacts of individual commercial guiding operations to vegetation and soils are quite limited in geographic extent, they are not likely to threaten the existence of native vegetation populations and as a result not likely to result in significant impacts to native vegetation in any of the parks.

The potential introduction and spread of non–native plant species that have not already been introduced to the parks as a result of commercial guiding activities is considered unlikely after implementation of the standard mitigation measures. Reversing the effects related to the introduction of an invasive species may require active management over a significant period of time and may never be completely successful. Given the implementation of the standard mitigation, and invasive species control measures already in place by Parks Canada, individual commercial guiding activities are unlikely to result

in an introduction, or a further spread, of invasive species that would threaten the existence of native plant communities.

Therefore, the activities of an individual commercial guiding licence are not likely to result in significant adverse impacts to vegetation in any of the parks.

Wildlife

The impacts of individual commercial guiding operations on wildlife species, including species at risk, are expected to be limited in geographic extent, duration, and frequency. Human/wildlife encounters are likely to result in disturbance level impacts only. Although some vulnerable species populations exist in the class screening area, there is no evidence that commercial guiding activities, after mitigation, would contribute to their decline. The activities of individual commercial guiding operations are not likely to threaten the continued existence of any wildlife species in either of the parks; therefore, the adverse impacts are not considered significant.

Table 5: Evaluation of the significance of adverse residual impacts on VECs before consideration of cumulative effects

VEC	Aspect	Geographic Extent	Duration	Frequency	Reversibility	Magnitude	Significance
Vegetation and soils	Native vegetation	Neg.[a]	Neg.	Minor	Minor	Minor	Not Significant
	Non-native vegetation	Neg.	N/A[b]	Neg.	Con.[c]	Neg.	Not Significant
	Soils	Neg.	Neg.	Minor	Neg.	Neg.	Not Significant
Wildlife	-	Neg.	Neg.	Neg.	Neg.	Neg.	Not Significant
Aquatic resources	Native fish species	Neg.	Neg.	Neg.	Neg.	Minor to Con.	Not Significant
	Non-native aquatic species and diseases	Neg.	N/A	Neg.	Con.	Neg. to Con.	Not Significant
	Other aquatic species	Neg.	Neg.	Minor to Con.	Neg.	Neg. to Con.	Not Significant
	Water quality	Neg.	Neg.	Neg. to Con.	Neg.	Neg.	Not Significant
Cultural resources	--	Neg.	Neg.	Neg.	Neg.	Neg.	Not Significant
Aboriginal land use	--	Neg.	Neg.	Neg.	Neg.	Neg.	Not Significant

VEC	Aspect	Geographic Extent	Duration	Frequency	Reversibility	Magnitude	Significance
Visitor experience	Visitor satisfaction	Neg.	Neg.	Neg.	N/A	Neg.	Not Significant
Accidents and malfunctions	--	Neg.	Neg.	Neg.	Neg.	Neg.	Not Significant

[a] Neg. means negligible.
[b] N/A means not applicable.
[c] Con. means considerable.

Aquatic resources

Aquatic species will be affected in varying ways. The impacts of individual commercial guiding operations on species that are not being fished are expected to be limited in geographic extent, duration, and magnitude. The frequency of impacts will vary depending on the activity, but is still likely to be minor. Fishing will result in the loss of individuals from the population. However fishing is regulated to protect populations; therefore, the activities of one commercial guiding operation are not likely to threaten the continued existence of any aquatic species. The impacts of an individual commercial guiding operation on whale and seal species will be very limited in geographic extent, duration, magnitude and frequency. There is no evidence that commercial guiding activities would contribute to their decline. Therefore, impacts of a single commercial guiding operation are not likely to threaten their existence in any park.

The potential introduction and spread of new non–native aquatic species and diseases as a result of commercial guiding activities is considered unlikely after implementation of the standard mitigation measures. Reversing the effects of an introduction of an invasive species may require active management over a significant period of time and may never be completely successful. The introduction of new non-native aquatic species would result in disturbance level impacts to native species. However, if a new fish disease was introduced the impact could be fatal for some fish. Given the implementation of the standard mitigation, and invasive species control measures already in place by Parks Canada, individual commercial guiding activities are unlikely to result in an introduction, or further spread, of invasive species that would threaten the existence of aquatic communities.

The impacts of individual commercial guiding operations, not involving gas motors, on water quality are expected to be limited in geographic extent, duration, magnitude and frequency. Gas-powered motorized activities are of short duration, although an individual operation's activities could be daily. In large lakes or oceans impacts of contaminants from an individual commercial guiding operation are quickly diluted, limiting the geographic extent and easily reversing impacts. Impacts from regular operations after

applying the mitigation are only expected to create disturbance level impacts. Given the implementation of standard mitigation measures, it is not likely that individual commercial guiding operations will have any significant effect on water quality.

Therefore, the activities of an individual commercial guiding licence are not likely to result in significant adverse impacts to aquatic resources in any of the parks.

Cultural resources
Given the implementation of standard mitigation measures it is not expected that the impacts of individual commercial guiding operations will result in residual effects. Therefore there will be no significant adverse effects on the integrity or context of cultural resources or sites.

Aboriginal land use
Given the implementation of the standard mitigation measures it is not expected that the wildlife or vegetation populations will be affected by an individual commercial guiding operation; therefore, traditional harvest would not be affected. Visitor use from one commercial guiding operation is restricted geographically and occurs for a short duration, making interactions less likely and not significant.

Visitor experience
Interactions between commercial groups and any given independent user are expected to be short in duration, infrequent and relatively minor in nature. Given the implementation of standard mitigation measures, the impacts of individual commercial guiding operations are not likely to cause significant adverse impacts to levels of visitor satisfaction.

Accidents and malfunctions
Given the implementation of standard mitigation measures and management measures already in place by Parks Canada, it is not likely that most individual commercial guiding operations will result in accidents that will have significant effects on ecological or cultural resources or on visitor safety and experience. Although a spill from an over-snow vehicle could destroy some individuals of a species, the probability of a spill is low and the possibility of severe damage is very low. If these events did occur, the effects would not impact the ecosystem or population. Therefore, after implementation of the mitigation measures, individual commercial guiding operations will not have significant effects on ecological or cultural resources or on visitor experience.

3.5. Cumulative environmental effects

Cumulative impacts can occur when more than one project affects an ecological component. These cumulative stresses can be from multiple projects within the park or from projects around the park or a combination of these. Cumulative impacts can be a concern for the following reasons:

- the combined impact of multiple actions on an ecosystem can be greater than the sum of the individual impacts of each action;

- activities can occur close together in time and/or space so that effects overlap and/or recovery is more difficult;
- the incremental effect of multiple actions can detrimentally affect the ecosystem (also called the "nibbling effect"); and
- ecosystem responses can include time lags, space lags, thresholds of ecosystem tolerance and indirect effects which make predictions difficult.

Park management plans are considered by Parks Canada to be the appropriate mechanism for the identification and management of cumulative environmental effects. Each park management plan establishes the context and vision for the park, guided by the *Canada National Parks Act*. Each management plan identifies major stressors affecting both natural and cultural resources from both inside and outside the park boundaries. Some of the main stressors include mining and oil and gas activities, agriculture, and road developments. Strategic goals, objectives and actions are methodically developed to address the negative effects of identified stressors along with the identification of indicators of change. Each park management plan specifically addresses effective human use management and prescribes strategic goals, objectives and key actions to be implemented including actions to manage or restrict commercial recreation use where necessary. All park management plans are subject to strategic environmental assessment in accordance with the *2004 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals* before the plan is signed off by the Minister. Strategic environmental assessments also focus on the cumulative effects of the key actions outlined in management plans to determine if the plan moves the state of the park towards, or away from, a state of ecological and cultural integrity.

Cumulative effects assessment (CEA) includes past, present and future projects that may impact the same VECs as identified in this MCSR. The VECs selected for environmental assessment as part of the MCSR were selected from the indicators outlined in the park management plans and as a result already reflect the stressors which may have the potential to cause cumulative environmental effects. With the CEA incorporating and focusing on the indicators and stressors identified in the Park Management Plans, further identification or analysis of potential cumulative effects stressors either inside or outside the park is not re-considered within the MCSR. Section 3.5.1 is an analysis of cumulative effects based on information available now.

However, the number of licences and activities to be evaluated over time is not known and additional projects could be initiated that would cumulatively impact VECs. Furthermore, the magnitude and significance of cumulative effects will vary over time as mitigation measures identified in the management plans are implemented, as patterns of human use change, and as ecological conditions vary. As a result, a process has been developed to evaluate cumulative effects of new and modified business licences annually and all licences every five years.

A two-tiered assessment process has been developed for evaluating the cumulative effects of commercial guiding activities. The first level of assessment integrates cumulative effects assessment with the annual business licensing process and facilitates

Parks Canada's ability to make a determination of the significance of cumulative effects on a project-specific basis as required by the *Canadian Environmental Assessment Act*. Project-specific cumulative effects assessment is facilitated through the class screening project report process. This process is described in Section 3.5.2.

The second level of assessment integrates cumulative effects assessment with the park management five-year review process and facilitates Parks Canada's ability to ensure that decisions on commercial guiding use are consistent with management plan direction. The integration of CEA with park management plan review processes provides the focus for follow-up and reporting activities related to commercial guiding operations. This process is described in Section 3.5.3.

3.5.1. Current cumulative effects analysis

Cumulative effects may result from multiple projects covered by this MCSR and/or the interaction of projects covered by this MCSR and other past, present and future projects inside or outside of a park. In order for cumulative effects to be possible, there must be residual effects on a VEC. No residual effects were identified on cultural resources; therefore no analysis of cumulative effects is necessary for cultural resources. The cumulative effects on soils and vegetation, wildlife, aquatic resources, Aboriginal land use and visitor use are described below.

Soils and vegetation

Minimal residual effects on vegetation and soil may occur, but past, present and future visitor use, Aboriginal use, research and park operations are the only projects in the parks that could cumulatively impact soil and vegetation. All of these activities occur at very low densities and none of the vegetation species are known to be threatened by them.
With the implementation of the mitigation measures in the MCSR and the management plans, the adverse cumulative environmental effects on soils and vegetation are not likely to be significant.

Wildlife

Projects in and around the parks affecting wildlife include: aircraft landings, visitor activities, research activities and Aboriginal land use. As described by the introduction to Section 2.2, wildlife are managed cooperatively by external agencies who ensure that harvest by Aboriginal people is sustainable. As illustrated in Table 2, the visitor use of these parks is very low. Park management plans identify any mitigation necessary to prevent adverse cumulative environmental effects of visitors and researchers.

Therefore, commercially guided activities are not likely to threaten the continued existence of any wildlife species in any location in the parks; therefore the adverse cumulative environmental effects are not likely to be significant. Since there are no expected significant adverse cumulative environmental effects on wildlife, there will be no significant adverse cumulative environmental effects on Aboriginal hunt success.

Aquatic resources

Multiple guided businesses under this MCSR, non-commercially guided visitor use,

researchers, park management, and float-plane landings may impact water quality and the distribution of non-native aquatic species. These activities all have very minor residual effects on water quality and are infrequent. Aquatic non-native species have not been identified in the parks and are unlikely after the implementation of the mitigation in this MCSR. As a result, adverse cumulative environmental effects on aquatic resources are not likely to be significant.

Multiple guided businesses under this MCSR, non-commercially guided visitor use, researchers, and in a few cases people fishing outside the park may impact fish populations. Fishing is regulated under the *National Parks Fishing Regulations*, territorial legislation and through cooperative management regimes to ensure that there are no significant adverse cumulative environmental effects on fish populations.

Aboriginal land use

Multiple guided businesses under this MCSR could cumulatively decrease Aboriginal land use experience. Aircraft landing and non-commercially guided visitors in the parks may also contribute to decreased Aboriginal land use experience. As described in Table 1, most parks have very low visitation making conflicts with visitors and decreased Aboriginal land use experience very unlikely. As described in Section 1.1.4, each of the parks is managed cooperatively with Aboriginal groups who address this issue as necessary. Furthermore, park management plans, developed with Aboriginal groups, identify appropriate activities, appropriate locations for activities and approaches to minimize conflicts between Aboriginal land use, aircraft and visitors. With the implementation of the mitigation measures in the MCSR and the management plans, the adverse cumulative environmental effects on Aboriginal land use are not likely to be significant.

Visitor experience

Multiple guided business licences under this MCSR could cumulatively decrease visitor experience. Aboriginal land use, non-commercially guided visitor use, and aircraft landings in the parks may also contribute to decreased visitor experience. As described in Section 1.1.4, each of the parks is managed cooperatively with Aboriginal groups who address conflicts between visitors and Aboriginal groups as necessary. Furthermore, park management plans, developed with Aboriginal groups, identify appropriate activities, appropriate locations for activities and approaches to minimize conflicts between Aboriginal land use, aircraft and visitors. As described in Table 1, both parks have very low visitation making decreased visitor experience due to overcrowding or encounters with Aboriginal people unlikely. With the implementation of the mitigation measures in the MCSR and the management plans, the adverse cumulative environmental effects on visitor experience are not expected to be significant.

3.5.2. Integration of class screening and business licensing review process

Figure 4 outlines the annual business licensing and class screening process for proposed new or modified business licence applications. A pre-screening process ensures the activity is considered appropriate for a national park before the application is further evaluated. In the spring of every year, applicants fill out the business licence application

forms and Parks Canada (usually a team of people from public safety, resource management, and cultural management) evaluates the application and completes the CSPR evaluation for potential environmental effects, including cumulative effects. The results of the class screening process are documented in the CSPR.

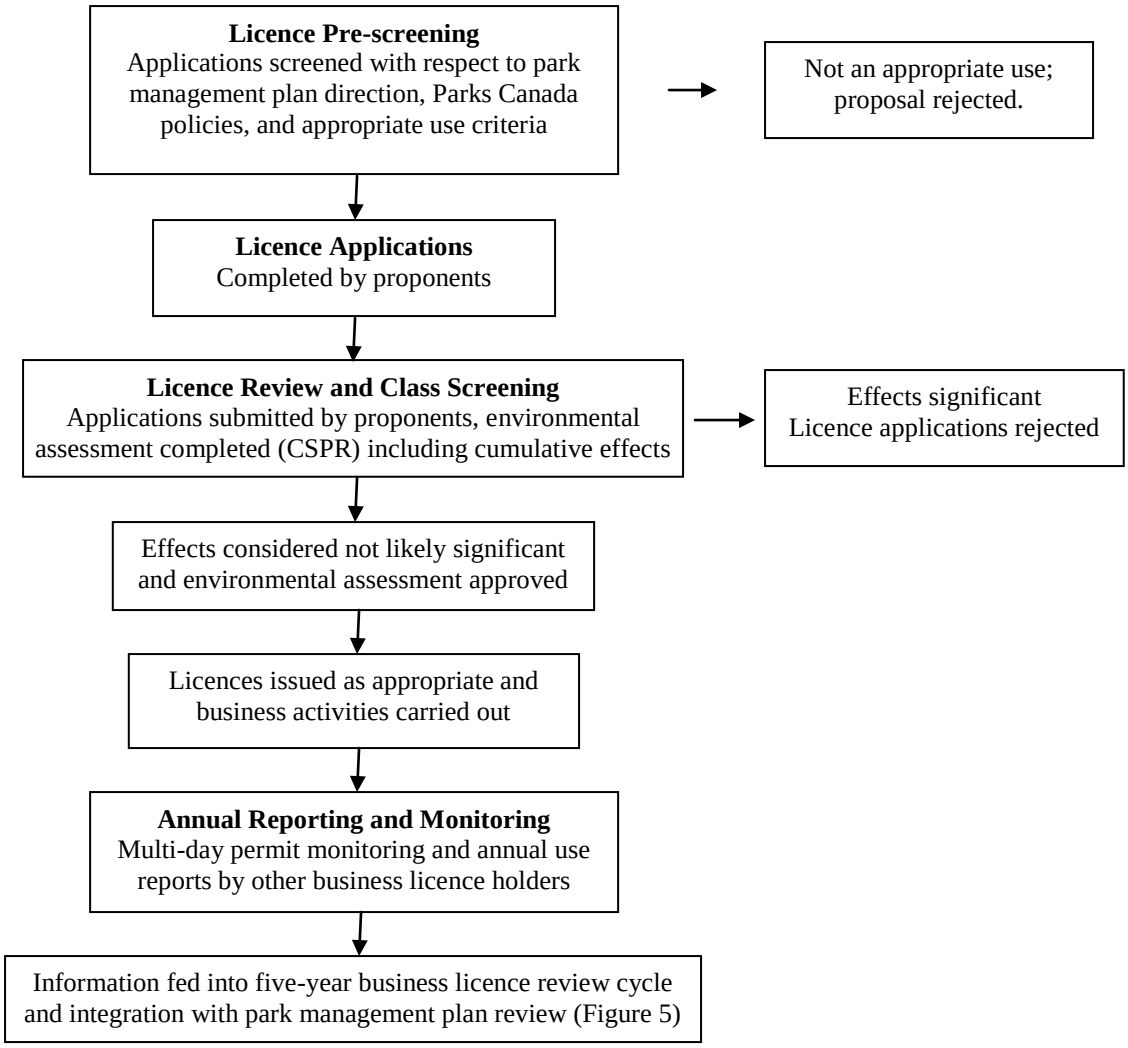

Figure 4: Annual business licence and class screening review process

3.5.2.1. Cumulative impacts to wildlife

Cumulative impacts to wildlife are assessed by focusing on the methods of impacts to wildlife, which are similar regardless of species. While the impacts of one guided trip alone is not significant (see Section 3.4), repeated impacts can cause more serious impacts. Specific cumulative effects indicators related to the selected components of the wildlife VEC to be assessed through the CSPR and business licence review process include:

- Increase in human-wildlife interactions that may lead to habituation or human injury;
- Increase in human caused displacement of wildlife from prime food sources;

- Decrease in wildlife habitat effectiveness; and
- Disruption of wildlife during sensitive seasons including nesting, denning, rearing or breeding seasons.

3.5.2.2. Cumulative impacts to vegetation and soils

Repeated use of a given site will likely result in an increase in the magnitude of environmental effect. Loss of vegetation cover and soil erosion may occur at heavily used sites. However the geographic extent of such impacts is still unlikely to result in significant environmental effects that threaten the existence of species or biological communities at an ecosystem scale.

The extent of non-native vegetation is one of the indicators of ecological integrity identified in park management plans. Despite implementation of the mitigation, non-native species may be introduced into the park or spread further through the park. Non-native species can compete with native species and change natural ecosystems. These impacts would affect the ecological integrity of the parks.

In order to focus the CEA on the issues and areas of greatest concern, cumulative impacts are assessed by focusing on sensitive species and times, and on the potential for the introduction and spread of non-native vegetation. Specific cumulative effects indicators related to the selected components of the vegetation and soils VEC to be assessed through the CSPR and business licence review process include:

- Introduction or spread of invasive non-native plant species into new areas of the parks
- Introduction or spread of new non-native species that are a particular threat
- Impacts to known locations of rare or endangered plant species
- Impacts to areas of native vegetation at sensitive times

3.5.2.3. Cumulative impacts to aquatic resources

Aquatic species, other than sport fish species, are not likely to be directly impacted by cumulative impacts. Sport fishing does remove individuals from a population and could impact the ecological integrity of a system or population. The cumulative effect of these actions by people fishing with or without commercial guides will vary from water body to water body. Evaluating whether or not fishing should be allowed is beyond the scope of this environmental assessment. Furthermore, ensuring fish populations are at desired levels requires the management of public fishing as well as commercial guided fishing. As a result, management plans for the national parks and the *General Fishing Regulations* of the *Canada National Parks Act* are the appropriate tools to regulate fishing and protect ecological integrity of the affected aquatic ecosystems.

The extent of non-native aquatic species and fish diseases is one of the indicators of ecological integrity identified in park management plans. Despite implementation of the mitigation, non-native species and fish diseases may be introduced into the park or spread further through the park.

Cumulative impacts to water quality are greater from other sources; however, commercial

guiding could contribute to these impacts. The impacts vary over time and between water bodies and need to be evaluated at a more specific level.

Specific cumulative effects indicators related to the selected components of the aquatic resources VEC to be assessed through the CSPR and business licence review process include:

- Decrease in native fish populations
- Introduction or spread of new non-native species that are a particular threat
- Introduction or spread of new fish diseases that are a particular threat
- Increase accumulation of contaminants that could decrease water quality

3.5.2.4. Cumulative impacts to cultural resources

Repeated use of a given site will likely result in an increase in the magnitude of environmental effects to cultural resources. Loss of vegetation cover and soil erosion may occur at heavily used sites and in turn result in exposure or inadvertent impacts to buried resources. In order to focus the CEA on the issues and areas of greatest concern, cumulative impacts to cultural resources will focus on the sites identified in Section 2.3. Specific cumulative effects indicators related to the cultural resources VEC to be assessed through the CSPR and business licence review process include:

- Impacts to the integrity or context of cultural resources
- Regular or repetitive use of cultural resource sites

3.5.2.5. Cumulative impacts to Aboriginal land use

Repeated visitor use in the same area as traditional Aboriginal land use could lead to decreased experience and harvest success. Specific cumulative effects indicators related to the cultural resources VEC to be assessed through the CSPR and business licence review process include:

- Decrease Aboriginal Land Use Experience
- Decrease Aboriginal Land Use Harvest Success Rate

3.5.2.6. Cumulative impacts to visitor experience

The management plans and human use strategies for the parks identify management approaches for addressing cumulative effects to visitor experience. The dynamic nature of the relationship between independent use, commercial use, and overall human use management objectives and actions means that the potential for cumulative effects will change over time. The cumulative impacts of commercial guiding on the quality of visitor experience should be evaluated based on current surveys and visitor use information. Cumulative effects indicators related to the Visitor Experience VEC to be assessed through the CSPR and business licence review process include:

- Conflicts between user groups
- Decrease in visitor satisfaction

3.5.3. Integration of class screening and park management plan review process

Commercially guided activities, even cumulatively, make up a low proportion of visitor use and are anticipated to have relatively minor impacts on the selected VECs compared to the influence of other projects and activities including park management activities, independent visitor use, aircraft overflights and activities outside the park boundaries. As a result, the contribution of commercial guiding activities to cumulative effects are most effectively identified and managed at a landscape scale in concert with other projects and activities. The park management planning process is the appropriate tool to facilitate cumulative effects assessment. The MCSR for commercial guiding activities establishes the process for integrating consideration of the impacts of commercial guiding activities into the five-year park management planning process for each of the parks.

There are four main steps to the integration of cumulative effects assessment and the class screening process with each park management planning process:

- Summary reporting on commercial guiding activity
- State of the park report
- Five-year park management plan review
- Amendments to the class screening process

Summary reporting on commercial guiding activity
Annual monitoring of multi-day use in Aulavik and Tuktut Nogait occurs through a permitting system that tracks all parties. As a result, business licence holders offering multi-day trips in these parks are not required to submit annual reports.

For both parks, business licence holders who fish during their trip must report the catch (species and approximate size) of fish after each trip. Bear sightings must also be reported after each trip. In preparation for the five-year management plan review, report information will be summarized to establish the locations of and trends in commercial use. This information will be reviewed to identify trends and issues of relevance to each management planning process.

State of the Parks Report
The summary and evaluation of commercial guiding activity is one piece of information that will be used by Parks Canada to write the state of the park report. Other information contributing to the state of the park report includes ecological integrity indicator monitoring, implementation of park management activities and other ecological or social research. The state of the park report will provide an evaluation of ecological integrity and cumulative effects at the park scale. This information is then used to guide changes to the management plan.

Five-year park management plan review
In order to address cumulative impacts, management plans for each park identify indicators of ecological integrity that are responsive to change and reflect overall ecosystem health. The cumulative effect of all activities on indicators is monitored over the five-year term of the management plan and the results of monitoring are used as input

into the state of the park report. The five-year management plan review re-evaluates the state of ecological integrity indicators and updates management actions in response to the state of the park report. Management plan actions related to commercial guided activities would be prescribed for areas where the level of overall human use impacts is considered unacceptable and where limitations to commercial use would have a discernable benefit. Potential actions could include a wide range of measures including: trail closures, timing restrictions, allocation limits or restrictions on new licences.

Amendments to the class screening process

The updated park management plans are expected to provide direction related to the management of cumulative effects with respect to commercial guiding activities. Direction provided in the management plan will be used to update and modify the class screening and business licence processes as necessary. All business licences will then be reviewed using the amended model class screening to ensure that mitigation and licence stipulations are appropriate and up-to-date.

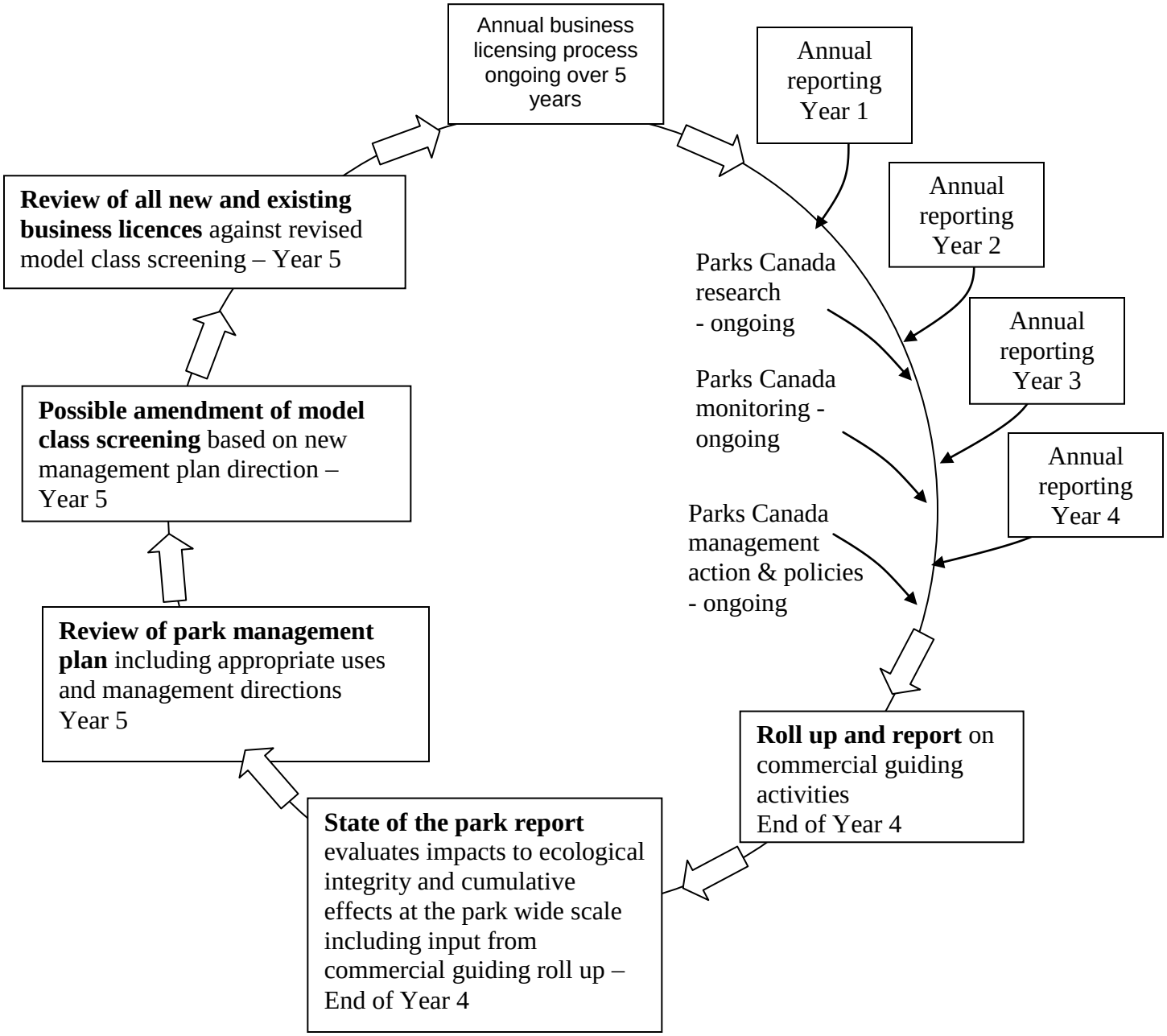

Figure 5: Five-year business licence review process for each park

3.6. Surveillance

Surveillance of commercial guiding activities is on-going and ensures that required mitigation is implemented and restrictions or stipulations are followed. Surveillance also provides the opportunity to react to unpredicted environmental effects in a timely manner. Resource Conservation and Public Safety Specialists routinely monitor conditions in the backcountry and will be able to evaluate whether commercial operators are implementing required mitigation. Resource Conservation and Public Safety Specialists, in cooperation with park managers, are also able to identify and enforce any site-specific or short-term mitigation to respond to unpredicted environmental effects. Commercial guides need to stay informed about park policies and management directions to ensure they are in compliance.

3.7. Follow-up

According to the Act, follow-up is "a program to confirm the accuracy of the environmental assessment of the project and to determine the effectiveness of mitigation measures". Follow-up monitoring is designed to verify the accuracy of the environmental assessment and the proposed mitigation. Follow-up monitoring is also used to identify and record potential cumulative impacts.

The permitting system, yearly reports by day users, end of trip reports of catch and bear sightings, and monitoring by Parks Canada are part of an adaptive management and cumulative effects assessment process. Reporting requirements are part of the business licensing and review process and are adapted into the park management planning process. Parks Canada is responsible for on-going monitoring of ecological integrity indicators, trail/campsite conditions, visitor experience and trailhead facility conditions. Therefore, the appropriate follow-up monitoring programs are identified through the management planning and business planning processes. Examples of ongoing monitoring programs include: numbers and distribution of wildlife populations, number of interactions between wildlife and people, area and distribution of vegetation burned, water quality and the indicators chosen for the cumulative effects analysis in the CSPR (Sections 3.5.1.2, 3.5.1.3, 3.5.1.4, 3.5.1.5, and 3.5.2.6). No specific monitoring of commercial guiding activities is required as a result of this assessment.

4. Consultation

4.1. Public consultation process

Public consultation took place at three stages during the development of this class screening process; consultation conducted by Parks Canada as part of the development of the MCSR, consultation in anticipation of its declaration in February 2005 conducted by the Agency, as well as consultation in anticipation of its re-declaration in 2010. The intent of consultation during the development of the MCSR was to create awareness of the proposed model class screening process, to offer the opportunity to review both the

draft MCSR and draft CSPR forms, and to provide comments and suggestions prior to Parks Canada's submission to the Agency for declaration. Subsequently, the Canadian Environmental Assessment Agency offered the public the opportunity to review the proposed model class screening as part of its declaration and re-declaration process.

4.1.1. Objectives of consultations during MCSR development

The proposed objectives for consultations with identified stakeholders were to:

- Inform Aboriginal groups and stakeholders of Parks Canada's intention to create a model class screening, including the intended outcome, the benefits and how it will affect business licence proponents;
- Identify the opportunities to be involved in the process of developing the model class screening;
- Explain how to obtain additional information and who to contact; and
- Offer interested individuals and organizations the chance to review and comment on the draft Model Class Screening Report and the Class Screening Project Report Form prior to submission of the documents to the Agency for declaration.

4.1.2. MCSR development consultation approach

A cover letter and information backgrounder was developed and mailed out to all identified stakeholders through the respective Superintendents' offices. The information provided the background and objectives of the proposed model class screening. This package outlined the key elements of the model class screening; the process leading to the formal declaration of a model class screening; how additional information could be obtained; opportunities to review the proposed model class screening documents; and all relevant Parks Canada contacts.

Parks Canada consulted directly with Aboriginal groups through meetings and/or phone calls. Parks Canada staff followed up directly with key stakeholders to assess the preliminary reaction to the class screening proposal and determine if there was interest in reviewing the draft proposal and providing feedback. Follow-up was carried out over the phone or through one-on-one meetings. Parks staff coordinated one-on-one feedback from individual operators. Comments and suggestions were considered or incorporated into the environmental assessment process where appropriate. Responses to comments or suggestions not incorporated were recorded. The need for further consultation or stakeholder review and the process for further review was determined. Opportunity to review the draft screening documents was offered to interested stakeholders.

4.2. Public Consultation

Following the initial submission of the MCSR to the Canadian Environmental Assessment Agency in 2005, it underwent a formal 30-day public review prior to declaration as part of Agency procedure. As with the consultation on the development of the MCSR, comments received were recorded, considered and incorporated into the Model Class Screening Report as appropriate. Upon its second submission to the Agency

in 2009, this MCSR underwent a 30-day public review upon which no comments or issues were raised by the public.

4.3. Federal departments

Parks Canada has sole authority over all lands affected by commercial guiding in the National Parks of Canada and is the sole authority for enforcement of the *Canada National Parks Act*. Under the *Species at Risk Act* the Minister of Environment is responsible for all species at risk in national protected heritage areas administered by Parks Canada including national parks and national historic sites. The Canadian Wildlife Service of Environment Canada and the Department of Fisheries and Oceans were consulted in the original drafting of this class screening, and since the mitigations and level of activity are the same, these consultations were not repeated.

4.4. Aboriginal Consultation

In the context of existing Aboriginal and treaty rights of the Aboriginal peoples of Canada, recognized and affirmed in section 35 of the Constitution Act, Parks Canada contends that the projects of the class within the MCSR will not infringe upon potential or established Aboriginal and treaty rights.

The draft Model Class Screening Report was provided to the Inuvialuit Environmental Impact Screening Committee (EISC), but they did not have any comments. The MCSR was provided to the EISC a second time as part of the Agency's public consultation period. No comments or questions were raised. In addition, the MCSR was sent to the Wildlife Management Advisory Council (NWT), the Tuktut Nogait National Park Management Board, the Inuvialuit Game Council, the Fisheries Joint Management Committee, and the Aulavik National Park Site Manager along with a letter requesting comments on the document prior to re-declaration. Comments were received and incorporated from the WMAC (NWT). Parks Canada representatives also attended an Inuvialuit Game Council meeting prepared to discuss the MCSR, although questions were not raised.

4.5. Other expert consultations

Appropriate experts within Parks Canada including environmental assessment specialists, wildlife and conservation biology specialists, cultural resource specialists, planners and the warden service reviewed the model class screening report.

The inclusion of guiding and tourism associations and environmental groups in the consultation process was felt to have addressed the need for additional expert consultation related to business and environmental issues. No other experts with an interest or expertise related to the class screening process were identified.

4.6. Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Registry project file must include a copy of the MCSR and all related CSPRs. The RA maintains the file, ensures convenient public access, and responds to information requests in a timely manner.

The Registry Internet site is administered by the Agency. The RA and the Agency are required to post specific records to the Internet site in relation to the MCSR and any related CSPRs.

Upon declaration of the MCSR, the Act requires RAs to post on the Internet site of the Registry, at least every three months, statements of projects for which an MCSR was used. Each statement should be in the form of a list of projects, and should include:

- the title of each project for which the MCSR was used;
- the location of each project;
- RA contact information (name, phone number, address, email); and
- the date when it was determined that the project falls within the class of projects covered by the report.

Note: The schedule for posting statements is:

- no later than July 15 (for projects assessed from April 1 to June 30)
- no later than October 15 (for projects assessed from July 1 to September 30)
- no later than January 15 (for projects assessed from October 1 to December 31)
- no later than April 15 (for projects assessed from January 1 to March 31).

5. Procedures for Revising the Model Class Screening Report

The RA will notify the Agency in writing of its interest to revise the MCSR as per the terms and conditions of the declaration. It will discuss the proposed revisions with the Agency and affected federal government departments and may invite comment from stakeholders on the proposed changes. For a re-declaration of the MCSR, a public consultation period will be required. The RA will then submit the proposed revisions to the Agency, along with a statement providing a rationale for each revision proposed as well as a request that the Agency amend or re-declare the MCSR.

5.1. Amendments

The purpose of an amendment is to allow for minor modifications to the MCSR after experience has been gained with its operation. Amendments do not require public consultation and do not allow for changes to the term of application. In general, amendments to the MCSR can be made if the Agency is satisfied that changes:

- represent editorial changes intended to clarify or improve the document and procedures screening process;
- streamline or modify the planning process; and/or
- do not materially alter either the scope of the projects subject to the MCSR or the factors to be considered in the assessment required for these projects.

5.2. Re-declaration

The purpose of a re-declaration is to allow substantial changes to the MCSR after experience has been gained with its operation. Re-declarations require a public consultation period. A re-declaration of an MCSR may be undertaken for the remaining balance of the original declaration period or for a new declaration period if the changes:

- extend the application of the MCSR to projects or environmental settings that were not previously included, but are similar or related to projects included in the class definition;
- represent modifications to the scope of the projects subject to the MCSR or the factors to be considered in the assessment required for these projects;
- reflect new or changed regulatory requirements, policies or standards;
- introduce new design standards and mitigation measures;
- modify the federal coordination notification procedures;
- extend the application of the MCSR to RA(s) who were not previously declared users of the report;
- remove projects that are no longer suitable for the class;
- extend the term of application of the MCSR; and /or
- result in significant changes to the class screening project report template.

5.3. Term of Application

The term of the Class Screening will be for 10 years, until 2021. However, as part of the management plan review for each individual park, the Class Screening process will be reviewed and amended as required. The coordination of the park management plan review and the review of the Class Screening process will provide the policy and human use strategy context for managing commercial guiding activities over the subsequent 10-year period.

This report will be in effect for 10 years from its date of declaration. Near the end of the MCSR declaration period, and at other times as necessary, Parks Canada will review content and usage to allow for report updates and the preparation for potential re-declaration.

6. References

Canadian Heritage Parks Canada. 1994. Guiding Principles and Operational Policies. Minister of Supply and Services Canada.

Downie BK. 1995. Cultural and Natural Background Research for the Proposed Tuktut Nogait National Park. PRP Inc.

Ecological Stratification Working Group. 1996. A national ecological framework for Canada. Ottawa: Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research; and Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch.

Grayhound Information Services. 1997. The Natural and Cultural Resources of Aulavik National Park. Metcalfe, Ontario.

Harmon W. 1994. Wild Country Companion. Helena, Montana: Falcon Books.

Indian and Northern Affairs Canada. 1984. The Western Arctic Claim: The Inuvialuit Final Agreement.

Klassen E, Maile B, Molder R, Newbigging C. 1999. An analysis of the exotic plant species distribution and associated risks for Prince Albert National Park, Saskatchewan, Canada. Department of Geography, Land Use and Environmental Studies, University of Saskatchewan.

Monz C, Roggenbuck J, Cole DN, Brame R, Yoder A. Wilderness party size regulations: Implications for management and a decision-making framework. In: Cole DN, McCool SF, editors; 2000; Ogden UT. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

National Historic Sites Directorate, Archaeological Research Branch, Archaeological Resource Management Section, Offices RA. 1993. Guidelines for the Management of Archaeological Resources in the Canadian Parks Service. Environment Canada Parks Service.

NOLS. 2002. Principles of Leave No Trace. Lander, Wyoming: National Outdoor Leadership School (www.LNT.org).

Parks Canada. 1998. Management Directive 2.4.2 Procedures for the Application of the Environmental Assessment and Review Process.

Parks Canada. 2002a. Aulavik National Park of Canada Management Plan. Parks Canada.

Parks Canada. 2002c. Fishing Regulations Summary April 1, 2002 - March 31, 2003.

Parks Canada.

Parks Canada. 2002d. Information to Complete an Environmental Screening Report for a Horse Outfitting Business Licence. Draft. Jasper and Banff: Parks Canada.

Parks Canada. 2002f. Parks Canada Attendance 1997-1998 to 2001-2002. Available:http://parkscanada.pch.gc.ca/library/DownloadDocuments/Documents Archive/attendance_e.pdf, November 1, 2002.

Parks Canada. 2010. Human Waste Guidelines – Western Arctic Field Unit. Draft 2010.06.03.

The Whirling Disease Foundation. Prevention Methods for Anglers: Whirling Disease. [Online]. Available:http://www.whirling-disease.org/prevention.pdf, February 11, 2003.

Zoltai SC, Holroyd GL, Scotter GW. 1987. A natural resource survey of Wager Bay, Northwest Territories. Edmonton: Canadian Wildlife Service, Western and Northern Region. Report nr Technical Report Series No. 25.

Zoltai SC, McCormick KJ, Scotter GW. 1983. A Natural Resource Survey of Bylot Island and adjacent Baffin Island, Northwest Territories. Ottawa.

Appendix A

Class Screening Project Report for Commercial Guiding Activities in Aulavik National Park of Canada and Tuktut Nogait National Park of Canada

Introduction

This Class Screening Project Report is based on information provided in the *Model Class Screening Report for Commercial Guiding Activities in the Northern National Parks of Canada*.

The first portion of the Class Screening Project Report is to be completed by the applicant and Sections 4 to 7 will be completed by Parks Canada staff.

Section 1 – Applicant Information

Company Name		
Business License Application Reference #		
Purpose of Application Check One		New Business licence – environmental assessment required
		Change or Expansion of Existing Business License – environmental assessment required
		Renewal of Existing Business License – no environmental assessment required – **Do Not Continue with the CSPR**

Section 2 – Application of the Class Screening

This section determines whether the Model Class Screening process applies to the proposed project.

Part A	Yes	No
Does the proposed activity require a business licence from Parks Canada under Section 3 of the *National Parks Businesses Regulations 1998?*		
Is the business licence for operation in Tuktut Nogait National Park of Canada or Aulavik National Park of Canada?		
Is the business licence for guided non-motorized boating (rafting, kayaking, canoeing), hiking, dog-sledding, fishing, and/or over-snow vehicles as described in the subclasses of the MCSR?		

If "yes" to all of the above continue on.
If "no" to any of the above
Do Not Continue with the CSPR
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Part B	Yes	No
Is the business licence for operating a one-time, occasional or annual special event such as military exercise, sporting event, or festival?		
Does the business require or currently hold a lease and licence of occupation?		
Does the business proposal involve the establishment of a permanent or semi-permanent backcountry camp for the season?		
Does the business involve a cruise ship?		

If "no" to all continue on.
If "yes" to any of the above.
Do Not Continue with the CSPR
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Section 3 – Standard Environmental Effects and Mitigation

A) This section identifies the standard mitigation measures to be applied to the proposed commercial guiding operation as a condition of the business licence.

The *Standard Mitigation* column identifies the standard mitigation to be applied to the proposed activity. The *Activities/Areas* column identifies the specific activities included within each standard mitigation category. Please check all standard mitigation categories that apply to the proposed operation.

Standard Mitigation	**Activities/Areas**	
Commercial Guiding – Generic	This category applies to all commercial guiding operations	
Hiking	Includes interpretive hiking and day hiking on established trails and other approved non-technical terrain	
Cross-country skiing	Includes cross country skiing and backcountry skiing	
Overnight	Includes camping at established sites or non-established sites	
Non-motorized boating	Includes rafting, kayaking and canoeing	
Dog-sledding	Includes day trips, and multi-day trips	
Fishing		
Over-snow vehicles		

Note: Standard mitigation measures as described above are to be attached as conditions of the business licence under; *Business Licence Schedule A) Section 3) "Environmental Stewardship".* Activities will not be allowed in any areas not identified above. This stipulation will be attached as a condition of the business licence under: *Business Licence Schedule A) Section 2) "Locations".*

B) Which park(s) will you be operating in?

Tuktut Nogait……..…..
Aulavik……...……..

C) This section identifies locations in the parks that have been identified as sensitive sites in the Model Class Screening Report. Additional mitigation is identified in the Model Class Screening Report for these sites and will be attached to your business licence. Which of the following sites will you be operating in?

Aulavik

Nasogaluak……...
Head Hill……..
McClure's Cache…….

Tuktut Nogait

Cache Lake……...

Note: Site specific mitigation as described above are to be attached as conditions of the business licence under; *Business Licence Schedule A) Section 3) "Environmental Stewardship".* Activities will not be allowed in any areas not identified above. This stipulation will be attached as a condition of the business licence under: *Business Licence Schedule A) Section 2) "Locations".*

The following sections will be completed by Parks Canada

Section 4 – Additional Environmental Effects

This section identifies activities and environmental effects that may not be addressed through the application of standard mitigation measures identified in Section 3.

A) Based on the information provided in the Business Licence application as submitted by the proponent, identify any potential additional environmental effects related to the proposed project that may not be addressed through the application of standard activity-specific or site-specific mitigation.

Describe potential environmental issues or effects. Attach additional information as required. Enter NA if not applicable.
1.
2.
3.

B) With respect to potential environmental effects as described above in A), is additional information required in order to assess the potential environmental effects or to make an environmental assessment determination? If yes, specify and attach required information.

Describe information requirements and list attachments: Enter NA if not applicable
1.
2.
3.

C) Identify any additional mitigation measures required to address additional environmental effects as described under A). Attach additional information as required.

Additional Impact 1	
Mitigation measures	

Additional Impact 2	
Mitigation measures	
Additional Impact 3	
Mitigation measures	

Note: Additional mitigation measures as described above are to be attached as conditions of the business licence under;
Business Licence Schedule A) Section 3) "Environmental Stewardship".

D) Indicate the likely significance of any residual adverse environmental effects following mitigation (based on the following criteria: magnitude, geographic extent, duration, frequency of occurrence, and permanence):

	Negligible Effects – not likely to affect ecological or cultural integrity
	Minor Adverse Effects – insignificant impacts to ecological or cultural integrity
	Considerable Adverse Effects – there is potential for significant impacts to ecological or cultural integrity
	Not Addressed - the effects of the proposed licenced activities are not adequately assessed through the CSPR process

Note: If adverse environmental effects are rated as considerable,
DO NOT proceed with the Class Screening.
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Section 5 – Cumulative Effects Assessment

Cumulative Effects Evaluation

A) In consideration of:

- The nature of the proposed operation (e.g., type of activity, intensity of use);
- Areas of vulnerability affected by the proposed operation as indicated in Section 5.1, and;
- Information and direction provided in park management plans, state of the parks reports and other monitoring information;

Is the proposed operation likely to result in adverse environmental effects to any of the following cumulative effects indicators as identified in the Model Class Screening Report? (Consider spatial and temporal overlap of activities, additive or repetitive impacts, synergistic effects)

Indicator	**Yes**	**No**
Increase in human-wildlife interactions that may lead to habituation or human injury		
Increase in human caused displacement of wildlife from prime food sources		
Decrease in wildlife habitat effectiveness		
Disruption of wildlife during sensitive seasons including nesting, denning, rearing or breeding seasons		
Introduction or spread of invasive non-native plant species into new areas of the parks		
Introduction or spread of new non-native species that are a particular threat		
Impacts to known locations of rare or endangered plant species		
Impacts to areas of native vegetation at sensitive times.		
Decrease native fish populations		
Introduction or spread of new non-native species that are a particular threat		
Introduction or spread of new fish diseases that are a particular threat		
Increase accumulation of contaminants that could decrease water quality		
Regular or repetitive use of cultural resource sites		

Indicator	**Yes**	**No**
Impacts to the integrity or context of cultural resources		
Increased conflicts between user groups		
Decrease in visitor satisfaction		
Decrease Aboriginal land use experience		
Decrease Aboriginal land use harvest success rate		

B) If checking "yes" to any indicators in A), describe the specific contribution of the proposed operation to adverse cumulative environmental effects and outline mitigation measures as appropriate. Attach any additional information as required.

Contribution	
Mitigation measures	
Contribution	
Mitigation measures	

Note: Additional mitigation measures as described above are to be attached as conditions of the business licence under;
Business Licence Schedule A) Section 3) "Environmental Stewardship".

C) Indicate the likely significance of any residual adverse environmental effects following mitigation (based on the following criteria: magnitude, geographic extent, duration, frequency of occurrence, and permanence):

	Negligible Effects – not likely to affect ecological or cultural integrity
	Minor Adverse Effects – insignificant impacts to ecological or cultural integrity
	Considerable Adverse Effects – there is potential for significant impacts to ecological or cultural integrity
	Not Addressed - the effects of the proposed licenced activities are not adequately assessed through the CSPR process

Note: If adverse environmental effects are rated as considerable,
DO NOT proceed with the Class Screening.
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Section 6 – Species at Risk Act

Will the proposed project adversely affect species at risk, either directly or indirectly, such as by adversely affecting their habitat, and/or that would require a permit under the *Species at Risk Act* (SARA)?

For the purposes of this document, species at risk include:

- species identified on the List of Wildlife Species at Risk set out in Schedule 1 of the *Species at Risk Act (SARA*), and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act.*
- species that have been recognized as "at risk" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities.

Yes ___
No ___

Note: If answering yes, additional environmental assessment work or permitting under SARA may be required.

To obtain information on species at risk, consult the following:
COSEWIC www.cosewic.gc.ca
SARA Registry www.sararegistry.gc.ca

Contact Parks Canada Environmental Assessment Specialist
before finalizing the Class Screening Project Report.

Section 7 – Monitoring and Follow-up

Compliance monitoring, monitoring of impacts and follow-up activities related to most commercial guiding operations will be generally carried out as part of the regular duties of Resource Conservation and Public Safety Specialists and as indicated in Sections 3.6 and 3.7 of the Model Class Screening Report.

If considered necessary, describe any special requirements for compliance or environmental impact monitoring in relation to the proposed commercial guiding operation. Attach additional information as required.

Section 8 – Decision Statement

☐ Business License may be issued as the proposed activities are not likely to cause significant adverse environmental effects.

☐ Business License should not be issued because the proposed activities are likely to cause significant adverse environmental effects.

☐ The effects of the proposed licenced activities are not adequately addressed by the CSPR process and therefore an individual environmental assessment is required.

_____ _____

Applicant Date

_____ _____

Environmental Assessment Reviewer Date

_____ _____

Field Unit Superintendent Date

Appendix B

Activity-Specific and Site-Specific Mitigation Summary

General Mitigation for All Activities

In addition to the measures outlined below, business operators and guides are expected to comply with any local park regulations, policies, guidelines, travel restrictions, area closures, established reservation systems or other directives issued by Parks Canada for the purpose of mitigating environmental effects or ensuring public safety. Posted voluntary restrictions on trails should be considered as mandatory restrictions by commercial operators and remain in effect until acceptable trail conditions exist and closures/restrictions are lifted unless, through consultation with Parks Canada, special permission is granted. Business operators and guides are expected to follow other laws and regulations as applicable (i.e. boat safety).

Guides are expected to act as stewards, set proper examples for trail etiquette, and educate guests on the importance of keeping areas pristine. Guides are expected to monitor client actions and ensure that minimal impact practices are implemented.

Vegetation and Soil

- As part of a pre-trip briefing, operators and guides shall ensure that all clients are aware of national park regulations on picking or removing vegetation. Clients should be briefed on travel procedures including potential impacts to vegetation and soils prior to departure. Clients should be warned not to eat any edible plants or berries.
- Guides should request that clients check for and remove any bur-like seedpods or mud from boots, clothing and pets and dispose in garbage containers prior to departure to reduce risk of new weed infestations.
- Ensure that clients have proper footwear for the trail and trail conditions including boots and gaiters if appropriate. Soft sole shoes should be preferentially selected when trail conditions warrant and for around camp.
- Avoid using trails that have extensive wet areas or snow patches until later in the season when soils are dry and trails are clear of snow.
- Groups should stay to the middle of the trail even when conditions are wet to avoid widening or braiding of trails.
- Pass on wide parts of the trails to reduce trampling and trail widening.
- Do not use shortcuts or cut switchbacks and inform clients of the associated environmental impacts including vegetation damage, soil erosion, and damage to trail infrastructure.
- Do not make markers, cairns or inuksuks; never blaze trees or otherwise damage vegetation to mark a route.
- Use hiking poles as pointers, binoculars, spotting scopes, or other aids to assist in heritage interpretation from the trail and avoid having to move off of hardened surfaces.
- Concentrate traffic routes and rest stops in areas that are established for these purposes or that are already impacted.
- Guides and operators are asked to report adverse trail and facility conditions, vandalism, and user group conflicts to Parks Canada.

- Portable stoves, hibachis, or barbeques should be set up on durable, heat resistant surfaces and away from vegetation or litter wherever possible.

Commercial guides and operators are expected to limit their activities to informal trails wherever feasible. Where off-trail travel does occur, care and discretion is required in order to ensure that the benefits of off-trail travel are realized without causing additional environmental damage. The following mitigation must be followed:

- Guides should choose routes or locations that follow or utilise the most durable surfaces whenever possible. Rock, talus, gravel, sand, and gravel stream bottoms are considered to be the most durable surfaces. Snow is also a durable preferred travel surface provided that groups are equipped for comfort and safety.
- Guides should choose routes or locations that minimise impacts to vegetation and soils.
- Areas of naturally sparse vegetation are preferred routes as trampling can be easily avoided. When you must walk on vegetation use the following guidelines to choose the most resistant and resilient vegetation type. Choose dry vegetation and soils that are more durable than wet vegetation or soils. North of the tree line, avoid vegetated and soft soil areas, particularly grass-sedge meadows, which are critical feeding habitat for wildlife and are easily damaged by foot traffic. In steep terrain travel on rock outcrops or snow. Avoid soil-covered surfaces. When descending loose scree, move slowly and cautiously minimizing the movement of scree and the erosion.
- Guides should use discretion in the management of group travel and select the appropriate technique depending on the circumstances. If an informal trail or route is visible, ensure the whole group follows this trail. Also, in circumstances where travel is on durable surfaces it may be preferable to concentrate the group in one area or along one route. When traveling through areas of undisturbed vegetation (no informal trail or route is visible) groups should spread out laterally to avoid repeated trampling and the creation of informal paths.
- In general guides should avoid concentrating use in sensitive areas such as wet alpine meadows, steep slopes and riparian areas or other areas close to water.
- Select rest stops on durable surfaces.
- Fires are not permitted.

Wildlife

- As part of a pre-trip briefing, operators and guides shall ensure that all clients are aware of wildlife sensitivities and potential hazards, understand wildlife viewing and safety procedures and are aware of national parks regulations on feeding, enticing or disturbing wildlife. Clients must also be aware that the removal of bones or caribou antlers is prohibited in national parks.
- Guides shall manage groups during wildlife viewing opportunities such that the animal's normal behaviour is not disturbed by not approaching wildlife, keeping lines of escape open for the animal and clients, and keeping groups close together. Use binoculars in situations where it is desirable to enhance viewing opportunities.

- Guides shall maintain a distance of at least 30 metres from large wildlife species.
- Keep the animal's line of travel or escape route clear. If it approaches you, move away.
- Foxes and wolves can carry rabies. Do not allow them to approach you. Be especially suspicious if wildlife appears "friendly" or "tame".
- Retreat immediately if you notice signs of aggression or any behaviour change. Avoid direct eye contact. Animals feel threatened by this. Muskoxen have been known to charge and gore people when they felt threatened. Keep your distance.
- Guides shall maintain a distance of at least 300 metres from known wildlife den sites, calving areas and nest sites. Minimise close contact with nesting birds or young animals.
- Watch for bird nests and chicks so as not to step on them; many arctic birds are ground nesters. Section 6(a) of the *Migratory Birds Regulations* states that no one shall disturb or destroy nests or eggs of migratory birds.
- Guides shall leave the area immediately in the event that dens, nests or young animals are accidentally encountered.
- Operators should discourage clients from bringing dogs on guided excursions. In the event that it is necessary to bring a dog, they are to be kept on leash at all times and must not be left unattended.
- Guides and operators are asked to report wildlife sightings, unusual wildlife behaviour, encounters with wildlife, injured animals and carcasses to Parks Canada. Marked animals (radio collars, ear tags, leg bands on birds, neck bands on swans) and injured animals should also be reported.
- Operators and guides shall implement alternate trip or route plans as required to avoid close encounters with wildlife.

Operators and guides shall ensure that food and food smells are managed to avoid enticing wildlife:

- All garbage and food waste must be packed out. Garbage or food waste shall not be buried or otherwise disposed of in the backcountry. Garbage shall not be burned in any park.
- Minimize food smells, particularly from leftovers, by triple bagging them, placing in air tight containers or eating them.
- All dishes and food utensils shall be washed and stored immediately after use. Food particles shall be strained from dishwater and stored with garbage.

Aquatic Resources

Operators and guides should be aware that riparian areas are often susceptible to damage through trampling due to wet soil conditions. Aquatic wildlife, groundwater and surface water resources and riparian areas are among the most sensitive ecosystem features that may be impacted by outdoor recreation activities. Environmental management and mitigation is focused on preventing direct damage to sensitive aquatic wildlife and riparian vegetation and preventing chemical contamination of water resources.

- Guides should advise clients to bring their own water where feasible.
- When group water resources must be refilled guides should select access points on durable materials or use crossing structures wherever possible. All water should be should be considered potentially contaminated and should be boiled, or

filtered and treated chemically to eliminate water-borne pathogens.

- Rest stops and campsites should be placed on high dry ground away from the water's edge.
- Use alternate travel routes to and from the water's edge to avoid the development of new informal trails.

Operators and guides should take measures to prevent and minimize potential water contamination associated with human activities such as washing, bathing, and cooking.

- Never deposit garbage, food wastes or wastewater refuse in streams or lakes.
- Minimize use of soap and use biodegradable soaps for dishwashing and bathing when soap is necessary.
- Bathe or wash away from water sources (50 m) and avoid durable surfaces that lead directly to the water so that gray water may be absorbed and filtered by vegetation and soils before reaching any body of water. Residual soap should not be dumped in lakes or streams.
- Dispose of gray water by screening and/or removing all food particles, then dispersing at least 50m (200 feet) away from watercourses and sleeping areas.
- Treat drinking water by filtering, boiling or use of iodine to prevent disease.
- Store fuel in leak proof containers and use a funnel when pouring fuel from a container into a stove to reduce spillage. Refuelling of camp stoves should occur 100 m from the high water mark of any water body, and an absorbent cloth should be used to catch minor spills.
- Guides shall not dispose of excess fuel, food or materials anywhere in the backcountry – any excess food fuels or materials must be packed out and disposed of at an approved facility. Cigarette butts, candy wrappers and twist ties must also be packed out.
- Minimize the amount of food, cans, bottles and tin foil taken into the park to reduce litter.
- On your way out – when your pack is lighter – try to pick up any litter left by others. Report any large accumulations or large items, such as empty fuel drums, to park staff.

Cultural Resources

- Educate clients about the value of cultural resources when at a cultural site.
- Guides are responsible to ensure that clients do not remove any items from cultural sites or vandalize the sites.
- Guides are responsible to ensure that clients do not deface or write on rocks, outcrops, trees, logs or park infrastructure.
- Limit foot traffic to hardened trails in the area if cultural sites are exposed as a result of trail braiding or the development of informal trails.
- Report the discovery of an artefact or cultural site to Parks Canada – do not remove or otherwise disturb the site.
- Do not remove or disturb any rocks from any features that look – even remotely – like an archaeological site. These sites include cairns, tent rings, fox traps and food caches and are almost indiscernible to the untrained eye.

Aboriginal Land Use

Mitigation for protecting cultural resources, vegetation and soil will protect culturally important areas as well. Additional mitigation could be identified in site specific mitigation.

- Guides will inform clients about the right of Aboriginal people to participate in harvest for subsistence and the cooperative arrangements in place to ensure this harvest is sustainable.
- No interference with traditional activities is permitted.
- Visitors will not approach aboriginal camps unless invited by the members.

Visitor Experience

Large commercially guided groups may have a negative effect on the perception of the environment and the visitor experience of other park users. Crowding and noise at rest stops and viewpoints may affect the aesthetic experience and feelings of solitude and remoteness that many backcountry visitors seek.

- Operators shall comply with group size restrictions as per business licence stipulations, zoning and area management restrictions. Multiple groups must be separated by a minimum of 500 metres.
- Guided groups do not have precedence over other groups. Guides shall act in a courteous manner towards other user groups on the trail and concede the right of way to smaller groups.
- Where environmental impacts can be mitigated, guides should seek group consolidation, solitude and separation from other park users or groups at rest stops, viewpoints and campsites.
- Guided groups should travel as a group within calling distance from the front to the back of the group. Guided groups should attempt to keep noise to a minimum.
- Where feasible operators should try to minimize overcrowding by scheduling departure dates and times that avoid high use times. Guides should minimize overcrowding by managing the amount of time spent at high use sites.
- Guides should pick up garbage and take reasonable measures to restore impacted sites that are encountered during the course of an excursion.
- When requested, or when a perceived need arises, guides are expected to pass environmental management or interpretive information on to non-guided groups and to offer emergency or other assistance to non-guided groups when needed.
- Do not build cairns, other markers, or leave messages in the dirt.

Vehicle use can negatively affect the visitor experience:

- Multiple groups should try to share air access where appropriate.

Mitigation for Overnight

Vegetation and Soil

- Select campsites in durable locations where signs of occupation will be minimal, especially for base camps. Disperse tents; avoid repetitive traffic routes; and

concentrate kitchen and tarp sites where possible on rock, sand, gravel or naturally unvegetated sites. Avoid vegetated areas.

- Do not dig trenches around tents or build rock wind breaks.
- Do not remove any rocks from any features that look – even remotely – like an archaeological site, for example, tent rings, fox traps and food caches.
- If rocks are used to secure tents, return them to their original position and location.
- Wear soft shoes around camp to minimize the impact around the campsite.
- Concentrate tents and camp kitchens in areas that are established for these purposes or that are already impacted. Avoid making shortcuts between camps or kitchen areas.
- Do not "clean" sites of organic litter. Re-naturalize campsites and rest stops when leaving, covering scuff marks, replacing sticks or branches, raking matted grasses etc.
- Guides should monitor the impacts around campsites and move or rearrange camp as necessary to avoid permanent damage to vegetation or soils.
- Before leaving ensure the site is as clean as or cleaner than it was found.

Wildlife

- Cooking, eating and supply areas shall be set up at least 100 metres downwind from tenting areas.
- All food, including garbage, canned food, scented and flavoured toiletries (minimize the amount of them you bring in), used toilet paper, pet food and livestock feed, should be stored in one of the following methods, depending on the location:
    - If trees are present, hung between two trees at least 4 metres above the ground and one metre from the tree trunk, or stored securely.
    - Cliffs or big boulders may have storage sites that a bear cannot access.
    - In a waterproof package and sunk in the water.
    - If necessary, the airtight food package can be left on the ground in an open area away from tents.

- Ensure that food caches left unattended are secure from scavenging wildlife.
- Dispose of dishwater in designated areas, or broadcast at least 100 metres from your sleeping area.
- Campsites should be at least 200 feet from water and not near bird nests.

Mitigation for Dog-Sledding

Vegetation and Soil

- Dogs are not allowed to run free around camp. They must be in their harnesses or picketed. They must not be tied to trees, but to self carried anchors or to a rope that is stretched between two trees. Trees must not be limbed to make beds.

Wildlife

- All dogs must be on leashes or fixed lines at all times. No dogs are allowed to run free.
- While in the park and a few days prior to entering the park, dogs should only be fed commercial dog food. If dogs never eat commercial food, traditional food is acceptable.
- Storing and management of dog food should follow the same mitigations as for human food.

Aquatic Resources

- Provide Parks Canada with records (with dates) of your de-worming program and vaccinations (for at least distemper, parvo and rabies) signed by a practicing veterinarian.
- Stop dogs to defecate in the same location each trip. Clean up and transport out of park on a regular basis.
- Clean-up faeces at the trailhead and on the trail on a regular basis as agreed to by Parks Canada.
- To help control the spread of giardia virus in the park all dogs must be tied at least 100 m. from any water body. Dog scats that are on frozen water surfaces should be picked up and moved at least 100 m from the shoreline.

Mitigation for Over-Snow Vehicles

Vegetation and Soil

- Where over-snow vehicle trails exist from previous trips, use the same trails.
- Avoid vegetation as much as possible.
- Ensure the depth of snow is adequate to prevent damage to vegetation riding over.

Wildlife

- Operators shall educate clients on the potential impacts of winter recreation and on minimum impact practices as applied to winter activities.
- Guides shall minimise the number of individual snowshoe or ski or over-snow vehicle tracks established into an area.
- Guides shall not follow wildlife tracks in order to ensure or enhance viewing opportunities.
- Where feasible operators and guides shall avoid early morning or night trips to minimise impacts to nocturnal wildlife.

Aquatic Resources

- Use of frozen water bodies is encouraged to limit the amount of damage done to vegetation. Climbing riverbanks for shortcutting oxbows, etc. should be minimized to protect against erosion.
- When crossing riverbanks, select locations where snow cover is thick enough to buffer the bank from the effects of treads.
- When crossing watercourses banks should be approached at a 90_{o} angle whenever

possible to minimize disturbance to underlying soils and vegetation and prevent possible bank erosion.

- When crossing a watercourse, choose the shallowest sloping location of the bank in order to reduce the impacts of treads on underlying soil and vegetation which can result in bank erosion.
- Ensure there is adequate ice thickness to support the weight of the machine prior to crossing watercourses. Do not cross streambeds near areas where water is open.
- Ensure vehicle is well maintained and tuned.
- Install proper jets for the elevation the vehicle will be operating at and adjust the clutch accordingly to reduce emissions.
- Do not use after-market performance "pipes".
- Use biodegradable synthetic low-particulate lube oil.
- When purchasing new machines, consider more environmentally friendly models.
- Fuel should be kept in sealed containers and appropriate nozzles/funnels should be used during refuelling. Refuelling should take place 300m away from rivers, lakes or ponds.
- Absorbent cloths should be used to catch minor spills.

Mitigation for Cross-country Skiing

Wildlife

- Operators shall educate clients on the potential impacts of winter recreation and on minimum impact practices as applied to winter activities.
- Guides shall minimise the number of ski tracks established into an area.
- Guides shall not follow wildlife tracks in order to ensure or enhance viewing opportunities.

Mitigation for Fishing

Wildlife

- Dispose of entrails properly to reduce the risk of attracting bears and creating a safety hazard for visitors (Parks Canada 2002d). Dispose of entrails by puncturing the swim bladder (this allows entrails to sink) and deposit into deep water, using a boat if available (Parks Canada 2002d).
- Always clean your catch well away (300 m) from campsites.

Aquatic Resources

A National Park fishing licence must be purchased and Park fishing regulations must be followed. The regulations include guidelines for catch-and-release practices (Claggett 2002) which include:

1. **Don't play fish to exhaustion.** Instead, use a landing net to bring fish under control before they're played out.
2. **Wet your hands when handling fish.** Dry hands and gloves will remove the protective mucous coating and scales.

3. **Handle fish in the net.** Grasp them across the back and head for firm but gentle control.
4. **Turn fish belly up while removing hooks.** This disorients fish momentarily for easier, quicker handling.
5. **Don't remove swallowed hooks.** Just cut the line next to the fish's mouth.
6. **Don't keep fish out of the water more than 10-15 seconds.** Fragile gills are damaged after that, especially in cold weather.
7. **Revive the fish before releasing (The Catch and Release Foundation 2001).** Hold it under the belly and by the tail; keep it in an upright position underwater. If you are fishing in a river or stream, hold the fish facing the current. Be patient and give the fish as much time as it needs to recover and swim away on its own.
8. **Bring a fish up slowly from depths 30 feet or greater (The Catch and Release Foundation 2001).** This can allow the fish to decompress and increase survival chances.
9. Pause while reeling the fish in and allow the air or gas from the fish's swim bladder to rise to the surface.
10. **Don't cull fish.** Decide quickly whether to keep the fish or not. Do not retain fish on stringers or in live wells, only to be set free when a larger fish is caught. This practice results in an increased mortality of released fish.

- Guides must educate clients about the importance of non-sport fish to prevent the destruction of these species when they are accidentally caught (Mayhood 1992).
- Avoid wading in rivers, creeks or steams when fish are spawning in that particular area.
- This requires knowledge of species diversity in the different streams, rivers and creeks as well as their biology.
- Retrieve as many snagged hooks and lines as possible.
- Always rinse all mud and debris from all waders and gear that will enter the water to avoid introducing exotic species. If waders or equipment is known to come from an area heavily affected by whirling disease, disinfect the equipment with bleach (1 part chlorine to 9 parts water for 10 minutes), rinse and let dry in the shade (The Whirling Disease Foundation).
- Fish entrails should be sunk in the middle of the lake, stream or river after puncturing the swim bladder or packed out.

Mitigation for Non-Motorized Boating

Seals, Walrus and Seabirds Mitigation

- Vessel behaviour should be based on the most sensitive or easily disturbed species on site (which may not be the species that is sought for viewing)
- Approach at an indirect angle that provides the maximum visibility for the animals or birds
- Move closer gradually
- Monitor behaviour on approach. Watch for signs of agitation and increase your angle *away* from the animals or birds if they become visibly agitated.

- Do not approach head on
- Avoid loud noises
- Avoid rapid movements
- Avoid sneaking up to animals
- Use radio communication with others on-scene to assess the situation
- Avoid circling islands or traveling close to shore at close distances
- Kayakers should avoid hugging the shore
- Use binoculars, instead of your vessel, to bring animals into closer view
- Birthing areas are "*no go zones*": remain at least 250 m offshore
- Avoid approaching pinnipeds on cliff areas or areas with steep drops where animals may injure themselves if they flee the area
- Do not approach closer than 100 m "*no go zone"*
- Be aware that this 100 m "*no go zone*" is a minimum distance: a greater distance may be required earlier in the season and/or year round at certain sites
- If stopping to view pinnipeds, avoid rapid movements: stop and depart slowly and keep a steady speed when viewing.
- Do not go ashore
- Up to 3 vessels "*under 5 tons*" or 1 vessel "*over 5 tons*" may be inside the *"close viewing zone*" (100-250 m) at one time
- If an animal approaches the vessel, it is appropriate to observe it at whatever distance the animal chooses

Whales Mitigation

- Approach whales from the side or rear; do not approach whales head on
- Establish layout and movement of other vessels before approaching whales
- Move closer gradually
- Approach traveling whales from behind or from the side with speed and direction consistent with the behaviour of the whales
- If whales appear to be avoiding the vessel, increase distance between the vessel and whale
- Don't chase whales
- Vessels should be positioned only on one side of the whales; whales should not be circled
- Positioning vessels ahead of whales and waiting for the whales to pass is not to be used
- Avoid crossing ahead of traveling whales
- If crossing ahead of whales is unavoidable, there should be 800 m clearance
- Do not approach closer than 100 m "*no go zone*"
- Up to 3 vessels "*under 5 tons*" or 1 vessel "*over 5 tons*" may be inside the "*close viewing zone*" at one time
- Do not get between a mother and calf
- To avoid startling whales, paddlers should make some sort of regular, repetitive, low volume noise (like tapping floor of vessel) when inside the "*close viewing zone*"
- Avoid sudden alteration of vessel direction

- Avoid sudden alteration of vessel angle
- If a whale approaches the vessel, stop until it moves away at least 50-100 m

Site Specific Mitigation

Aulavik

Management of human waste

The following mitigations are taken from the draft *Human Waste Guidelines – Western Arctic Field Unit* (Parks Canada 2010). All users of Aulavik National Park are challenged to pack out their solid human waste wherever feasible. Numerous commercially available waste disposal products exist that offer portable, low cost options for safe, lightweight means to collect, transport and dispose of human waste.

Where it is not feasible to pack out solid human waste, users are asked to observe the following practices:

- Encourage clients to use washrooms before boarding the aircraft.
- Defecate at least 50 metres away from aircraft landing areas, campsites, trails and freshwater sources.
- Leave faeces exposed on tundra or bury in a shallow hole of no deeper than 15 cm. Cover faeces with material excavated from hole.
- South facing sites may accelerate decomposition and are preferred sites for defecation.
- If travelling along a body of salt water, it is acceptable to deposit faeces in a shallow pit below the high water mark.
- Pack out toilet paper when possible. Very small amounts may be ignited if in a controlled environment.

Users are not required to pack out urine; however, introduction of human urine into freshwater sources must be minimized. Users are asked to observe the following practices:

- Urinate at least 50 metres from aircraft landing areas, campsites, trails and freshwater sources.
- Rocky or gravely sites may reduce attraction from wild animals and are preferred sites for urination
- Pack out toilet paper when possible. Very small amounts may be ignited if in a controlled environment.

If collecting solid human waste for appropriate disposal outside of national parks, urinate separately before defecation wherever possible. Urine adds significant weight and volume to waste accumulations for disposal.

Large Groups

Groups planning on utilizing the same location for more than 20 person days may be required to pack out all solid human waste. For example, a group of 4 persons camped at one location for 2 days would equal 8 [4x2] person days. A group of 5 persons planning on using a base camp for 7 days would equal 35 [5x7] person days. Large groups or those intending on utilizing a base camp are asked to contact the Western Arctic Field Unit for additional direction.

Snow
Guides shall ensure that groups move well off main trails or landing areas for bathroom breaks. Latrine areas should be located in sites not likely to be traveled through by others, well away from water bodies and buried deeply when leaving.

Over-snow Vehicles

Snowmobile guides in Aulavik must:

- Belong to an Inuvialuit firm
- Provide detailed route descriptions which avoid impacts to important Park cultural and natural resources
- Apply for an over-snow vehicle permit for each trip into the Park
- Not engage in traditional harvest activities
- Travel only during times that will have the least effect upon wildlife populations
- Demonstrate that the trip would offer a reasonable visitor experience in keeping with national park values

Cultural Sites

Guides should be familiar with, and avoid areas of cultural significance identified below.

- Guides should be aware that there is local community concern over visitation of gravesites. Guides should respect these concerns and practice voluntary avoidance of gravesites.
- Guides should leave in place and report locations of found artefacts.
- Guides are encouraged to include cultural interpretation of Park resources and are advised to work with PC to locate cultural sites which are less sensitive to disturbance for this purpose. PC will provide background information and assist with developing interpretive materials.

Head Hill Site 130X88

The site consists of a series of muskox kill sites and dwelling remains on the crest of a hill on the north side of the Muskox River, west of its confluence with the Thomsen River. The remains of an estimated 800-1000 muskoxen, including 561 skulls are at the site, which stretches about 350m on a north-south axis along the hillcrest. The site may have been occupied from A.D. 1600-1771 during the "Intermediate Interval" which is a transitional period between Thule and Copper Inuit and by the Copper Inuit from A.D. 1851-1890.

Nasogaluak Site 130X4

The site is located on the western and southern edges of a high terrace or bluff overlooking the Thomsen River and valley. The valley is broad with little topographic

variation and the river meanders across a wide and often sandy floodplain. The site features, consisting primarily of caches (about 40), are discontinuously spread over a large area measuring 20,000 sq. m. Copper Inuit were the likely inhabitants of the site, within a time period between A.D. 1851-1890.

HMS Investigator Cache Site (M'Clure's Cache Site) 130X107

The site is located on Providence Point Peninsula, about 2km south of Providence Point, along the western shore of Mercy Bay. The site consists of three clusters of debris, abandoned by Robert M'Clure and his crew of the Investigator (1851-1853). This site is a focal point of Inuvialuit travel and collection routes for Banks Island.

Burials

Isachsen Sands 130X59

This site is about 20km south of the Head Hill Site, on the northwest bank of the Thomsen River. Three tool caches believed to be burial caches are located away from the tent rings and meat caches of the main habitation area of the site.

130X14 (Possible Burial)

The site is located on the west side of the Thomsen River on a stony, well-drained terrace about 4m above the river and 10m west of the water's edge. A boat-shaped arrangement of stones is considered to be a possible grave.

130X34 (Possible Burial)

The site is on the west side of the Thomsen River on a low ridge in an area dominated by large, thin stone slabs. This extensive site consists of about 80 slab caches, a few dismantled tent rings and a possible grave formed of slabs.

130X38 (Probable Burial)

The site is spread along the east edge of a gravely terrace about 20m above and 25m south of a seasonal creek that flows north to the Thomsen River. Two probable graves were recorded consisting of small and large cobbles in approximately parallel lines.

130X111 (Possible Burial)

The site is on the crest of a low hill paralleling a small seasonal stream to the north, draining into a creek on the west side of the site. A possible grave measures 1.5m x 2.5m, is roughly oval in shape and consists of small cobbles. No artefacts or bones are associated with the feature.

130X126 (Possible Burial)

A possible grave 3.2m x 1.2m in size, covered by heavy vegetation is recorded 750m west of the Thomsen River. No associated artefacts or bone is present.

130X153 (Possible Burial)

A tent ring, cache and possible grave are located approximately 350m west of the Thomsen River. The grave is rectangular, measures 2.8m x 1.3m and is covered by considerable vegetation.

130X171 (Probable Burial)
The site is located on the east side of the Thomsen River on a terrace/spur 30m above the river, offering a commanding view of the river valley. The feature is ovoid in shape measuring 3.0m x 2.3m with numerous small, flat stones covering a 1.6m x 1.0m area composing the probable grave. Approximately 18 possible human bones and several artefacts are associated with the feature.

130X209 (Possible Burial)
Located on the west side of the Thomsen River, north of an unnamed stream and about 7.2km northwest of Dissection Creek. The possible grave consists of 17 small rocks and measures 1.8m x 1.1m and appears to be untouched. No associated artefacts or bone was observed.

130X213 (Possible Burial)
The site is located about 400m west of the Thomsen River, near site 130X29. The possible grave is rectangular shaped, its long axis oriented north-south. It is noted as being an appropriate size and shape for a grave.

130X218 (Possible Burial)
The site is on the west side of the Thomsen River, on the edge of a grassy hill near the head of the outside bend of a large meander in the river, across the river from "Trout Beach". The possible grave, measuring 2.7m x 2.3m, is made of large and small boulders. Three caches are also present at the site, but no artefacts or faunal material is associated with the features.

130X229 (Possible Burial)
A possible grave situated on a small knoll on the north bank of the Muskox River, a short distance from the Thomsen River and about 20km north of Isachsen Sands. The feature is formed of flat rocks and cobbles covering a 1.0m x 2.5m area. A number of artefacts and bone are associated.

Tuktut Nogait

Management of human waste

The following mitigations are taken from the draft *Human Waste Guidelines – Western Arctic Field Unit* (Parks Canada 2010). All users of Tuktut Nogait National Park are challenged to pack out their solid human waste wherever feasible. Today, numerous commercially available waste disposal products exist that offer portable, low cost options for safe, lightweight means to collect, transport and dispose of human waste.

Where it is not feasible to pack out solid human waste, users are asked to observe the following practices:

- Encourage clients to use washrooms before boarding the aircraft.
- Defecate well away from campsites and trails, and at least 50 metres from freshwater sources.

- Leave faeces exposed on tundra or bury in a shallow hole of no deeper than 15 cm. Cover faeces with material excavated from hole.
- South facing sites may accelerate decomposition and are preferred sites for defecation.
- Pack out toilet paper when possible. Very small amounts may be ignited if in a controlled environment.

Users are not required to pack out urine; however, introduction of human urine into freshwater sources must be minimized. Users are asked to observe the following practices:

- Urinate at least 50 metres from aircraft landing areas, campsites, trails and freshwater sources.
- Rocky or gravely sites may reduce attraction from wild animals and are preferred sites for urination
- Pack out toilet paper when possible. Very small amounts may be ignited if in a controlled environment.

If collecting solid human waste for appropriate disposal outside of national parks, urinate separately before defecation wherever possible. Urine adds significant weight and volume to waste accumulations for disposal.

Large Groups
Groups planning on utilizing the same location for more than 20 person days may be required to pack out all solid human waste. For example, a group of 4 persons camped at one location for 2 days would equal 8 [4x2] person days. A group of 5 persons planning on using a base camp for 7 days would equal 35 [5x7] person days. Large groups or those intending on utilizing a base camp are asked to contact the Western Arctic Field Unit for additional direction.

Snow
Guides shall ensure that groups move well off main trail or landing area for bathroom breaks. Latrine areas should be located in sites not likely to be traveled through by others, well away from water bodies and buried deeply when leaving.

Cultural Sites

Guides should be familiar with, and avoid areas of cultural significance identified below.

- Guides should be aware that there is local community concern over visitation of gravesites. Guides should respect these concerns and practice voluntary avoidance of gravesites.
- Guides should leave in place and report locations of found artefacts.
- Guides are encouraged to include cultural interpretation of Park resources and are advised to work with PC to locate cultural sites which are less sensitive to disturbance for this purpose. PC will provide background information and assist with developing interpretive materials.

300X189 (Burials)

The site is on the west side of the Hornaday River, atop the highest bluff in the area, just east of a small lake, and south of a creek. The creek runs eastward down the bluff and into the Hornaday River. A long lake, generally oriented north-south, lies about 1.6km to the west-southwest, and a very large, unnamed lake lies about 3.7km to the south-southwest. The site consists of two graves, covered by slabs and boulders, with chambers about 1m square. Pieces of wood are scattered around the perimeter of each grave, which are 10m apart, centre-to-centre. The graves could relate to either Copper Inuit or Mackenzie Inuit, dating as far back as A.D. 1725.

300X246 (Possible Burial)

This site is on the west bank of the Hornaday River, on east-sloping land about 0.5km south of La Ronciere Falls. A bare knoll is located about 150m north of the site. It is speculated to be a grave, based on the similarity of features (made of wood) in Ivvavik (Adams 1999).

300X284 (Burial)

The site is high atop the edge of a rocky outcrop, above the western bank of the Hornaday River. It is just east of a small tundra lake and about 100m north of a creek, and lies between the large site 300X183 and the graves at 300X189.

300X321 (Possible Burial)

The site is located on a high point of land on the west side of the Hornaday River 1.5km away, and backing on a small low spot containing a lake and three small ponds feeding the Hornaday River by a stream. The presence of possible grave goods and bone, as well as the unusual form of the feature suggests it is a possible grave. It rests about 6m from the northwest corner of the landform in a rock strewn gravel topped ridge with boulders and some exposed bedrock and light vegetation cover.