Moose Lake
Access Management Plan

Alberta

Moose Lake Access Management Plan
February 8, 2021

ISBN 978-1-4601-5024-5

Table of Contents

Figures and Tables

Executive Summary

The Moose Lake 10km Zone Access Management Plan (Moose Lake Plan) identifies management actions that are intended to support the achievement of three outcomes:

- Ecological integrity,
- Exercise of Section 35 rights and traditional land uses, and
- Well managed development of resources

The Moose Lake Plan applies to the Moose Lake 10km zone, an area located approximately 100 km northwest of Fort McMurray. This 10 kilometre zone extends from the boundary of Fort McKay First Nation's (FMFN) Gardiner and Namur Lake reserves (Reserves No 174A and 174B), known locally as the Moose Lake reserves.

The 10km zone includes portions of the Birch Mountains Wildland Provincial Park and portions of the Red Earth Caribou Range. The Moose Lake Plan and its associated management direction will apply to all Crown land within that 10km zone. This area has been identified as a place of importance by FMFN who see this as their last meaningful place to practice Treaty rights and traditional uses. The area is also considered important by the Fort McKay Metis and other Indigenous groups for traditional uses.

The Moose Lake Plan is the culmination of an extensive planning effort pursued by FMFN since the early 2000's to address concerns regarding resource development and associated environmental impacts on the exercise of Treaty rights, traditional land uses, cultural practices and associated interests on and near their Moose Lake reserves.

Extensive engagement with Indigenous groups and other stakeholders has occurred over previous planning efforts to develop and review proposed management direction. The Government of Alberta has worked with FMFN to complete a plan under previous commitments (2012, 2015 and 2016) with some opportunities for other Indigenous Groups and stakeholders to participate in both the development and review of draft plans developed as part of those efforts. This Moose Lake Plan is the result of a government commitment in 2020 to partner with the FMFN, and engage the Fort McKay Métis, energy and forestry resource tenure holders, and other Indigenous communities and organizations in northeast Alberta in finalizing a Moose Lake Plan.

While bitumen extraction remains the principal activity associated with development disturbance in the 10km zone, forestry, Indigenous traditional land use, commercial trapping, guiding/outfitting operations, and public recreational activities such as hunting and fishing also occur within the area. There is also one established hunting/fishing lodge located on Crown Land within the planning area.

The Moose Lake Plan provides greater clarity to regulatory decision-makers in relation to natural resource development and land management in this 10km zone. The Moose Lake Plan includes direction for land and footprint management, air quality, water quality and quantity, wetland abundance and health, fish and wildlife management, monitoring, and governance.

The Moose Lake Plan includes direction as follows:

Land and Footprint Management

- The Moose Lake Plan limits the total amount of buffered footprint allowed for industrial resource development in the 10km zone to 15 percent or 15,537 ha. The disturbance limit provides sufficient land base for resource development while at the same time addressing the potential for cumulative impacts, and supporting traditional use and ecological integrity outcomes.
- The allocation of the disturbance limit will be by resource sector and will enable sector-specific project planning to occur. Any physical footprint, regardless of available disturbance footprint, remains subject to *Oil Sands Conservation Act, Environmental Protection and Enhancement Act, Water Act, and Public Lands Act* approvals.

- Forestry, aggregate (sand and gravel), and Petroleum Natural Gas sectors will also be included in the allocation of disturbance limits
- Dispositions for coal and metallic and industrial minerals will not be issued in the 10km zone
- No new surface resource development will be permitted within 1 km of the boundaries of the Moose Lake Reserves or the ordinary high-water mark of Buffalo (Namur) and Moose (Gardiner) Lakes.
- Culturally relevant conservation and reclamation plans will be required for all approved developments.
- Reclamation and monitoring data will be collected and reported through a transparent and publicly accessible process.
- Surface disturbance on new leases issued for sub-surface agreements will prohibit active resource production and be limited to lower disturbance activities such as access, monitoring, and exploration.
- Restoration of legacy seismic lines throughout the 10km zone is an important action due to its direct impact on disturbance limits and sector allocations. The Government of Alberta will oversee the planning and operational delivery of the restoration of legacy seismic lines within the 10km zone.

<u>Infrastructure Management Conditions:</u>

- The construction and operation of central processing facilities, aerodromes, landfills, and permanent work camps are not permitted within the 10km zone.

Air Management

Moose Lake air management criteria will include enhanced air quality management and monitoring for the 10km zone. The intent is to ensure air quality on the Gardiner and Namur Lake reserves and in the 10km zone is proactively managed and consistent with the Lower

Athabasca Regional Plan (LARP) Air Quality Management Framework principle of keeping clean areas clean. Main components include:

- Requirements and support for ambient air quality monitoring
- Establishing ambient air quality targets
- Use of Best Available Technology Economically Available (BATEA)

Water Management

The Moose Lake Plan is intended to support the protection of surface and groundwater to maintain watershed function and integrity. The Moose Lake Plan includes a number of management requirements to protect the Hamlet of Fort McKay's drinking water supply and other drinking water uses from Buffalo (Namur) Lake, Moose (Gardiner) Lake and the Ells River watershed and to manage water resources in consideration of Section 35 rights and cultural practices. These management requirements include:

- Direct surface water withdrawals from Buffalo (Namur) Lake, Moose (Gardiner) Lake and the Ells River are prohibited for thermal injection purposes. ; this also applies to groundwater withdrawals from surficial aquifers within 3 km of the Ells River
- Water allocation volumes within the 10km zone will be protective of Moose (Gardiner) and Buffalo (Namur) lakes, reflect cumulative allocation limits for the Ells River, and be informed by Alberta's Surface Water Allocation Directive (2018).
- A groundwater / surface water interaction model will be developed to assess possible impacts to surface water.
- Erosion control for road crossings and culverts are to be designed to accommodate 1 in 25 year 24 hour precipitation events.
- Conditions to minimize potential surface water and groundwater contamination through additional well pad monitoring and enhanced well pad precipitation design.

Fish and Wildlife Management

- Alberta Environment and Parks will develop lake-specific fisheries management objectives for Moose (Gardiner) and Buffalo (Namur) lakes based on the principle that First Nations and Métis traditional land use and cultural practices are an important component in the development of those objectives
- Wildlife management and habitat conservation objectives for the 10km zone will be identified and considered when revising broader wildlife management plans, habitat management plans, or species recovery plans that encompass any portion of the 10km zone. Management objectives and associated plans will recognize that conservation of populations, followed by rights under section 35 of the Constitution Act, 1982 are priority considerations.

Technical Advisory Committee

- Alberta Environment and Parks will establish an inclusive Technical Advisory Committee (TAC) with membership from local Indigenous communities and companies with operations within the 10km zone to facilitate technical cooperation, support implementation of the Moose Lake Plan and provide recommendations to government regarding the effective management of the Moose Lake 10km zone.

Moose Lake Trail / Access

The Moose Lake Trail is intended to provide consistent, reliable, and safe access for members of the FMFN to the Moose Lake reserves. Other Indigenous persons with a historical pattern of traditional land use in the 10km zone, especially the Fort McKay Métis, will also benefit from the Moose Lake Trail.

- Access to the Moose Lake Trail shall be managed to reduce non-essential industrial use.
- Access, including any new access within this zone will be managed to minimize creation of additional footprint and to reduce user impacts to ecosystem intactness and fish and wildlife populations and habitat, and to support traditional use.

Performance Management and Monitoring

A monitoring program, including community-based monitoring, will be established through the activities of the Technical Advisory Committee. Monitoring is essential to have accurate representation of reference condition, to track resource development footprint including reclamation, and to determine if adjustments to management direction may be needed in future Moose Lake Plan revisions. Monitoring includes:

- Surface and Groundwater
- Wildlife
- Air
- Reclamation, and
- Resource Development Footprint tracking

Plan Implementation

More detail and rationale for these and all management requirements is included within the full Moose Lake Plan. This plan will initially be implemented as policy prior to its recommended incorporation into LARP as a component of a sub-regional plan (which may include regulatory details for specific components of the plan).

1. The Moose Lake Area

The *Moose Lake Access 10KM Zone Management Plan* (Moose Lake Plan) applies to the area delineated by a 10-kilometre extension around Fort McKay First Nation's Moose Lake ***reserves*** 174A and 174B (Figure 1, page 8). This includes the Fort McKay First Nation's reserves, Moose (Gardiner) and Buffalo (Namur) lakes, Big Island Lake, Sand Lake, other smaller water bodies, a portion of the Birch Mountains Wildland Provincial Park, and tenured and untenured ***provincial Crown land*** designated as "mixed-use" under the Lower Athabasca Regional Plan (LARP). The 10-kilometre zone (10KMZ) also overlaps with the Red Earth Caribou Range. The Birch Mountains Wildland Provincial Park is managed under Alberta's *Provincial Parks Act* to support environmental objectives including ***conservation*** of ecological systems and biological diversity, or "***biodiversity***," low-impact backcountry recreation, and minimal, managed land ***disturbance***. Fort McKay First Nation's Moose Lake reserves are under federal jurisdiction and subject to bylaws passed by the Fort McKay First Nation.

The Moose Lake planning area is located in the Athabasca Oil Sands Area, approximately 100 kilometres northwest of Fort McMurray and 65 kilometres northwest of the Hamlet of Fort McKay. This area is of cultural and spiritual importance to the members of the Fort McKay First Nation and Fort McKay Métis, whose ancestors lived in the area for multiple generations. Today, the Moose Lake reserves are located within a relatively undisturbed boreal forest wilderness area in what the Fort McKay First Nation and Fort McKay Métis consider to be traditional territory.

Importance of Moose Lake to the Fort McKay First Nation

The Government of Canada executed Treaty 8 in 1899 with First Nations people across a southern portion of the Northwest Territories, the northwest corner of Saskatchewan, northern Alberta and British Columbia east of the Rockies. Canada set aside reserve lands (I.R. 174A and 174B) for the exclusive use and occupation of the Fort McKay First Nation in 1915 known by band members and other Indigenous peoples colloquially as the "Moose Lake reserves." These lands have been in continuous use for countless generations. The resolution of a Treaty Land Entitlement Claim in 2004 included new lands added to the Moose Lake reserves less than two years after Fort McKay First Nation initiated efforts to preserve and enhance the ecological and cultural integrity of the Moose Lake area to support traditional land uses and the preservation and transmission of its Cree and Dene cultures to future generations.

Fort McKay First Nation believes Moose Lake is, therefore, vital for the meaningful exercise of constitutionally recognized and affirmed Treaty rights, traditional land uses, and cultural practices. Fort McKay First Nation members also believe strongly that Moose Lake is the area best suited to preserve and transmit Indigenous culture to their children and grandchildren.

Importance of Moose Lake to the Fort McKay Métis

The Hamlet of Fort McKay is an Indigenous community, made up primarily of the Fort McKay Métis and the Fort McKay First Nation. The majority of community members share kinship bonds and have a similar and shared experiences related to adjacent industrial impacts on their traditional land use. The Fort McKay Métis have used the Moose Lake area for generations, and have regularly partnered with the First Nation in efforts to preserve and enhance the region's ecological and cultural integrity.

In this plan, the Metis living in the Hamlet of Fort McKay are collectively referred to as the Fort McKay Métis. The Moose Lake Plan recognizes and supports ongoing use of public land within this planning area for the Fort McKay Métis to exercise traditional land uses and pursue cultural practices. Some of the Fort McKay Metis individuals are recognized harvesters under the Government of Alberta's Metis harvesting policy, which pertains to individuals who might be beneficiaries of a Metis aboriginal right within the meaning of section 35 of the Constitution Act, 1982. The Fort McKay Métis believe the safeguarding of the area will support the preservation and transmission of their heritage, which includes the interweaving of Cree, Dene and Métis cultures, for future generations.

The Moose Lake area also contains dispositions issued by the Province for natural resource development anticipated over the next several decades related primarily to in-situ oil sands extraction. Except for several small areas, virtually all the mixed-use lands within the 10KMZ are under tenure for oil sands development (see Figure 2, page 9).

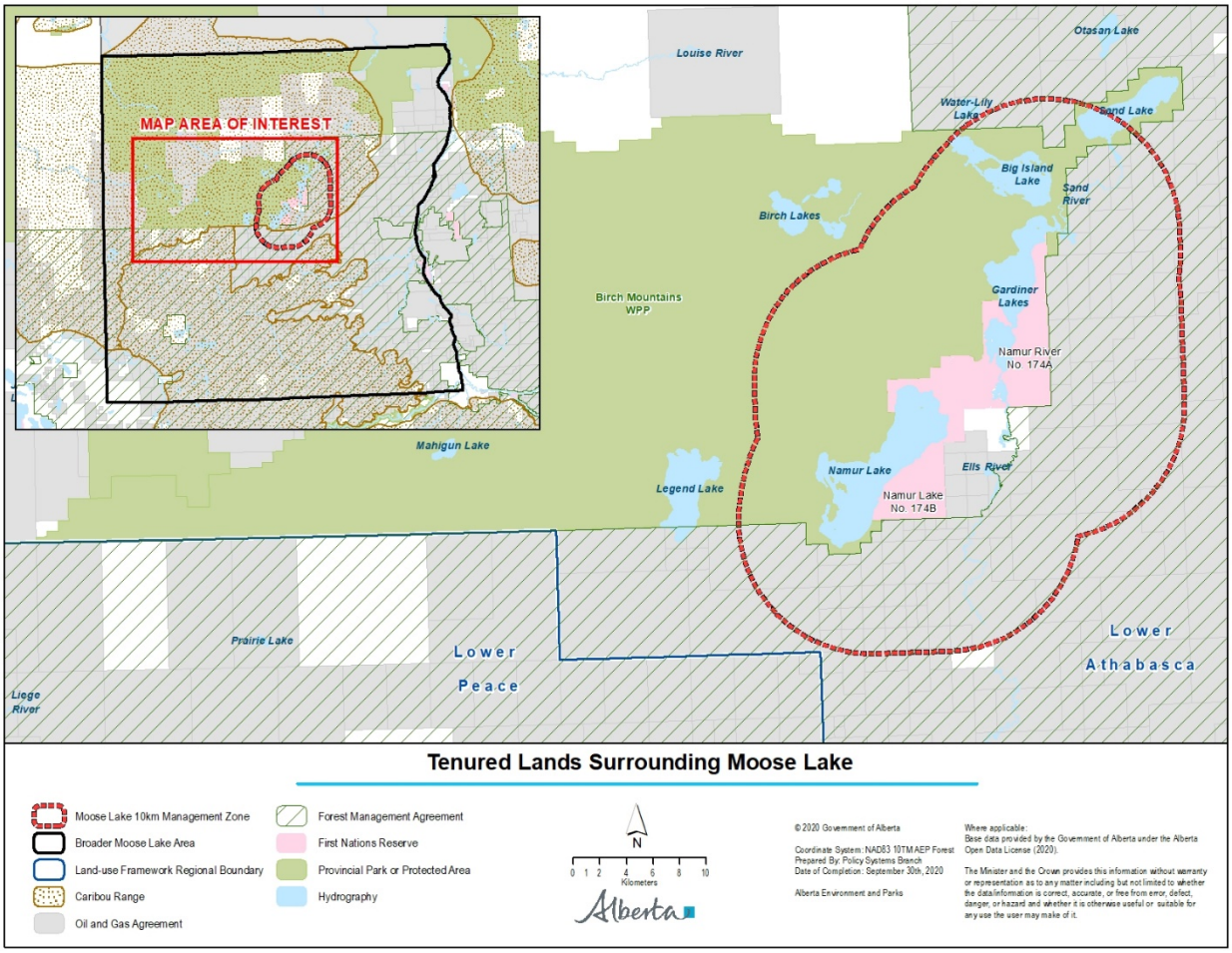
To put the 10KMZ into perspective, the Athabasca Oil Sands Area is ~93,000km^2. Fort McKay First Nation's self-described traditional territory is 39,000 km^2. The Moose Lake 10KMZ is 1,030 km^2, representing 2.6 percent of the area Fort McKay First Nation considers to be traditional territory and 1.1 percent of the Athabasca Oil Sands Area.

Current Land Use Status

Bitumen recovery is the industrial ***activity*** with the greatest potential to disturb the natural landscape in the 10KMZ; however, other activities that may also contribute to landscape impacts include but are not limited to forestry, sand and gravel, petroleum and natural gas, and recreational uses including off-highway vehicles.

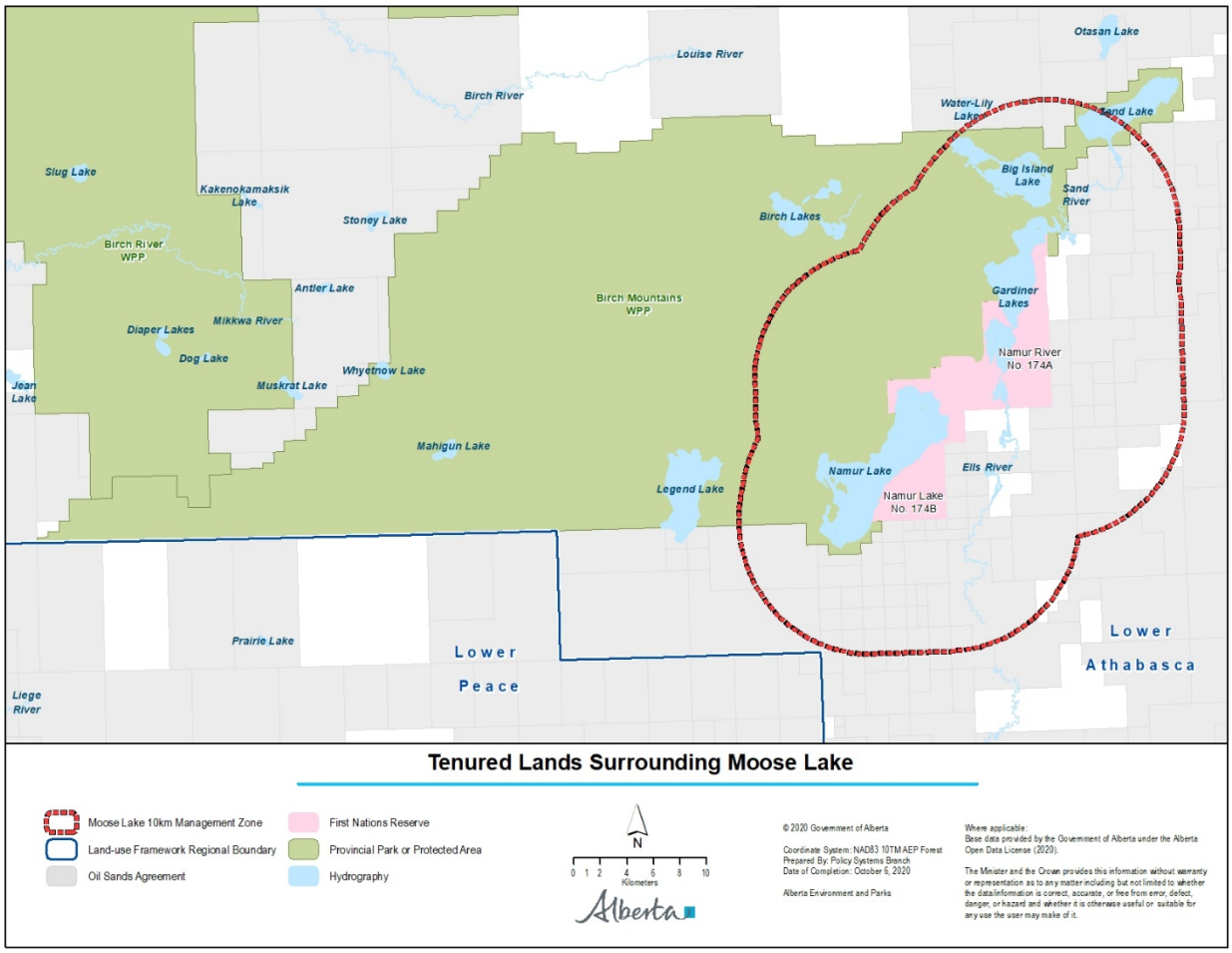
While most of the mixed-use land in this planning area is under subsurface mineral lease, at the time this plan was submitted for approval there were no in situ oil sands projects in an operational phase of development inside the 10KMZ. A forest management agreement with an embedded conifer timber quota covers 48 percent of the 10KMZ (89 percent of the mixed-use area). There is one small aggregate disposition for the extraction of sand and gravel. There is also one established hunting and fishing lodge located on provincial Crown land in the portion of the Birch Mountains Wildland Park that is within the 10KMZ at Buffalo (Namur) Lake.

Figure 1: Moose Lake area and 10 kilometre management zone



Tenured lands include Oil Sands Leases, Petroleum Natural Gas Leases, and Forest Management Agreements

Figure 2: Oil sands Tenure in Moose Lake area and 10 kilometre management zone



2. Purpose of the Plan

The purpose of the Moose Lake Plan is to define outcomes and ***management actions*** to maintain ecological integrity and ***biodiversity*** within the 10KMZ to support the exercise of ***section 35 rights***[1], traditional land uses and cultural practices while simultaneously enabling well-managed, responsible, development of resources.

A "Policy*Plus*" Plan

The Moose Lake Plan builds upon existing Government of Alberta legislation and policy, wherever applicable with the addition of specific management criteria to support the achievement of the plan's Vision and Outcomes.

The Moose Lake Plan includes management actions for land and footprint management, air quality, water quality and quantity, wetland abundance and health, fish and wildlife management, monitoring, and governance.

The Government of Alberta is committed to managing the ***cumulative effects*** of resource development on air, water, land and biodiversity at the regional level. Cumulative effects management typically focuses on achieving defined outcomes, understanding the ***effect*** of multiple development pressures (existing and new), assessing risk, working collaboratively with shared responsibility for meaningful action, and improving the integration of economic, environmental and social considerations.[2] While current regulations and policies exist to guide resource development at both a provincial and project level, including environmental management frameworks specific to the Lower Athabasca Region, the Moose Lake Plan identifies additional management criteria for the purpose of meeting outcomes specifically identified for this area.

2.1 Vision

The Moose Lake Plan distinguishes the 10KMZ from other mixed-use lands within the Lower Athabasca Region and encompasses a comprehensive, integrated approach to management that acknowledges and seeks to protect unique features of the landscape that are important to Fort McKay First Nation, Fort McKay Métis, and other ***Indigenous peoples***. The Vision for the Moose Lake Plan is to adopt outcomes and management actions to support:

- the exercise of s. 35 rights, traditional land uses and cultural practices, and the transfer of Indigenous knowledge to future generations by members of the Fort McKay First Nation, Fort McKay Métis and other Indigenous peoples with a historical presence in the Moose Lake area;
- ecological integrity and naturally occurring biodiversity; and

[1] Rights recognized and affirmed in Section 35 of the *Constitution Act, 1982*, which pertains to the "aboriginal and treaty rights" of the aboriginal peoples of Canada.

[2] LARP, 3.

- opportunity for responsibly managed resource development.

2.2 Principles

The Moose Lake Plan has been developed according to the following general principles—it is transparent and accessible; inclusive and collaborative; adaptive and robust; risk-based and follows the precautionary principle—accompanied by more specific principles related to supporting the exercise of section 35 rights and the commitment that oil sands resources will not be sterilized.

- A "PolicyPlus" principle applies; that is, the Moose Lake Plan begins with existing legislation and policy, then adds additional criteria as required to achieve the Vision.
- The planning and implementation process for the 10KMZ is collaborative.
- Preserving the ecological integrity and biodiversity of the Moose Lake area is important for the exercise of s. 35 rights and requires natural resource developers to minimize the adverse cumulative effects of development on the environment.
- Land uses and management thresholds are clearly articulated to protect the environment and minimize cumulative effects of development, and are intended to be incorporated into LARP as soon as practicable.
- Coordinated access will enable resource development to proceed, ensure that the public interest is maintained, and enable all Albertans to benefit from responsible development of those resources.
- The Moose Lake Plan provides clarity and direction to Alberta regulators in relation to natural resource development and land management decision-making within the 10KMZ.

2.3 Management Context

The Moose Lake Plan was developed to address concerns of the Fort McKay First Nation related to increased development pressures and associated environmental impacts on the exercise of Treaty rights, traditional land uses, cultural practices and associated interests on and near their Moose Lake reserves. The plan was developed in partnership with the Fort McKay First Nation, and through engagement with the Fort McKay Métis, energy and forestry resource tenure holders, and other Indigenous communities and organizations in northeast Alberta.

The Government of Alberta acknowledges First Nations and other Indigenous peoples possess rights recognized and affirmed by section 35 of Canada's *Constitution Act, 1982*. The Government of Alberta also acknowledges Fort McKay First Nation's history of traditional land use on its Moose Lake reserves and the immediately surrounding area, which Fort McKay First Nation considers its traditional territory. Other Indigenous peoples, including the Fort McKay Métis, also have a history of traditional land use inside the 10KMZ. The Fort

McKay First Nation contends protection of the Moose Lake area is necessary to support the exercise of Treaty rights by its members, and the preservation and transmission of its Cree and Dene cultures to future generations. The Fort McKay Métis share a similar lived experience and they and their ancestors have also used these lands to support traditional land uses, cultural practices and pursuits.

This Plan, by taking a policy plus approach to managing the area, is intended to reduce the biophysical effects of resource development with an intended outcome to support s.35 rights and traditional land uses.

A unique plan to address unique circumstances

Fort McKay First Nation's reserve settlement and the settlement of its neighbours, the Fort McKay Métis, combine to comprise the Hamlet of Fort McKay, which, unlike other Indigenous communities in Alberta, is surrounded on three sides by surface mineable oil sands operations that come within three kilometres of the hamlet. As a result, many areas traditionally used to exercise section 35 rights and traditional land uses have either been developed or become inaccessible. The Government of Alberta recognizes the uniqueness of the Moose Lake situation and supports the Moose Lake Plan within that context.

2.4 Legislative and Policy Context

The Moose Lake area is within the Lower Athabasca Region and is subject to the provisions of the Lower Athabasca Regional Plan (LARP). LARP was adopted in 2012, under authority of the *Alberta Land Stewardship Act,* and supports economic, environmental and social objectives, including:

- managing activities to meet the reasonably foreseeable needs of current and future generations of Albertans, including aboriginal peoples;
- considering future proposals for land use and development;
- setting priorities and ensuring the coordination of decisions by ***decision-makers*** and local government bodies;
- monitoring and responding to the cumulative effect of human endeavour and other events.[3]

In addition, the Government of Alberta considers development impacts on the exercise of constitutionally recognized and affirmed section 35 rights, traditional land uses, and cultural practices, and potential impacts to those rights and practices as a result of cumulative environmental effects.

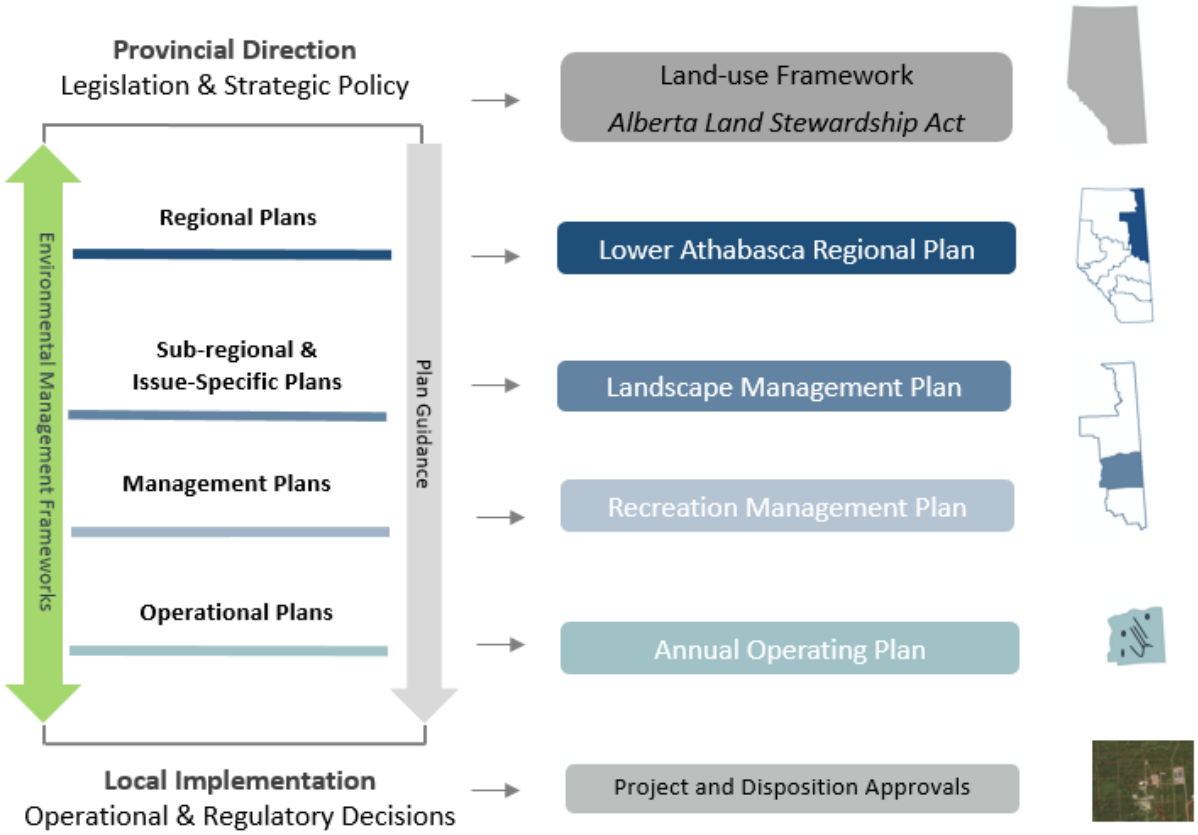
2.5 Legal Authority and Mechanism to implement the Plan

This plan will initially be implemented as policy prior to its recommended incorporation into LARP as a component of a sub-regional plan (which may include regulatory details for specific components of the plan) for the larger Moose Lake watershed. Until the plan is

3 ALSA, 1(2).

incorporated into LARP, it will inform and provide direction to decision makers (e.g. Alberta Environment and Parks and the Alberta Energy Regulator) to guide land and resource management activity within the 10KMZ. The Moose Lake Plan is consistent with provincial policies, strategies and frameworks, and with the desired outcomes for the Lower Athabasca Region stated in LARP (Figure3).

Figure 3: Alberta Environment and Parks Planning Hierarchy



Plan Implementation

The 10KMZ is a "defined management zone" for which an issue-specific management plan has been created to reconcile land uses, such as resource development activities, with the exercise of s. 35 rights and traditional land uses.

This plan will serve as the principal guiding document to inform regulators, decision makers, and resource development companies in the 10 KMZ with respect to land management activities and resource development. All relevant existing legislation, policies, and practices apply and serve as the underlying foundation upon which this plan is drafted.

Application and implementation of this plan is relevant to permitted land users within this zone. The whole of the plan should always be considered when an approval/permit is issued or when it is renewed[4].

- Companies with existing approvals in this planning area will become subject to plan direction and alignment as and when those approvals are renewed.
- Notwithstanding existing exemptions (i.e. wetland policy requirements), companies currently with applications pending will have application decisions reviewed and considered by the Alberta Energy Regulator using the direction stated within this plan.
- Companies who currently hold sub-surface leases but have not proceeded into any regulatory approval or application process will be subject to the provisions in this plan.

Technical Advisory Recommendations and Plan implementation

Management actions will support the achievement of outcomes and the vision of the plan. Management actions and performance measures may evolve over time. A Technical Advisory Committee will be formed as part of the plan implementation process and the committee will use an adaptive management approach to identify issues and make recommendations to government to refine management actions and performance measures in service to the outcomes over time. The TAC will be convened by the Government of Alberta as an informal committee.

Recommendations from the TAC that are submitted, reviewed, and supported by government are intended to be implemented as follows:

Companies within the 10kmz are encouraged to participate in the Technical Advisory Committee to continue developing specific criteria as noted within the plan and to find opportunities to incorporate applicable recommendations wherever practicable during their operational phase and prior to periodic plan revision or project renewals.

As part of the TAC work plan to be developed following their establishment, the TAC will propose how and when their recommendations should be implemented, if the recommendations are supported by the Government of Alberta, as decision-maker. Ideally, TAC recommendations reached by consensus should be implemented as best practices as soon as possible, but at a minimum within five years of the Government of Alberta's receipt and support.

[4] Crown mineral agreements will be continued, renewed or extended through normal processes.

3. Outcome-Based Planning

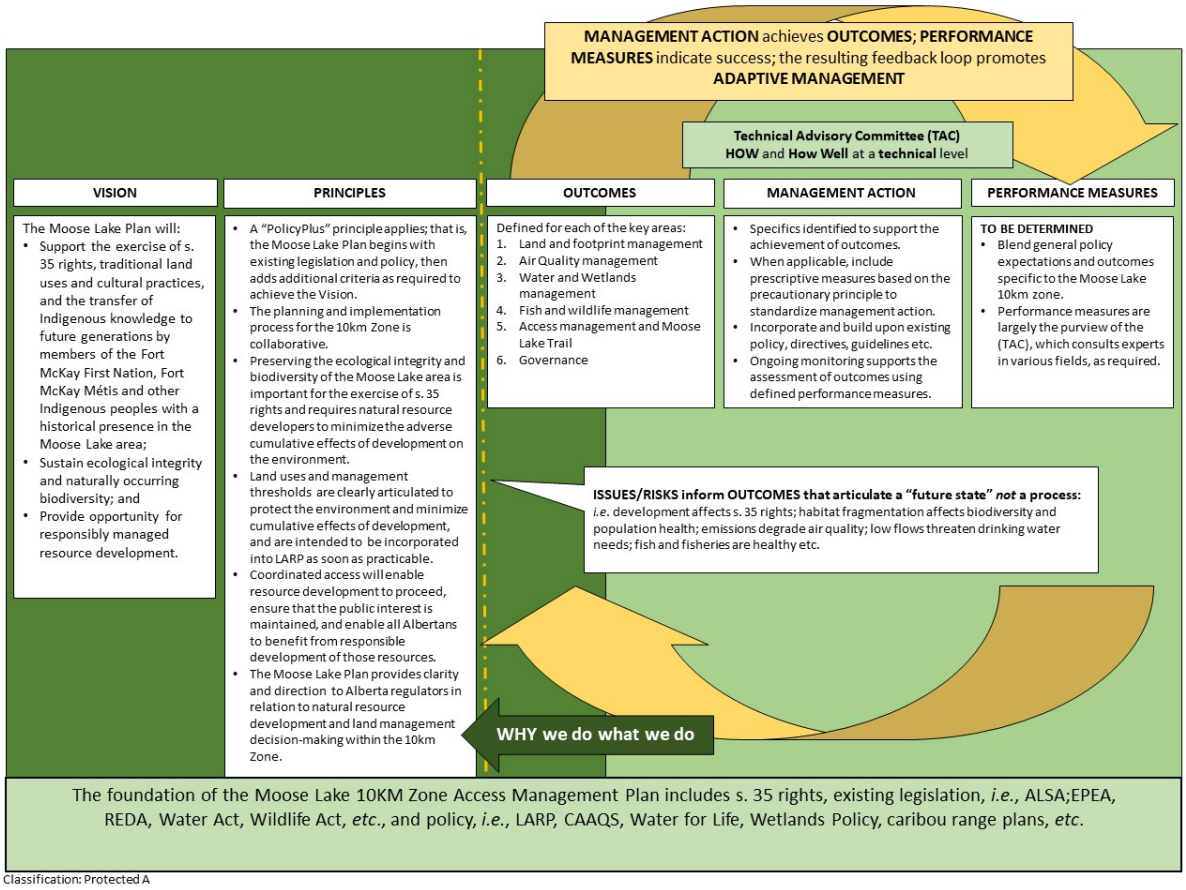
The Moose Lake Plan is an *outcome-based* plan, and is built upon the outcome-based planning logic model depicted in figure 4. This Government of Alberta plan was completed through the collaborative efforts of Fort McKay First Nation and through engagement with others interest holders in the planning area including Fort McKay Metis, energy sector, and the forest sector.

An outcome-based planning logic model has been useful because it:

- provides a visible template to enable stakeholders to prioritize and plan based on a common foundation, vision and principles;
- improves clarity and alignment between stakeholders and the responsible government agency or agencies;
- encourages issue or risk identification, which helps to identify problems for which outcomes represent an ideal state in which the problem is addressed;
- acknowledges and empowers autonomous stakeholders to independently and jointly solve problems through management action rather than implement 'solutions' that may not be helpful;
- specifies performance measures to assess the effectiveness of management action to achieve outcomes; and
- introduces a feedback loop to enable ***adaptive management***.

The Moose Lake Plan specifies a series of outcomes associated with each management theme—land and footprint, air, water and wetlands, fish and wildlife, and governance—for which stakeholder input has been provided over several years and which input concluded in the summer of 2020.

Figure 4: Outcome-based planning logic model



Classification: Protected A

4. Land and Footprint Management

Land and ***footprint*** management is the key element of the Moose Lake Plan – specifically minimizing the amount, duration and impact of natural resource development within the 10 KMZ. Land and footprint management strategies support, orderly, responsible development that will maintain the ecological integrity and biodiversity of the Moose Lake area to support the exercise of section 35 rights, traditional land uses and cultural practices.

Fundamental to the approach is to measure, spatially and temporally, the ***resource development footprint*** created by companies in the oil sands, forestry, petroleum and natural gas, and aggregate industries. The Moose Lake Plan includes several measures to encourage oil sands developers, timber harvesters and other natural resource-based activities to design and manage operations to be as efficient with footprint and impact as possible. The plan also includes a ***disturbance limit*** on the total amount of footprint allowed for industrial resource development in the 10KMZ. Constrained and optimized development footprint promotes intactness of a natural landscape that is important for the exercise of s. 35 rights, while allowing for resource development to occur.

4.1 Current Legislative and Policy Framework

The Lower Athabasca Regional Plan (LARP, adopted 2012) includes guidance to regulators and developers for the use of provincial Crown land and adoption of integrated land management practices.

The legislation and underlying policy, as amended or replaced from time to time, that guide activities resulting in land disturbance and ***reclamation*** include, but are not limited to the following:

- Lower Athabasca Regional Plan: Environmental management frameworks;
- *Public Lands Act* (PLA), "Public Lands Administration Regulation" (PLAR), and the "Master Schedule of Standards and Conditions";
- *Environmental Protection and Enhancement Act* (EPEA) and "Conservation and Reclamation Regulation";
- *Mines and Minerals Act* (MMA) and "Exploration Regulation";
- *Provincial Parks Act* and "Provincial Parks (Dispositions) Regulation";
- *Forests Act* and all enabled regulations (including the "Timber Management Regulation and Regeneration Standard of Alberta", "Alberta Forest Management Planning Standard", and "Northeast Alberta Timber Harvest Planning and Operating Ground Rules";
- *Forest and Prairie Protection Act* and all enabled regulations;
- *Oil Sands Conservation Act* (OSCA);
- *Oil and Gas Conservation Act; and*
- Policies including, but not limited to, the following:
    - Geophysical Programs: exploration directives (various);
    - Exploration Programs: "Manual 008 – Oil Sands and Coal Exploration Application Guide" (AER, 2014); "Coal and Oil Sands Exploration Reclamation Requirements" (AEP, 2015);
    - In situ projects: "Specified Enactment Direction 001 Direction for Conservation and Reclamation Submissions Under an Environmental Protection and Enhancement Act Approval for Enhanced Recovery In Situ Oil Sands and Heavy Oil Processing Plants and Oil Production Sites" (AER, 2016); and,
    - all activities: local municipal by-laws.

All the above combine to establish the policy foundation for land and footprint management in the Moose Lake Plan.

4.2 Land and Footprint Management Outcomes

The desired outcome for land and footprint management in the Moose Lake 10KMZ is to "keep intact areas intact" and the return of **equivalent land capability**, which for the purposes of the plan also includes traditional and cultural land uses. This means encouraging resource developers to design operations so that they reduce, to the greatest degree possible, the extent and duration of development footprint to minimize habitat loss and other environmental impacts, and to ensure timely restoration efforts to maximize habitat gain and ecological function.

This outcome will require developers to manage development footprint within acceptable parameters established by measuring ***Interior habitat***—an undisturbed landscape is, implicitly, intact. However, additional measures are required to mitigate the

cumulative effects of multiple activities potentially occurring on the landscape with independent operations. These additional components of land and footprint management actions are sector-specific and will be itemized as required below.

Landscape intactness supports the exercise of section 35 rights, traditional land uses and cultural practices in the sense that it ensures sufficiently large areas of intact boreal forest are available to be used by members of the Fort McKay First Nation, Fort McKay Métis and other Indigenous peoples.

A secondary outcome is to minimize, to the greatest degree possible, the sensory impacts of resource development on Fort McKay's Moose Lake reserves; *i.e.*, its members would prefer not to see, hear, smell, taste or feel industrial activity on reserve lands. There are several corresponding industry-specific directives that support this outcome, including limitations to resource development activities within one kilometre of the Moose Lake reserves.

Current State

Currently 86.5 percent of the 10 KMZ is habitat at a sufficient distance from resource development footprint to be considered intact Interior habitat (see Table 1, next page). The current intact state of Interior habitat is higher in the Birch Mountains Wildland Provincial Park (inside the 10KMZ) than in the ***mixed-use area***, where there has been a longer history of resource exploration and timber harvest. ***Legacy seismic*** activity has left disturbance across the entire 10 KMZ—it is estimated there are more than 500 kilometers of linear disturbance that fragments the landscape and reduces habitat quality and quantity.

Additional measures of landscape intactness may be developed over time to assess the current and future state of the 10 KMZ. For example, terrestrial landscape connectivity explicitly tracks the ecologically functional connection between or, conversely, fragmentation of, habitat on the landscape. This work is within the purview of the Technical Advisory Committee.

4.3 Interior Habitat Methodology

Habitat loss due to human disturbance is a primary threat to biodiversity. Footprint measurements are a proxy for development disturbance and could include roads, well pads, pipelines, borrow pits, gravel pits, forestry camps, *etc*.

Interior habitat

Interior habitat is the percentage of native terrestrial and aquatic cover that is a specified distance from development footprint; this distance is referred to as a "buffer." Interior habitat refers to the proportion of native habitat distant from or outside the ***edge effect*** of development footprint. For a given area, development footprint plus the buffer—the "buffered footprint"—is the inverse of Interior habitat.

Resource development footprint has impacts on the landscape beyond the directly impacted site and into the adjacent native vegetation: these impacts are called ***edge effects***. Edge effects are particularly important in Alberta's boreal forest where the mix of industrial activities produces widespread footprint across the landscape. Edge effects fragment and degrade species' habitats, change microclimate (*e.g*., light, moisture) and alter predation patterns and competition. In some parts of the boreal forest, the area directly impacted by human footprint may be low, but there may be native vegetation that is impacted by edge effects. These are important considerations for the practice of section 35 rights because traditional land uses and other cultural practices can be impacted by edge effects.

Table 1: Current state (2016) of the 10KMZ: intact Interior habitat and buffered footprint

		Current State	
	Hectares	**Interior Habitat**	**Buffered Footprint**
Mixed-Use Area	56,203 (54%)	45,285 (80.6%)	10,918 (19.4%)
Reserves	7,780 (8%)	6,920 (89.0%)	860 (11.0%)
Park	39,582 (38%)	37,376 (94.4%)	2,205 (5.6%)
10KMZ	103,565 (100%)	89,581 (86.5%)	13,984 (13.5%)

The ***Interior habitat*** indicator used in the Moose Lake Plan is as a performance metric and will be evaluated over time in relation to changing conditions. The metric tracks both habitat loss and habitat gain and will account for new and recovered resource development footprint and its effect on the landscape. Interior habitat measures a facet of landscape intactness that supports the setting of thresholds, monitoring, and management actions to maintain larger areas of contiguous habitat by minimizing habitat fragmentation.

Interior habitat is calculated as a percentage of a given area—in this case, the landscape within the 10KMZ—beyond a defined buffer distance from development footprint. To ensure

the indicator considers a range of flora and fauna, and is sensitive to changing disturbance levels, Interior habitat is calculated as the area outside of the 50- and 200-metre buffers from development footprint. Buffer widths are smaller for footprint features with widths less than 20m (*e.g.*, legacy seismic lines), and become reduced over time as the successional recovery of development footprint proceeds (see Appendix 1: Recovery Milestones).

Buffered footprint refers to both the area directly impacted by disturbance, the development footprint, and the average area of *both* buffers. Buffered footprint is the indicator used to implement the disturbance limit, and it is measured in hectares (ha).

Figure 5: Interior habitat buffers applied to a polygonal (non-linear) development feature

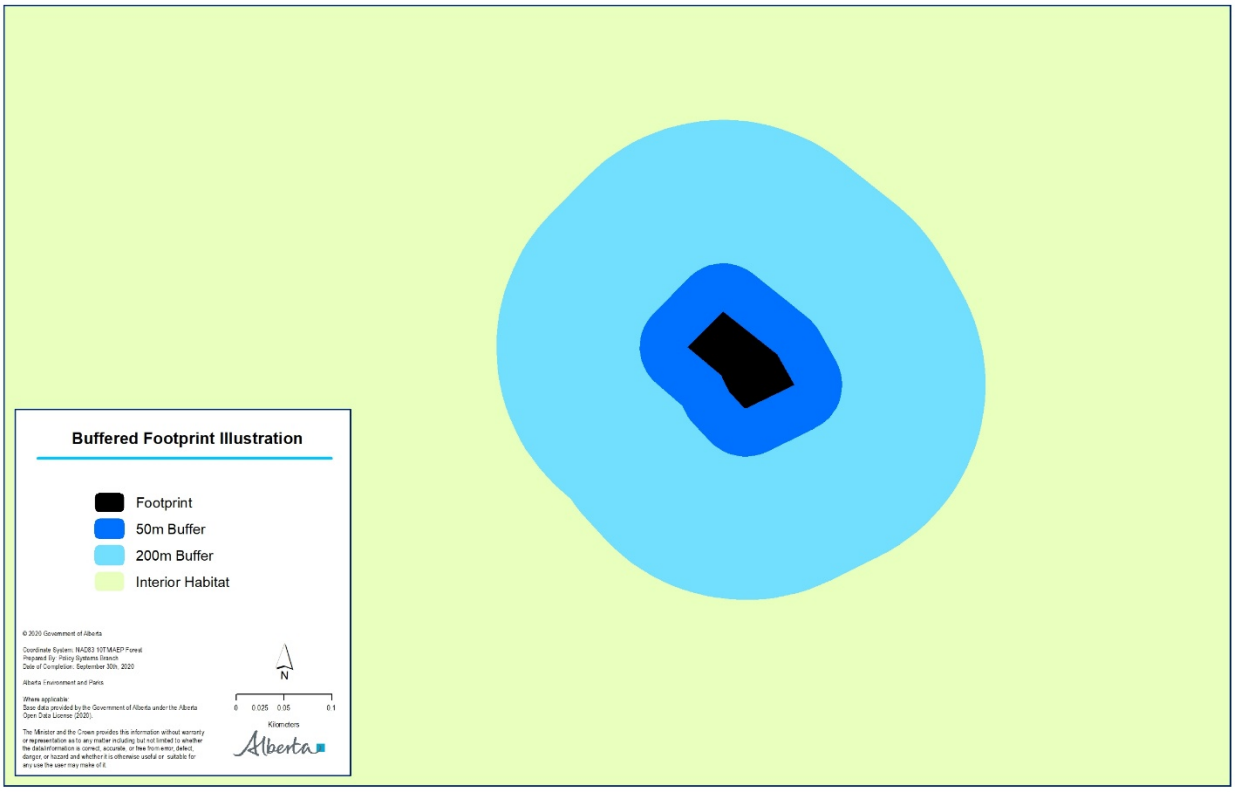
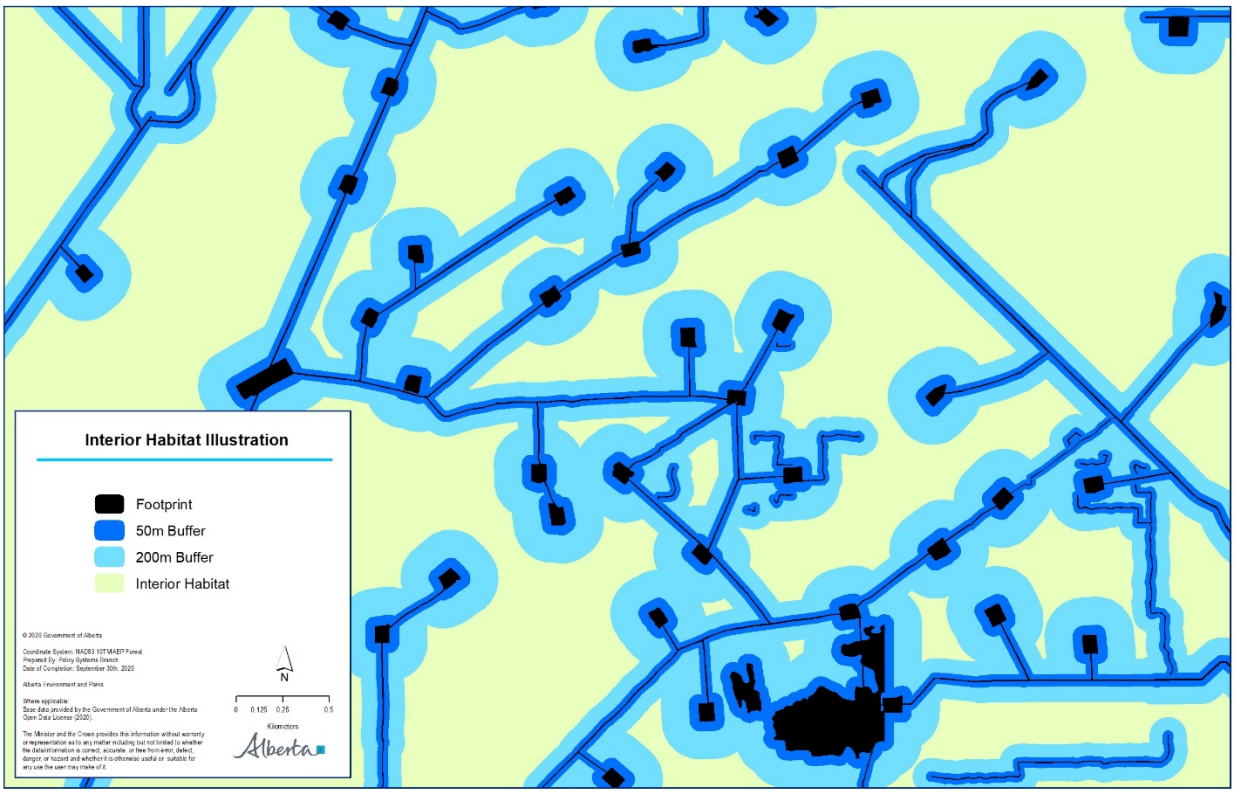


Figure 6: Interior habitat buffers applied to a linear development features



The buffered footprint calculations are shown below:

$$\text{buffered footprint (ha)} = \frac{\text{50m buffered area (ha)} + \text{200m buffered area(ha)}}{2}$$

$$\text{Interior habitat (\%)} = \frac{\text{total area (ha)} - \text{buffered footprint(ha)}}{\text{total area (ha)}}$$

To determine the adjusted buffers applied to development footprint of widths less than 20 metres, the following formula applies to the original 50- and 200-metre buffers:

$$\text{adjusted buffer (m)} = (50 \text{ or } 200) * \left[0.25 + 0.75 * \frac{\text{footprint width (m)}}{20}\right]$$

By way of example, a 5 metre wide road would have the 50 m buffer adjusted to ~21.9 m, and the 200 m buffer adjusted to 87.5 metres.

4.4 Land and Footprint Management Actions

Existing legislation, policy and regulation support some of the outcomes of the Moose Lake Plan related to extent and duration of resource development footprint inside the 10KMZ. Additional management actions within this plan include:

- implementation of a disturbance limit for the 10KMZ;
- development limits within one kilometre of the Moose Lake reserves; and
- requirements for Integrated Land Management and best management practices.

Disturbance limits

The Moose Lake Plan limits the total amount of buffered footprint allowed for industrial resource development in the 10KMZ to 15 percent or 15,537 ha. The disturbance limit demonstrates a meaningful effort to address the cumulative impacts of resource development and will maintain the area of Interior habitat at 85 percent or more on a landscape scale, which is necessary to maintain the ecological and cultural integrity of the 10KMZ. This metric represents a decrease in 1.5 percent from the current measurement of 86.5 percent Interior habitat. The limit is intended to maintain the ecological and cultural integrity of the 10KMZ (Table 2).

Disturbance Limit
The disturbance limit for the 10KMZ will permit up to 1.5 percent of additional buffered resource development footprint, which would maintain intact Interior habitat at 85 percent.

Table 2: Interior habitat current state and permissible disturbance limits

		Hectares	Percent
10KMZ		**103,565 ha**	**100**
Current State	**Interior habitat**	89,581	86.5
	Buffered footprint	13,984	13.5
Disturbance Limit	**Interior habitat**	88,028	85.0
	Buffered footprint	**15,537**	**15.0**

Note: The 10KMZ and mixed-use area are 103,565 ha, and 56,203 ha respectively.

Sector Allocation under the disturbance limit

The allowable disturbance limit of 15,537 ha for the entire 10KMZ is further divided into allocations for each sector, which apportion buffered footprint limits to enable each sector to function independently from the others as its particular business circumstances require. Within each sector, allocations are granted to individual companies during the application stage, at the discretion of the applicable regulator.

The industrial sector allocations identified in Table 3 were made with consideration of the current disturbance on the landscape of 13,984 ha, as well as anticipated activity. The majority of resource development in the 10KMZ is expected to come from in situ oil sands

activity; accordingly, the oil and gas sector is allocated the majority of the permissible buffered footprint at 11,404 ha. Forestry and aggregate (sand and gravel) are also allocated portions of the total buffered footprint. Buffered footprint allocations by sector are shown in Table 3 below.

Table 3: Industrial sector allocations under the disturbance limit

Sector	Allocation of buffered footprint (ha)
Forestry	1,500
Oil and gas	11,404
Aggregate (sand and gravel)	330
Allocation Total	**13,234**
Overage credits	2,303
Disturbance Limit Total	**15,537**

Land use activities associated with resource development that are not identified within this plan are not permitted to create footprint in the 10 KMZ at this time. However, allocations may shift in the future to enable new opportunities, or to become more reflective of future circumstances.

Overage credits

It is possible that a sector's allocation could be reached, and the sector may still require additional buffered footprint. In this circumstance, ***overage credits*** may be allocated towards a sector from the unallocated pool of 2,303 hectares. AEP is responsible for determining whether overage credits can be allocated, how much a sector may receive, and the duration overage credits are allocated for.

AEP may release overage credits to sectors on a temporary or permanent basis if sectors are at risk of reaching their allocations without clear opportunities to reduce that risk. Additional operational policy guidance will be developed to support implementation of the disturbance limit component of the plan, including guidance for the use of overage credits.

Integrated land management and best management practices

Integrated land management (ILM) practices will minimize resource development footprint inside the 10KMZ; this requirement aligns with guidance in the Lower Athabasca Regional Plan. ILM is a strategic, planned approach to restore, manage and reduce human footprint, including development footprint, on the landscape. Companies in the 10KMZ must demonstrate the effective use of ILM practices throughout the lifecycle of their respective activities and projects, such as multi-use corridors, low impact seismic, shared roads, progressive and timely reclamation of land not required for further development.

When submitting a project application for approval, companies are expected to minimize the buffered project footprint required when they seek a disturbance allocation. Requests

from the regulator to refine an approved development scheme to reduce footprint will follow guidance in Section 4.5.

4.5 Resource Development Footprint

Resource development activities must operate within defined disturbance limits, which could include footprint associated with the following:

- specified lands, as defined within the "Conservation and Reclamation Regulation" (e.g., well sites, pipelines, transmission lines, oil production sites, oil sands exploration);
- exploration, as defined within the "Exploration Regulation" (e.g., seismic);
- forest harvest areas, as defined within the Forests Act (e.g., harvest areas and in block roads); and
- any resource development footprint not explicitly described above that disturbs native vegetation and/or soils in the 10KMZ.

Aggregate (sand and gravel)

Companies must follow the requirements in place at the time an approval is issued for their activities (*i.e.*, exploration, extraction) and will be accountable to operate within footprint allocations under the disturbance limit.

- Within the 10KMZ, existing sand and gravel agreements will be honoured.
- No new sand and gravel extraction activities will be permitted within the 10KMZ and all rights will be reserved from disposition.

Coal, metallic and industrial minerals

- No new coal or metallic and industrial minerals extraction activities will be permitted within the 10KMZ and all rights are reserved from disposition.

Forestry

Forestry companies with Forest Management Agreements or Quotas in the 10KMZ are accountable for forest harvest areas and related roads attributed to them to calculate the forestry sector's footprint under the disturbance limit.

- To promote ILM, footprint associated with forest harvest areas will not be attributed to the forestry sector where such footprint overlaps with buffered footprint from more permanent activities, such as access roads that persists on the landscape.
- Forestry companies must adhere to management objectives identified in the applicable Forest Management Plan (FMP).
- Commercial forest harvesting will align with the FMP's Spatial Harvest Sequence (SHS), General Development Plans (GDP), and the Northeast Alberta Timber Harvest Planning and Operating Ground Rules.
- Forestry companies shall engage with overlapping and/or adjacent energy sector companies during the planning phases of oil sands development to align operations, better manage footprint, and ensure the effective use of merchantable timber that will

be removed for oil sands activity.
- Forest management activities not related to timber harvest, such as forest health and community fire prevention, will not count under the forestry sector allocation.
- Forest health and fire prevention activity inside the one-kilometre zone requires that input be sought from the Fort McKay First Nation.

Geophysical exploration

Any new or existing seismic footprint will not count as disturbance within either the oil and gas sector allocation or the overall disturbance limit. Existing geophysical programs that do not meet criteria listed below must employ the criteria on future program activity to assist in vegetation recovery.

Geophysical exploration should reuse existing lines where existing disturbances occur. Where existing disturbance is not available, new clearings must adhere to the following standards:

- Receiver lines must be meandering and use tree avoidance techniques.
    - Receiver lines within bog or poor fen ecosites or with lengths less than 300 metres between source lines shall not exceed 0.75m in width.
    - Receiver lines in ecosites other than bogs or poor fens and with lengths greater than 300 metres between source lines shall not exceed 1.75m in width.
- Source lines must not exceed 2.75 metres in width, must employ tree avoidance techniques, and meander to limit line of sight to less than 200 metres.
    - Source lines within a bog or a poor fen ecosite must not exceed 0.75m in width.
- Access lines within the program area (i.e. not source or receiver lines), including use of existing linear features, must not exceed 3 metres in width.
- Turn around spaces at the end of the source lines and access lines are permitted
- Doglegs must be employed at all intersections with linear features that are greater than 3.5 metres in width
- Outside EPEA-approved project development areas, at all intersections with linear features greater than 3.5 metres, access control on the line being used for the program must be established for distance of 100 metres from the intersection. The access control must effectively deter Off Highway Vehicle (OHV) use.
    - Access control options include, but are not limited to, debris roll back, tree falling across the line, and reforestation site preparation.
- Natural open areas or existing clearings must be used over a new clearing for helipads. If required, prepared helipads must not create clearings that exceed 35 meters in diameter.
- Holder must ensure shot holes drop zones used in heli-portable programs are no greater than 16 m^2.

Oil and gas

Oil and gas companies with agreements in the 10KMZ are accountable for activities attributed to provincial Crown lands dispositions, exploration footprint, and specified lands for the purpose of calculating buffered footprint under the disturbance limits.

- The Alberta Energy Regulator will be responsible for assessing project applications in relation to the oil and gas sector allocation of up to 11,404 ha, and will consider the proposed buffered footprint associated with the project application in relation to the sector allocation during the EPEA process when deciding whether a project may proceed.
    - AEP will provide a publicly available GIS-based tool to enable proponent assessments of developments plans (as buffered footprint) against the available sectoral allocation.
    - Proponents must submit digital information on the development footprint of the entire project (including activities approved under both EPEA and the Public Lands Act), as well as any existing footprint at the EPEA stage of the approval.
    - Allocations to project schemes from the oil and gas sector's allocation will be initially granted during the EPEA application process (which must include all anticipated footprint, even footprint not typically approved through EPEA).
    - Allocations granted based on EPEA applications must be adjusted during PLA Disposition approval processes to align with as-built footprint submissions.
- All applications to the Alberta Energy Regulator (AER) for projects within the 10KMZ must include an assessment of a company's total buffered footprint as a proportion of the company's total subsurface agreement area. If that proportion exceeds 20 percent of the subsurface agreement area, a company must demonstrate that further reductions to buffered footprint are not achievable over time through best practices including but not limited to:
    - optimizing the placement of all new footprint features (*e.g.*, access roads);
    - reusing existing disturbance (*e.g.*, oil sands exploration wells);
    - reclaiming all footprint not directly supporting production; and
    - progressive reclamation of production footprint.
- In recognition that allocations are a shared resource that requires efficient management and monitoring on an ongoing basis:
    - Upon EPEA application renewals, companies must justify to the AER the ongoing necessity of maintaining allocations at levels previously received.
    - The AER must initiate a review of existing allocations received by all companies if forecast levels of footprint may threaten to deplete the oil and gas sector's allocation pool.
- Oil and gas exploration and observation wells and hand-cut seismic lines within the one kilometre zone around the ordinary high-water mark of Gardiner (Moose) and Namur (Buffalo) lakes and the Fort McKay First Nation's reserves are permitted, subject to the following specific conditions:
    - Notification of FMFN

    - Consideration of ungulate breeding season
    - Frozen ground access for installation of exploration / monitoring equipment
- Existing petroleum and natural gas (PNG) agreements will be honoured within the 10KMZ, and development of existing agreements may proceed when Interim Directive 99-01 is lifted as long as PNG activity is aligned with disturbance limits.
- Suspended below ground PNG pipelines within the 10KMZ will be required to demonstrate that forest cover has been re-established along below ground pipeline Right of Ways (ROW) within five years of the plan coming into force. Companies must demonstrate that:
    - Revegetation of pipeline ROWs will maintain a minimum level of representative vegetative cover that is indicative of pre-disturbance conditions and will require tree cover on forest eco-sites.
    - Residual linear corridors may be up to 4m wide.
    - Human access must be effectively limited on pipeline corridors. Recommendations of the Technical Advisory Committee may inform strategies to limit such access. Implementation will occur within the same timelines as restoration.

- Oilsands leases within the 10km Zone issued after the date of approval of the plan will be issued with conditions that limit surface disturbance activities to those associated with monitoring, exploration and access.

- No new Petroleum and Natural Gas agreements will be issued within the 10KMZ.
- Within their project footprint, companies must harvest and remove all merchantable coniferous and deciduous trees as defined by the approved Forest Management Plan that overlaps their approved project footprint. Oil sands companies must engage with forestry companies during the planning phase of development to align operations, better manage footprint, and ensure the effective use of all merchantable timber.

Peat

- The allocation of public lands for the purpose of commercial peat harvesting shall be consistent with the principles of the "Allocation and Sustainable Management of Peat Resources on Public Land" policy. For the consideration of peat harvesting applications, the 10km zone will be considered an area of high sensitivity.

Transmission lines

- No new transmission lines be permitted in the 10KMZ.
- Distribution lines in the 10KMZ must follow existing corridors and must follow ILM principles to avoid creating additional industrial buffered footprint.

Major Infrastructure and Work Camp Accommodations

- The construction and operation of central processing facilities, aerodromes, landfills, and permanent work camps are not permitted within the 10KMZ.
- Temporary work camps to support industrial activity may be located inside the 10KMZ provided they are at least five kilometres from the Moose Lake reserves.
    - Temporary work camps are defined by a Regional Municipality of Wood Buffalo bylaw to be those with a duration of less than 12 months. Temporary camps also have a capacity of 25 persons or less.

4.6 Non-Resource Development Footprint

Non-resource development footprint arising from low-impact activities—backcountry recreational use, OHV use, hunting, fishing, *etc*.—is not considered to contribute to disturbance limits. The Technical Advisory Committee may make further recommendations to define these non-resource development activities.

Trails for Traditional Land Use by Indigenous Peoples

- Traditional land users should use existing linear features to access the landscape within the 10KMZ where available.
- If the creation of a new trail is required, including to provide reasonable all-season access, non-essential commercial and public use will be minimized, as outlined under Access (Section 8.0).

Commercial recreation

- No new commercial recreation developments, e.g., fishing lodges, boat launches, cabins, etc., are permitted within the 10KMZ.

Registered Fur Management Areas (RFMA)

- RFMA holders should use existing linear features to access the landscape within the 10KMZ where available.
- If the creation of new linear features is required, lines must meander under-canopy, be hand-cut and use tree avoidance techniques, i.e., no trees with a diameter at breast height greater than 10 centimetres are to be removed.

4.7 Birch Mountains Wildland Provincial Park

The portion of the Birch Mountains Wildland Provincial Park inside the 10KMZ is managed by Alberta Parks under the *Provincial Parks Act*. Existing surface restrictions under the *Provincial Parks Act* that relate to leases in the portion of the park located within the 10KMZ will be maintained.

Cooperative management for this park will be implemented collaboratively with interested Indigenous communities, including the Fort McKay First Nation and Fort McKay

Métis. Alignment and communication between the 10KMZ Technical Advisory Committee and any cooperative management structure for this park will be encouraged.

The Government of Alberta and Fort McKay First Nation will explore the possibility of expanding the duties of the Nation's existing Park Ranger Program to include patrolling the Birch Mountains Wildland Provincial Park and ensuring compliance with provincial regulations.

The Moose Lake Plan supports the option (50 to 100 years) of expansion of the park into the 10KMZ to preserve and restore naturally occurring biodiversity and ecological integrity. Further engagement with applicable stakeholders would be required.

4.8 Conservation and Reclamation

All new project applications inside the 10KMZ must include some form of planning for conservation and reclamation activities (*e.g.*, activity plans for oil sands exploration programs or, aggregate operations; conservation and reclamation plans for EPEA approved activities) with clearly defined end land use outcomes (*e.g.*, wildlife habitat, traditional/cultural use). Through this process companies should pursue the following.

- Base conservation and reclamation activity on mandatory demonstrable integrated land management requirements and a management approach to reduce buffered footprint.
- Seek and, where possible, incorporate input from the Fort McKay First Nation and Fort McKay Métis, facilitated by the Technical Advisory Committee, based on cultural values, traditional land uses and other community-specific knowledge to identify conservation and reclamation priorities including but not limited to the following:
    - reclamation planning and monitoring;
    - designation of reclamation planning units;
    - designation of end land uses; and
    - review of wetland avoidance and mitigation plans.
- Apply ***best management practices*** and standard operating procedures for reclamation of footprint and progressive reclamation of specified lands.
- Consider previous regional studies, such as the Cumulative Environmental Management Association's "State-and-Transition Model" ,and "application of Traditional Knowledge in the Development of Criteria and Indicators for Reclamation Certification (SENSES Consultants Limited 2013)
- Support traditional land use capability in reclamation plans as a required outcome by restoring to pre-existing vegetation condition.
- Align with an existing seed and plant material cooperative, such as the Oil Sands Vegetative Cooperative maintained by the Canadian Oil Sands Innovation Alliance (COSIA), to support the collection of seed and plant material from proposed areas of disturbance within the 10KMZ.

- Conduct reclamation using enhanced treatments (*e.g.*., planting of culturally relevant species, mounding, winter planting in bogs and fens, Faster Forests techniques, Disturbance and Recovery Trajectory Tool).
- Develop a reclamation monitoring program with the Fort McKay First Nation and other Indigenous peoples to ensure reclamation efforts are on a recovery trajectory.
- Ensure species composition and density reflect traditional cultural and wildlife values and objectives.
- TAC will recommend mitigation measures to government if natural regeneration is under-performing at the three-year measurement for natural recovery.
- Make efforts to ensure that the Fort McKay First Nation and other Indigenous peoples participate in the development of the permanent reclamation plan.

Reclamation planning, reporting and monitoring data collected and reported as part of an approved activity or monitoring program will be open, transparent and publicly accessible, including any associated work undertaken by the Technical Advisory Committee.

Criteria and directives

The Technical Advisory Committee will provide recommendations on culturally relevant reclamation indicators and practices to inform conservation and reclamation outcomes as well as end land use planning by all companies with agreements in the 10KMZ. Once developed, and supported by the Government of Alberta, these will apply to reclamation in the 10KMZ and inform the development of conservation and reclamation plans required under EPEA. Until these are developed, existing regulations and policies continue to apply to the 10KMZ.

The following policies, apply to the 10KMZ as amended or replaced from time to time, even after culturally relevant indicators and practices, *etc.*, have been developed:

- "Specified Enactment Direction 001, Direction for Conservation and Reclamation Submissions under an Environmental Protection and Enhancement Act Approval for Enhanced Recovery In Situ Oil Sands and Heavy Oil Processing Plants and Oil Production Sites" (Alberta Energy Regulator 2016).
- "Code of Practice for Exploration Operations."
- "Alberta Wetland Mitigation Directive" (Alberta Environment and Parks 2016).

AEP will work with the Technical Advisory Committee to report on restoration and reclamation monitoring data through a transparent and publicly accessible system.

Recovery milestones

Recovery milestones provide clearly defined checkpoints along the early stages of successional recovery of development footprint that should lead to habitat recovery, and also contribute to increased Interior habitat. The milestones are designed to ensure that any

re-established vegetation is on a recovery trajectory, intended to eventually eliminate development footprint and related edge effects.

To incorporate the concepts of staged recovery into the disturbance limit, buffered footprint will be progressively reduced, or discounted, in three phases if a company meets specified criteria for restoration, reforestation, or reclamation; defined as "Recovery Milestones" (Appendix 1). This approach is intended to provide incentives to achieve successful footprint recovery in order to create room for additional development footprint to proceed within each sector. For example, buffers are reduced by 50% upon achieving Milestone 1, buffers are removed upon achieving Milestone 2, and the footprint is removed upon achieving Milestone 3 (the final step).

4.9 Program to Restore Legacy Seismic Disturbance

Restoration of legacy seismic lines throughout the zone is an important action due to disturbance limits and sector allocations being determined with the expectation that legacy seismic disturbance would be actively restored within a reasonable timeframe. The Government of Alberta recognizes the desired outcome of restoring legacy seismic disturbance inside the 10KMZ. The Government of Alberta also recognizes the overall benefit of moving toward this outcome promptly, regardless of the responsibility for creating the original disturbance.

In order to move towards this outcome, the Government of Alberta will oversee the planning and operational delivery of the restoration of legacy seismic lines within the 10 KMZ by identifying it as a near-term priority for restoration efforts.

4.10 Land and Footprint Monitoring

Monitoring the buffered footprint on the landscape inside the 10KMZ is required to ensure Interior habitat remains intact at 85 percent or more. Monitoring development footprint will rely upon industry reported data, information from the Alberta Human Footprint Monitoring Program, and be augmented by additional information on footprint status collected through the implementation of the disturbance limits under the plan. Publicly available land and footprint monitoring data will be important for the Fort McKay First Nation, Fort McKay Métis, and other Indigenous peoples to assess how resource development by sector and by individual companies affects the quality and quantity of Interior habitat required to support the exercise of s.35 rights, traditional land use, and cultural practices.

The Alberta Energy Regulator is responsible to approve for companies, a buffered development footprint that complies with the conditions of the Moose Lake Plan. In addition to buffered footprint, AER also monitors the corresponding reduction of the sectoral allocation following each approval, the available buffered footprint from the oil sands sector pool, and whether either the sectoral allocation amount or the overage credits are

replenished by ongoing legacy seismic restoration and project footprint reclamation in the 10KMZ. The Technical Advisory Committee can provide relevant data to the AER through their role in tracking disturbance footprint within the 10kmz.

Operational policy will be developed to support the plan's implementation and industry reporting against recovery milestones. Information must be collected on both existing and new disturbance and ongoing restoration and reclamation to support performance measures for metrics such as, but not limited to:

- area disturbed;
- area temporarily reclaimed;
- area permanently reclaimed; and,
- area reclaimed or restored: areas for which a Reclamation Certificate, Letter of Clearance or some other closure mechanism has been issued to indicate a company has met its regulatory obligations

Where reclamation occurs, the Technical Advisory Committee will play a role to report on progress toward the milestones identified in Appendix 1 and to provide assurance that culturally sensitive reclamation efforts are aligned with regulatory reclamation requirements.

The Technical Advisory Committee will prepare a status report on buffered footprint and reclamation progress at regular intervals (e.g. every one to three years) to specifically track current disturbance relative to the disturbance limit.

4.11 Land and Footprint Performance Measures

Interior habitat will be reported annually and compared to the baseline for the 10KMZ to assess the effectiveness of land and footprint management efforts.

5. Air Quality Management

5.1 Current Legislative and Policy Background

The Lower Athabasca Regional Plan (LARP) includes a number of environmental management frameworks including one for air quality[5]. Management frameworks confirm regional outcomes, establish regional objective(s), indicators[6], and thresholds[7] to provide context within which decisions about future activities and management of existing activities should occur. They are intended to add to and complement, not replace or duplicate existing policies, legislation, regulations, and management approaches.

In support of the regional outcomes[8], the Lower Athabasca Region Air Quality Management Framework establishes the following regional objective for air – '*releases from various sources are managed so that they do not collectively result in unacceptable air quality*'.

[5] Lower Athabasca Region Air Quality Management Framework
[6] Indicator is a parameter that is measured to give information about the condition of the environment.
[7] The term 'threshold' is inclusive of limits and triggers. Limit is a threshold at which the risk of adverse effects on health or environmental quality is becoming unacceptable. A trigger is set in advance of a limit as early warning signals for evaluation, adjustments and innovation on an ongoing basis.
[8] Regional outcome for air quality under LARP – 'air and water are managed to support human and ecosystem needs'

Under the Canadian Council of Ministers of the Environment (CCME), federal, provincial, and territorial governments work collaboratively to improve air quality by implementing the Air Quality Management System (AQMS). In Alberta, under the AQMS, stakeholders, other interested parties, and governments work together to improve local air quality and maintain air pollutant concentrations below the Canadian Ambient Air Quality Standards (CAAQS).

Jurisdictional flexibility is a key principle that enables jurisdictions to implement CAAQS in a manner that is consistent with their specific management practices and circumstances. Other key principles and guidelines of AQMS and implementing CAAQS include:

- Formalizing the principle that CAAQS should not function as 'pollute-up-to' limits and are intended to drive continuous improvement in air quality, considering that some pollutants can affect human health even at concentrations below the standards; and
- Encouraging actions that prevent deterioration of air quality through continuous improvement (CI) and keeping clean areas clean (KCAC) in air zones with pollutant levels well below the CAAQS[9].

Figure 7: Outcome-based adaptive management for air in Alberta's Renewed Clean Air Strategy[10]

The Alberta's Renewed Clean Air Strategy (2012) vision also encourages adaptive management and the implementation of national and provincial strategies (see Figure 7 above). The provincial Air Quality Management System "supports healthy people and

[9] Guidance Document on Air Zone Management (2019)
[10] Clearing the Air, 19

ecosystems and strives to enable continued economic growth without compromising air quality."

The LARP, CAAQS, and Alberta's Clean Air Strategy provide the strategic direction for air quality management in the Moose Lake Access Management Plan.

5.2 Air Quality Outcome

The desired air quality outcome in the Moose Lake 10KMZ is to 'keep clean areas clean,' which means implementing preventative measures to avoid or minimize the increase of ambient concentrations of airborne parameters of interest in the 10KMZ. Airborne parameters of interest in the airshed include nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone (O_3) and fine particulate matter ($PM_{2.5}$), and, as key indicators of odour, hydrogen sulfide, (H_2S), total reduced sulphur (TRS), and non-methane hydrocarbons (NMHC).

Moose Lake Ambient Air Quality Targets

The use of a target as a threshold provides a distinct tool for signaling a change in ambient air quality and the opportunity to ensure appropriate management measures are in place.

Given the desired air quality outcome in the Moose Lake 10KMZ is to 'keep clean areas clean', the ambient air quality targets for the 10KMZ, including lands within the Birch Mountains Wildland Provincial and the mixed-use zone on which industrial operations are authorized, are consistent with CAAQS yellow management level[11] for SO_2, NO_2, O_3, and $PM_{2.5}$.

It is important to note that while the targets are consistent with one of the CAAQS thresholds, the targets are not CAAQS. This means that the process associated with exceeding a target is outlined directly in the Moose Lake Access Management Plan and does not follow the monitoring, reporting, and management requirements associated with Alberta's approach to implementing CAAQS. Adopting ambient air quality targets consistent with CAAQS has the advantage of aligning with nationally adopted air quality standards that have a well-established determination methodology and management system.

The targets for H_2S or TRS are consistent with the Alberta Ambient Air Quality Objectives (AAQOs) and Ambient Air Quality Guidelines (AAQGs), respectively. The objective for H_2S and guideline for TRS are intended to help alleviate substantial odour complaints from the public.

[11] The management intent associated with CAAQS yellow management level is to improve air quality using early and ongoing actions for continuous improvement.

There are no standards, objectives, or guidelines associated with NMHC. However, monitoring data will inform on ambient concentrations. If substantial increases in NMHC concentration are observed, investigation may be initiated as part of the management response.

Table 4: Moose Lake Ambient Air Quality Targets

Parameter	Metric/averaging period	Ambient air quality target
SO_2	Hourly CAAQS SO_2 metric is the three-year average of the annual 99th percentile of the SO_2 daily maximum one-hour average concentrations.	≤ 50 ppb ≤ 131 µg/m^3
	Annual CAAQS SO_2 metric is the arithmetic average over a single calendar year of all one-hour average concentrations.	≤ 3 ppb ≤ 7.9 µg/m^3
NO_2	Hourly CAAQS NO_2 metric is the three-year average of the annual 98th percentile of the NO_2 daily maximum one-hour average concentrations.	≤ 31 ppb ≤ 58.3 µg/m^3
	Annual CAAQS NO_2 metric is the arithmetic average over a single calendar year of all one-hour average concentrations.	≤ 7 ppb ≤ 13.2 µg/m^3
$PM_{2.5}$	Daily CAAQS $PM_{2.5}$ metric is the three-year average of the annual 98th percentile of the $PM_{2.5}$ daily 24-hour average concentrations.	≤ 19 µg/m^3
	Annual CAAQS $PM_{2.5}$ metric is the three-year average of the annual average concentrations.	≤ 6.4 µg/m^3
O_3	Eight-hour CAAQS O_3 metric is the three-year average of the annual fourth highest daily maximum eight-hour average concentrations.	≤ 56 ppb ≤ 110 µg/m^3
H_2S	There are no CAAQS for H_2S. H_2S is consistent with the Alberta Ambient Air Quality Objectives (AAQOs). This target should mitigate substantial odour complaints from the public and health effects.	< 10ppb (hourly) < 3 ppb (24-hour)
TRS	There are no CAAQS TRS. TRS is consistent with the Ambient Air Quality Guidelines (AAQGs). This target should mitigate substantial odour complaints from the public.	< 5 ppb (30-minute)

Additional parameters of interest may also be recommended by the TAC and considered by the Government of Alberta upon review of the Moose Lake Access Management Plan.

Current State

Fort McKay First Nation operates a continuous air monitoring station located on its reserve 174A at Namur (Buffalo) Lake since 2017 that has provided three years of ambient air quality data from 2017-19. Analysis of the Namur Lake station monitoring data indicates the

annual NO_2, SO_2 and $PM_{2.5}$ at the station during the periods 2017-19 are well within the CAAQS green management levels, although CAAQS data completeness were not necessarily met due to the remoteness of the station and the challenge of providing year-round power.[12]

For annual NO_2 and SO_2, the occasional elevated levels measured at Namur Lake station from 2017-19 are believed to include stack emissions from existing oil sands mines and processing plants at a considerable distance from the Moose Lake reserves. This illustrates the cumulative impact of mineable oil sands emissions on air quality even when the source is located approximately 70 to 80 kilometres away.

A comparison of measured hourly (NO_2, SO_2) and daily (for $PM_{2.5}$) data indicated that, except for ozone (O_3), current Moose Lake ambient air quality concentrations are well below the CAAQS green management level. For $PM_{2.5}$, this assessment is based on monitoring data for hourly levels measured in October to reduce potential wildfire effects.

The monitoring data was also compared to historical modeling data and showed a high correlation, which encourages confidence in current best practice modeling techniques as a means to better understand potential impacts to ambient air quality in the 10KMZ based on development scenarios from various sources to inform on management approaches.

Once five years of monitoring data is available from the Namur Lake air monitoring station, allowing three full assessments of ambient air quality relative to the ambient air quality targets, the Government of Alberta will work with the TAC to review the targets.

[12] Provision of power to support year-round operation of the Namur Lake AMS will be explored jointly by Environment and Parks and the Fort McKay First Nation through the TAC.

Fort McKay First Nations' Namur Lake Air Monitoring Station at its Moose Lake reserves

5.3 Air Quality Management Action

To "keep clean areas clean," air quality management in the Moose Lake 10KMZ will also adhere to the LAR Air Quality Management Framework principles of:

1. Pollution prevention through employment of best available technology economically achievable (BATEA);
2. Minimizing emissions through best management and control practices; and
3. Continuous improvement.

At the time of publication, it is acknowledged that the Namur Lake station currently does not meet the CAAQS data completeness, and therefore is not a CAAQS station. Efforts are being made to get the Namur Lake station operating on a year round basis. In the interim of the station meeting data completeness, data collected from the Namur Lake station can still be assessed against the Moose Lake Ambient Air Quality Targets to support place-based air quality management provided that:

i) The implications of gaps in data completeness are document and,

ii) The difference between Moose Lake ambient air quality targets and CAAQS are clearly communicated.

Monitoring data from the Namur Lake air monitoring station and any other future air monitoring station(s) installed in the 10KMZ will be assessed against the targets outlined in Table 4, according to the CCME Guidance Document on Achievement Determination Canadian Ambient Air Quality Standards.

Exceedances of these targets[13] will initiate an investigation by Alberta Environment and Parks to understand the cause(s) of the exceedance(s). Depending on the findings of the investigation, additional management actions may be required. These actions will be developed with TAC recommendations, informed by monitoring results, and analysis of the causes and impacts.

Management action(s) will depend on the nature, geographic location, circumstances, and risk to human health and ecosystems health. This includes assessing policies and actions that are already underway to avoid duplication. There is a range of regulatory and non-regulatory measures that can be implemented. Certain management actions lead to emission reduction (e.g. emission abatement equipment) while others lay the groundwork for emission reductions (e.g. new or amended legislation, regulations, and policies, focused monitoring studies investigative studies, and education and awareness building etc.).

Minimizing Industrial Emissions

As per Principle 1 of the Industrial Release Limits Policy, oil sands projects are required to meet air emission release limits based on "limits achievable using the most effective demonstrated pollution prevention/control technologies or the limits required to meet risk based and scientifically defensible ambient environmental quality guidelines, whichever are the more stringent."[14]

In addition, proponents regulated under EPEA in the 10KMZ or within 50km of the 10KMZ are required to include the 10KMZ in their proposed regulatory air modelling domain as per outlined in the Air Quality Modelling Guideline (2013, draft 2020) for new, expansion, approval applications and environmental assessments.

If modelling assessment indicates that a project emissions, either singly or in combination with other emissions may exceed the following, then additional emission control measures may be required:

- The AAQOs/AAQGs for the parameters of interest (SO_2, NO_2, $PM_{2.5}$, H_2S,, and TRS) outlined in the Moose Lake Access Management Plan excluding secondary pollutants (O_3 and secondary $PM_{2.5}$)

A comparison of the Moose Lake Ambient Target for annual NO_2 and SO_2 in the interim of updated AAQOs for NO_2 and SO_2 will also be considered as part of cumulative effects

[13] These targets are not intended as regulatory numbers for EPEA approvals and do not replace Alberta Ambient Air Quality Objectives/Guidelines. However, the Moose Lake Plan outlines existing '*PolicyPlus*' additional measures required to meet air quality outcomes. If a target is exceeded in reporting, the Government of Alberta will investigate, inform Fort McKay First Nation and the TAC, and then consider, with TAC participation, any management action that might be required. If, during investigation, a breach of approval or other legal requirement is identified, it would be reported to the appropriate investigator.

[14] Industrial Release Limits Policy, 1.

management to determine trends in ambient concentrations and what may be required to ensure proper management.

As part of implementation, the Government of Alberta will work with the TAC to assess the need and scope for undertaking an advance regional scale modelling to understand the risk of exceeding the Moose Lake Ambient Targets, particularly for secondary air pollutants (e.g. secondary $PM_{2.5}$ and O_3), in the region based on future development scenarios.

Where additional emission control measures may be required, the Government of Alberta will work with the TAC to determine best available technology economically achievable (BATEA) and emission control best practices. BATEA-based management could include, but is not limited to, the following:

- 100 percent redundancy as part of vapour recovery unit design;
- Selective catalytic reduction on cogeneration with gas turbine capacity equal to or greater than 85MW;
- Sulphur recovery of 90 percent for inlet sulphur rates between two and five tonnes per day; and
- Design, selection and operation of boilers and heaters based on the performance targets in AEP's Policy 2 with alternative gaseous fuel, which apply only when the fuel contains less than 90 percent methane consistent with the definitions in the federal Multi-Sector Air Pollutants Regulations.[15]

5.4 Air Quality Monitoring

Ambient air quality monitoring data is required to assess the parameters of interest relative to the Moose Lake Ambient Air Quality Targets. In addition, regional ambient air quality monitoring is required to assess how local and regional sources (e.g. oil sands projects) collectively and individually influence air quality within the 10KMZ. The specific air quality monitoring elements in this plan are:

1. The Government of Alberta will, with partners and through the Oil Sands Monitoring Program, request financial support for the existing Fort McKay First Nation Namur Lake air monitoring station and work with the Fort McKay First Nation to explore the future incorporation of the station into the Oil Sands Monitoring Program regional ambient environmental monitoring network.
2. The Government of Alberta and partners, through the same program and with the advice of the TAC, will assess on an ongoing basis the need for a continuous ambient air monitoring station at an appropriate location on or

[15] Multi-Sector Air Pollutants Regulations (SOR/2016-15, 17 June 2016, http://www.gazette.gc.ca/rp-pr/p2/2016/2016-06-29/html/sor-dors151-eng.html. Accessed 15 March 2020.

near the perimeter of the 10KMZ. The location of any future air monitoring station will be determined in collaboration with the Fort McKay First Nation. The parties recognize that the timing for installation of this station will be determined by the timing and magnitude of oil sands development in the area.

3. The Namur Lake air monitoring station and any other future continuous monitoring station(s) installed in the 10KMZ for the purpose of CAAQS determination should meet the CAAQS data completeness requirements, CAAQS siting criteria, the Air Monitoring Directive (AMD) requirements, and report to the Alberta air data warehouse.
4. Project-specific air quality monitoring will consider the ambient air quality monitoring elements described.

5.6 Sensory-Based Environmental Quality Management

Companies will employ best control and management practices to minimize noise, odour, dust and light pollution impacts within the 10KMZ in accordance with existing regulatory and policy requirements and with consideration to what's outlined in the Moose Lake Access Management Plan. For additional sensory-based issues and concerns raised by Fort McKay First Nation, Fort McKay Métis or other impacted Indigenous traditional land users, not contemplated by provincial regulations, a notification and response protocol will be established with TAC as applicable.

Odour Management

Odour management can be challenging because the olfactory sense is subjective and different people may respond differently to quantifiable ambient concentrations of pollutants such as H_2S and TRS. Odour management must also consider that odour may be due to a mixture of pollutants while odourous events are typically of short duration (a few minutes to tens of minutes). Determination of the origin of odourous pollutants may require careful and long term tracking to determine their origin. Targets for some odourous pollutant have been established in Table 4 above to assist in the management of odour. Odours, in the context of oil sands development, require management at five levels:

1. Project planning;
2. Project impact assessment;
3. Facility operations;
4. Odour complaints/concerns; and
5. Odour monitoring.

It is expected industry will work closely with the Fort McKay First Nation and Métis on an ongoing and regular basis to establish an odour complaint, tracking, and resolution process with TAC participation to enable Fort McKay First Nation, Fort McKay Métis and other Indigenous Peoples to register odour complaints and receive a timely response. The Fort

McKay Air Quality and Odour (FMAQO) complaint process may assist to inform this process.

Noise Management

Noise from oil and gas developments is managed under AER Directive 038: Noise Control (2007). The directive focuses on overall noise levels (dBA) associated with industrial activity and is effective at dealing with certain noise sources and types but it has no provisions to address tonal, impulsive or intermittent noise and their sources, which are the sounds most likely to impact the quiet enjoyment of reserve lands and disrupt traditional land uses. These noise impacts and their management, are outlined by Health Canada in "Guidance for Evaluating Human Health Impacts in Environmental Assessment: NOISE" (2017).[16]

Some noise, such as back-up signals, are related to safety concerns and so permissible within acceptable levels as advised by TAC. The TAC is also the forum to discuss and explore effective noise mitigation to unforeseen noise issues that are not addressed at the project planning stage.

- Government and industry recognize that Directive 038 does not consider audible noise as distinct from overall dBA and that these noises affect traditional land use and traditional resources.
- Industry must evaluate how noise (including audible noise) affects traditional land uses in the 10KMZ.
- Industry must mitigate audible noise to acceptable levels. These levels will be recommended by the TAC. Levels may be determined to be less than what currently complies with Directive 038; this is consistent with the Moose Lake 'Policy*Plus* principle.'
- When planning projects, industry must demonstrate how noise controls represent best practices and effectively reduce and control noise inside the 10KMZ.
- Industry will establish a noise complaint process, with TAC participation, to enable Fort McKay First Nation, Fort McKay Métis and other Indigenous people to register noise complaints and expect a timely response.

Dust Management

Dust has health, environmental, and nuisance impacts that include:

- Dust on vegetation;
- Visible pollution (ash and other components); and
- Contribution to ambient particulate matter levels.

While *in situ* dust issues are much less than those associated with oil sands mining facilities, road dust, exposed surfaces, land clearing, and material stockpiling are all potential dust sources associated with *in situ* developments.

[16] Guidance for Evaluating Human Health Impacts in Environmental Assessment: NOISE.

Dust emissions will largely be deposited within the developed area of a project and off-site dust deposition will likely be minimal and should have little impact on Fort McKay First Nation's enjoyment and traditional use of its Moose Lake reserves and surrounding lands. However, within the 10 KMZ, all *in situ* operations must employ best practices in their dust management plans to cover construction activities, traffic-related dust, and all operational activities with dust generation potential, *e.g.*, earth moving and earth/material stockpiling.[17] A dust management plan should also involve periodic off-site visual inspections to determine the extent, distance and general magnitude of project-related dust emissions.

Industry will establish a dust complaint process with TAC participation to enable Fort McKay First Nation, Fort McKay Métis and other Indigenous people to register dust complaints and expect a timely response.

Light Management

One of the management challenges with visible light pollution is that the atmosphere is relatively transparent to visible light and attenuation only occurs as a result of absorption or scattering of light by particles in the air.[18] Therefore, mitigation requires that light levels be minimized and/or there be physical barriers between light sources and possibly impacted receptors. Light pollution also results from direct or reflected electric light scattered by dust and gas molecules in the atmosphere producing a luminous background, which is referred to as sky glow.[19] Light trespass refers to light that goes into areas or in directions where it is not intended or is unwanted, *i.e.*, floodlighting.[20]

Companies within the 10KMZ shall develop a project light pollution management plan employing best practices to:

- identify all project light sources;
- provide best practices[21] to mitigate sky glow and light trespass from these sources, *e.g.*, light source types such as LED, high pressure sodium, metal halides; light positioning; and motion sensor activated lighting;
- demonstrate how continuous improvement will be applied to project lighting; and
- engage affected stakeholders in the development of the plan

[17] USEPA Report: Control of Open Fugitive Dust Sources.
[18] Jacob, 1999; Houghton, 2002.
[19] Lighting Research Centre, 2007.
[20] *Ibid*.
[21] The Lighting Research Centre (2007) provides more information on ways to prevent or mitigate light pollution based on information from the Illumination Engineering Society of North America (IESNA).

Industry will establish a light complaint process with TAC participation, to enable Fort McKay First Nation, Fort McKay Métis, and other Indigenous people to register light pollution related complaints and expect a timely response.

6. Water and Wetlands Management

For the purposes of the Moose Lake Plan, water includes surface water, groundwater, and wetlands, all of which are components of an integrated natural system.

6.1 Current Legislative and Policy Framework

The Government of Alberta's regulation and management of water is set out under the *Water Act*, which establishes Crown ownership of water and a system of authorizations—licences and approvals—and exemptions. Aspects of water quality are more directly addressed through the *Environmental Protection and Enhancement Act* (EPEA), which regulates groundwater and surface water quality through regulation of activities and releases, and guidelines to manage high-risk events such as spills.

Since 2003, *Water for Life*,[22] Alberta's strategy for water sustainability, has formed the cornerstone of the government's overall approach to water management. *Water for Life* sets desired outcomes to balance aquatic ecosystem health with the wise and best use of water

[22] Water for life: Alberta's Strategy for Sustainability, Government of Alberta (November 2003).

for the greatest benefit. The strategy was affirmed and renewed in 2008, building on learnings and to ensure alignment with government efforts under the *Land-use Framework*. Building on work in the *Water for Life* strategy, the Alberta government hosted the "Water Conversation" and released "Our Water, Our Future: A Plan for Action" in 2014, which identifies a number of short- and long-term strategic actions.

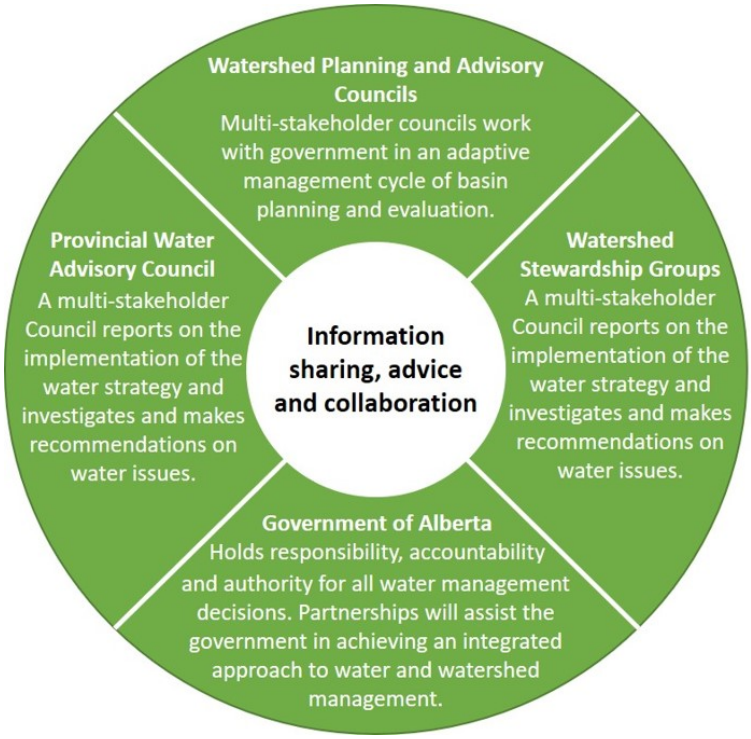
Water for Life is an outcome-based strategy that enables adaptive management. *Water for Life* has three main goals that align with outcomes equally important to the Moose Lake Plan.

1. Albertans are assured their drinking water is safe.
2. Albertans are assured that Alberta's aquatic ecosystems are maintained and protected.
3. Albertans will be assured that water is managed effectively to support sustainable economic development.

The Province, Fort McKay First Nation, Fort McKay Métis, other Indigenous people, oil sands, and forestry industries all have a role to play to ensure the water-related outcomes of the Moose Lake Plan are achieved and the area's water resources are wisely managed. The *Water for Life* goals are supported by three key directions, equivalent to high-level management actions:

1. Knowledge and research.
2. Partnerships.
3. Water conservation.

Figure 8: Water for Life structure, group functions, and WSG outcomes[23]



Comparing Water for Life to the Moose Lake Plan, knowledge and research correspond to monitoring and modeling; partnerships, which in Water for Life includes nested advisory groups (see Figure 8 above,) correspond to stakeholders jointly and independently managing a shared presence inside the 10KMZ; and water conservation, , includes protecting drinking water sources and will require water management best practices among resource developers to be considered and recommended by the Technical Advisory Committee.

The goal of the *Alberta Wetland Policy* is to conserve, restore, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and economy.[24] The policy uses a relative wetland value assessment to inform wetland management strategies using an "avoid, mitigate and replace" hierarchy. Relative wetland value is determined using five components: biodiversity and ecological health, water quality improvement, hydrologic function, human uses, and relative abundance.

Alberta has several other regulatory tools to create specific management or planning guidance for all water users or specific sectors within a defined management area. The following are relevant for the Moose Lake Plan:

- Lower Athabasca Regional Plan (LARP) Environmental Management Frameworks: LARP includes surface water quality and quantity, and groundwater management frameworks that govern regional approaches to water management.

[23] Water for Life, 17.
[24] Alberta Government, 2013. Alberta Wetland Policy. P. 2.

- "Surface Water Allocation Directive": released in 2018, this directive creates consistent water allocation rule sets to protect aquatic ecosystems while allowing sustainable water use when specific guidance or planning is not available to a regulator.
- "Water conservation policy for upstream oil and gas operations": updated in 2020, the policy aims to minimize upstream oil and gas use of high-quality, non-saline water in favour of alternatives such as wastewater, tailings water, and deeper or saline groundwater.
- "Assessment of Thermally-Mobilized Constituents in Groundwater for Thermal In Situ Operations": groundwater monitoring and management requirements address the release of constituents from surrounding sediments into groundwater due to heating associated with thermal in situ operations.

6.2 Water Outcomes

The water management intent within the 10km zone is to maintain the quantity and quality of surface water and groundwater resources within the established natural range of variability in order to protect the safety and security of the Hamlet of Fort McKay drinking water supply and other drinking water uses from Buffalo (Namur) Lake, Moose (Gardiner) Lake and the Ells River watershed; to maintain watershed function and integrity; and to support Indigenous traditional uses in the watershed.

Water outcomes support availability of water for resource development while recognizing the potential environmental impacts and cumulative effects that could materially affect section 35 rights and cultural practices.

1. The quality and quantity of the drinking water source for the Hamlet of Fort McKay, the Ells River and related water bodies, are protected.
2. Healthy and abundant aquatic ecosystems are protected to support the exercise of section 35 rights, traditional land uses and cultural practices.
3. Sufficient water of acceptable quality is managed and allocated to support responsibly managed, sustainable resource development.
4. Groundwater and surface water systems support ***watershed*** integrity, ecological processes, watershed function and biodiversity.
5. Surface water quality of the Moose (Gardiner) and Namur (Buffalo) lakes and other waterbodies within the 10kmz meet natural aesthetic standards to be recommended by the Technical Advisory Committee.
6. All industry sectors demonstrate best management practices for water use, water re-use, and the protection of water quality.
7. Wetlands maintain biodiversity and ***ecosystem function*** and integrity that support the exercise of section 35 rights, traditional land uses and cultural practices.

Current State of the Moose Lake Watershed

Water in the Moose Lake area is, like air, in excellent condition. Fort McKay First Nation has conducted periodic water monitoring since 2015 at Moose (Gardiner) and Buffalo (Namur) lakes. Nation members report they still drink water directly from Buffalo Lake. Drinking from Moose Lake is not practiced in the community due to a seasonal algae bloom. The prevailing northerly wind patterns characteristic of the Moose Lake area blow toward the oil sands mines and upgraders that are closer to Fort McMurray, so the deposit of airborne deleterious substances is relatively low.

6.3 Water Quantity and Quality Management Action

Water quantity management in the 10KMZ addresses the interaction between surface water and groundwater to meet outcomes particularly related to the drinking water source shared by the Fort McKay First Nation and Fort McKay Métis. With the exception of specifics noted below, water allocation decisions affecting Moose (Gardiner) Lake, Buffalo (Namur) Lake and the Ells River will be evaluated using the "Alberta Surface Water Allocation Directive" as amended or replaced from time-to-time. Consistent with the directive, water quantity management requirements apply cumulatively within the Ells watershed and include lakes of specific interest. The lakes also have their own specific limits determined through the processes outlined below.

Saline water from deep aquifers that are not connected to surface water or alternative water sources is highly recommended for industrial use. If groundwater sources are demonstrably connected to surface water, the interaction between them needs to be understood. This will be addressed primarily through the development of a groundwater-surface water interaction model, and groundwater and surface water monitoring.

Surface water withdrawals prohibited for industrial use

- Direct surface water withdrawals from Buffalo (Namur) Lake, Moose (Gardiner) Lake and the Ells River are prohibited for thermal injection purposes.

Other water allocations

For all other water allocation purposes, preliminary allowable water allocation amounts are determined for Moose (Gardiner) Lake, Buffalo (Namur) Lake, and the Ells River using water allocation amounts under the "Surface Water Allocation Directive":

1. The quantity of water allocated cumulatively in the Ells River watershed is the cumulative annual volume of surface water and groundwater allocations.
2. Where indirect surface water withdrawal (e.g., a reduction in stream flow and/or in lake level) is expected or is caused by the use of groundwater, the annual amount of that indirect impact must be within the annual water quantity allocation provided by the directive.
3. Since there is a time-lag between groundwater withdrawals and their effect on

surface water, and the potential for drawdown decreases with increased distance from wells, surficial groundwater withdrawals for thermal injection purposes from unconsolidated sediments above bedrock are not permitted within three kilometres of the Ells River main stem within the 10KMZ.

4. The TAC shall recommend criteria for adaptive management triggers and climate change scenarios and how best they can be incorporated into water management.

Lake levels and streamflow impacts

To facilitate the independent review and verification of lake-level and streamflow impacts that may be caused by proposed groundwater withdrawals from unconsolidated sediments above bedrock, Alberta expects relevant stakeholders and regulators to use a common groundwater-surface water interaction model.

The Government of Alberta and industrial stakeholders will explore development of a groundwater-surface water interaction modeling tool following approval of the Moose Lake Plan. A completed groundwater-surface water interaction modeling tool would be publicly available. The model will predict potential effects to groundwater at a spatial and temporal scale arising from development that can be differentiated from natural processes and that can inform and be informed by monitoring plans. The model can also be used to inform decisions on water use applications, including groundwater, along with the Surface Water Allocation Directive. A surface water–groundwater model will:

- serve as a common tool for the Government of Alberta and stakeholders
- be a complementary tool to the Surface Water Allocation Directive for better understanding of allocations and decisions
- assess interactions with groundwater and surface water
- be a tool to inform and be informed by data

Once developed and tested, the model will be regularly updated and validated with new monitoring and calibration information. The model will be constructed to standards acceptable to the Government of Alberta and determined in collaboration with the Fort McKay First Nation and Fort McKay Metis. The TAC will provide guidance to construct and update the model. The model's electronic input and output files will be available to all stakeholders.

Until the groundwater-surface water interaction model is available, thermal injection project proponents shall use groundwater-surface water modelling to assess the potential stream flow or lake-level reduction impacts of proposed groundwater diversion from unconsolidated sediments above bedrock.

Licensing

Licences are permitted for temporary surface water or groundwater diversions and for other purposes (e.g., drinking water) within the 10KMZ if they comply with the rule sets

established by the Surface Water Allocation Directive. The directive includes operational (near real-time) management direction that describes how much water may be taken, as well as when diversions should be reduced or curtailed because low flow circumstances prevail.[25]

Water quantity best practices and performance standards

Oil sands projects are required to follow the *Water Conservation Policy for Upstream Oil and Gas Operations* (2020) and future updates as amended from time to time. This guideline supports both *Water for Life* goals. The guideline objectives include water conservation, regulatory consistency, rigorous technical evaluation, adaptability and continuous improvement. The Government of Alberta will establish performance targets and best practices for water use inside the 10KMZ. The Technical Advisory Committee may provide recommendations for such targets and best practices. Known, tested and proven technologies to reduce in situ project water consumption that may be applicable to water quantity conservation practices for the 10KMZ that can serve as a starting point for discussions include the following:

- limit total water losses/waste streams from combined water/steam plant complexes to three to four percent, or less, of water entering the plant;
- use saline groundwater sources;
- select water-treatment equipment to avoid systems with high reject streams or large sludge streams, like evaporative water treatment instead of lime softening;
- select steam-raising equipment to avoid systems with high blowdown requirements, like using drum boilers instead of once-through steam generators;
- reuse oil sands mine water for process steam;
- use storm water as a primary design, such as routing well pad water to the process plant;
- re-use treated domestic wastewater;
- use water from borrow pits for early works (e.g., during construction, road building, etc.);
- provide and build redundant infrastructure to be sufficiently adaptable to meet water needs in the event water licenses are curtailed because of precipitation swings away from "wet" conditions; redundant systems might include:
  - on-site storage in well pad ponds;
  - on site tankage to store water for the duration of any temporary diversion licence, along with valid hauling contracts to meet producers' needs;

[25] Upon identifying either local or basin-wide low flow conditions, regulators begin a process of escalating interventions: first, typically, new temporary diversion licence (TDL) applications are refused; then, existing TDLs are suspended; if necessary, regulators follow-up more closely with regular licence holders about their ongoing needs and often request voluntary reductions/restrictions. In cases in which a senior licence holder is not able to divert water because of a competing junior user, licence priority can be enforced and the junior user(s) ordered to reduce or cease diverting.

  - deep well of suitable capacity to provide first-fill well requirements; and
  - on-site tankage and valid hauling contracts to meet domestic camp and office needs; and
- other scientifically proven techniques that have not yet been applied in SAGD for a variety of reasons could be evaluated (e.g., fog / dew screens to collect water for makeup, more complete extraction of water from bitumen product, condensing water from exhaust stacks)

Water quality management action

Water quality inside the 10KMZ could be adversely impacted by activities on the landscape to manage process water, surface water run-off, construction impacts and other development activities that are addressed specifically below.

Hazardous and oil field waste

Deep well disposal of produced water (only) is permitted within the zone if surface casing and groundwater monitoring are provided. Disposal of hazardous and oil field waste, sump pits, flare pits/horizontal flare stack burn pits, and on-site disposal of project domestic waste are prohibited within the 10KMZ. If drilling waste is treated on site, it must be encapsulated from contact with surface waters. In consideration of Interior habitat disturbance thresholds:

- maximize export of liquid/solid waste generated inside the 10KMZ to appropriate licensed facilities outside the 10KMZ;
- prohibit import of liquid/solid wastes from beyond the 10KMZ into the 10KMZ; and

Precipitation management

Well-pads must be designed to capture a 1-in-100 year 24-hour precipitation event and any captured water from well-pads must be trucked off site or alternatively trucked or pipelined to the central processing facility (CPF) for reuse as process water. If companies opt to provide continuous pumping of storm water to the CPF, they may reduce on-pad storage commensurately while still accommodating the 1-in-100 year 24-hour precipitation event.

Thermally mobilized groundwater constituents

The 2018 directive "Assessment of Thermally Mobilized Constituents in Groundwater for Thermal In Situ Operations," as amended or replaced from time to time will be applied.

Road crossings

Road and infrastructure (pipe, utility, etc.) crossings in or across fish-bearing water bodies must adhere to the *Water Act* and regulations and be constructed, monitored and maintained to ensure effective and functional fish passage. Additionally, disturbances associated with

road crossings, linear corridors and crossings (pipe, utility, etc.) should employ ditch erosion control and stream erosion control to accommodate the 1-in-25 year 24-hour precipitation event.

Chemical storage

All chemical storage tankage in the 10KMZ within three kilometres of the Ells River main stem, including totes, must include appropriate secondary containment.

Water quality best practices and performance standards

The Government of Alberta will establish performance targets and best practices for maintaining water quality inside the 10KMZ. The Technical Advisory Committee may provide recommendations for such targets and best practices. Practices that may be applicable to achieving water quality and fish habitat objectives in the 10KMZ, and that can serve as a starting point for discussions include the following:

- send all storm water to the CPF for process use;
- provide continuous pumping of storm water to the CPF to reduce on-pad storage;
- maintain/minimize well pad footprint via a combination of:
  - pipelined storm water to CPF;
  - vertical pond walls (e.g., precast concrete);
  - well pad bottoms shaped for maximum storage; and
  - wells and roads built on elevated “terraces” or “islands” above well pads.

The above is a preliminary list to be discussed and advised on by the TAC.

6.4 Groundwater Management Action

Companies are encouraged to use saline water from deep aquifers not connected to surface water or to use alternative water sources. Groundwater-surface water interaction must be understood before any groundwater can be sourced from surficial aquifers with potential connection to surface water. This will be addressed primarily through the development of a groundwater-surface water model and groundwater and surface water monitoring. Since there is usually a significant time-lag between groundwater withdrawals and surface water effects, and because potential drawdown decreases as the distance from wells increases, a specific management tool for this plan is a buffer area of three kilometres along the main stem of the Ells River within the 10KMZ within which no surficial groundwater withdrawal is permitted.

6.5 Wetlands Outcomes

Wetlands are managed within the 10km zone to maintain biodiversity and ecosystem health, water quality, hydrologic functions (i.e., groundwater recharge and discharge, filtration), abundance, and traditional land uses and cultural practices, and they are

conserved, reclaimed and restored to support those ecological functions and the exercise of section 35 rights.

The "Alberta Wetland Policy" and "Alberta Wetland Mitigation Directive" apply to the 10KMZ. Mineral leaseholders that submitted regulatory applications for resource extraction activities in the 10KMZ prior to the Alberta Wetland Policy implementation date (July 4, 2016), will be required to follow adaptive management strategies and wetland avoidance, mitigation and reclamation commitments specified in their regulatory applications. For leaseholders who submitted applications prior to the implementation date, no additional relative wetland value assessments will be required. However, any new or updated policies may be incorporated into approvals during future renewals, at the discretion of the designated director under the *Water Act*. Conservation and reclamation planning (e.g. activity plans, project-level conservation, reclamation and closure plans) will outline the wetland reclamation techniques to achieve equivalent wetland type or establish the conditions for equivalent wetland type to develop over time where ecosystem development is long-term (i.e., bogs and fens).

6.6 Wetlands Management Action

Wetlands are managed to avoid and minimize negative impacts and, where necessary, to replace lost biodiversity and ecosystem health, water quality, hydrological functions, abundance, and traditional land uses and cultural practices in the 10KMZ.

Relative abundance value contributing to overall relative value under the Alberta Wetland Policy is determined based on the assumption that current abundance and historical loss determine the value assessment; areas of low current abundance and high historical loss are assigned a higher value, and areas of high abundance and low historical loss are assigned a lower value.[26] The Policy*Plus* management outcome for wetlands in the 10KMZ Plan is to minimize future disturbance regardless of current abundance and historic loss.

The Alberta Wetland Policy provides for sub-regional management requirements. For the purposes of the Moose Lake Plan, the following modifications apply in the 10KMZ:

1. wetland management outcomes for the 10KMZ apply to all mineral leaseholders, including those with regulatory applications for resource extraction activities submitted prior to the policy implementation date;
2. relative abundance value for wetlands in the 10KMZ will be ranked using a plus one (+1) modifier; and
3. relative wetland value assessment in the 10KMZ includes consideration of the exercise of section 35 rights, traditional land uses and cultural practices. TAC will help to develop and recommend assessment

[26] Alberta Government, 2013. Alberta Wetland Policy. P. 13.

procedures, to be applied in parallel with the existing relative wetland value assessment tool.

Wetland replacement

As technically feasible, wetlands disturbed in the 10KMZ will be replaced type-for-type (e.g. marsh for marsh) in the 10KMZ or conditions will be established for equivalent wetland type to develop over time. Wetland replacement should seek to replace biodiversity and ecosystem health, water quality, hydrological functions, abundance, and traditional land uses and cultural practices.

Avoidance and mitigation

Development activities to protect wetlands, such as avoidance and mitigation planning, should seek and, if provided, incorporate input from the Fort McKay First Nation and Fort McKay Métis based on cultural values, traditional land uses and other community-specific knowledge. The Fort McKay First Nation and Fort McKay Métis should be engaged in reclamation planning, including reviewing avoidance and mitigation planning for wetlands.

Wetland restoration

Identification of priorities for restorative activities—such as replacement and reclamation—and non-restorative activities—such as research and best management practices—should seek and, if provided, incorporate input from the Fort McKay First Nation and Fort McKay Métis based on cultural values, traditional land uses and other community-specific knowledge.

Offset protocols and *in-lieu* fees

Offset protocols and in-lieu fees established under the Alberta Wetland Policy apply to new projects. In-lieu fees collected for wetlands within the 10KMZ can be used to support both restorative and non-restorative priorities inside this zone as identified by the Government of Alberta with input from Fort McKay First Nation and Fort McKay Métis.

6.7 Water, Groundwater and Wetland Monitoring

Groundwater monitoring wells

Until the 2018 “Assessment of Thermally Mobilized Constituents in Groundwater for Thermal In Situ Operations” Directive is fully implemented and the results of individual project assessments and risk-based monitoring plans are known, reviewed, and tested, each company within the 10KMZ will conduct groundwater monitoring at the following minimum number of well pads:

- In-Situ projects with 1 to 5 pads: groundwater monitoring conducted at a minimum of one well pad.
- In-Situ projects with 6 to 10 pads: groundwater monitoring conducted at a minimum of two well pads.
- In-Situ projects with 11 to 15 pads: groundwater monitoring conducted at a minimum of three well pads.

The minimum requirements will be revisited by the Technical Advisory Committee when more information about thermal projects becomes available. The TAC may revisit and make recommendations, if appropriate, to amend the monitoring requirement.

6.8 Water, Groundwater and Wetland Performance Measures

Project-level conservation, reclamation and closure plans and reclamation proposals for projects inside the 10KMZ must specify plans to reclaim pre-disturbance wetland classes to reclamation targets of equivalent wetland classes.

7.0 Fish and Wildlife Management

In 2019, the Fort McKay First Nation First Nation initiated a remote wildlife camera monitoring program in the Moose Lake area. The graphic above, which contains a representative sample, shows the diversity of animals observed in the area. The remote camera program has photographed and videoed both common and unexpected species including, for example, moose, caribou, elk, deer, wolves, lynx, bears, foxes, eagles, ptarmigan, ravens, and snowshoe hares.

7.1 Current Legislative and Policy Framework

The Government of Alberta has enacted legislation and developed policy to support fisheries and wildlife management in Alberta that apply to the 10KMZ in the context of the Moose Lake Plan, including the following:

- "Fish and Wildlife Policy for Alberta" (1982): This policy defines the role and responsibilities of the Fish and Wildlife Branch with respect to the management, allocation and use of fish and wildlife resources in Alberta.
- *Wildlife Act* (2018): This Act provides for the protection and conservation of wild animals. It sets rules for hunting and trapping wildlife, possession of wildlife and wildlife parts, as well as the sale, import and export of wildlife, controlled animals and endangered species.
- *Fisheries (Alberta) Act* (2016): This Act controls licensing for fishing, the

transportation of fish, fish stocking and the handling, marketing, processing, storage, preservation, sale and disposition of fish. It also prohibits the possession, importation and sale of prescribed invasive organisms without approval, and provides unique protections for fish that allow action to be taken to prevent the spread of ecological threats to fish, including fish parasites, diseases and genetic contamination.

- "Fish Conservation and Management Strategy for Alberta" (2014): This strategy provides a framework to ensure Alberta's fish benefit present and future Albertans, including the responsibility to manage the sustainability, conservation and use of Alberta's fish resources. It also sets out the prioritized use of fish resources.
- "Master Schedule of Standards and Conditions" (2018): This schedule provides specific rules and guidelines for a variety of land use activities that may impact fisheries or wildlife habitat, sensitive areas, Key Wildlife and Biodiversity Zones, or the homes (nests, dens, etc.) of particular species of fish and wildlife.
- EPEA (2019): Proponents operating a project authorized under EPEA may be required to produce and implement a Wildlife Mitigation and Monitoring Plan to address project specific impacts to wildlife populations and habitats.
- "A Woodland Caribou Policy for Alberta" (2011): This policy identifies caribou conservation as a shared government, public and private sector responsibility, led by government. It provides strategic guidance for development of conservation outcomes, priority management actions, scale, and timelines for caribou recovery actions in Alberta.

7.2 Outcomes for Biodiversity and Population Health

The Moose Lake Plan includes measures to achieve and maintain naturally occurring, healthy and self-sustaining fish and wildlife populations (including culturally relevant species). This may be accomplished by developing or refining fish and wildlife management objectives within the 10KMZ that are informed by Indigenous knowledge, and First Nations' and Metis' traditional land use and cultural practices.

The Moose Lake Plan fish and wildlife outcome is to maintain the diversity and health of populations of naturally occurring species within the 10KMZ.

7.3 Current State

The largely intact landscape of the Moose Lake reserves and surrounding 10KMZ provide habitat for a wide range of boreal species; many of which have been detected in Fort McKay First Nation's recent camera trapping programs. The preservation of habitat is key to maintaining healthy fish and wildlife populations and this plan will accomplish that through wise management of land and footprint.

The 10KMZ is located in the much larger Wildlife Management Unit 531 (WMU 531). WMU 531 is inhabited by such large ungulate species as moose, woodland caribou and wood bison along with a variety of other terrestrial species typical in the boreal forest such as black bears, wolves, coyotes, fur bearers, birds and others.

Several surveys conducted in WMU 531 since 1994 indicate the moose population has been relatively stable and at low densities which is typical in boreal mixed-wood forests due to poor quality habitat (large expanses of muskeg and late-seral forest).

The Red Earth boreal woodland caribou range covers 82% of the 10KMZ. In contrast, the 10KMZ comprises only 3.5% of the Red Earth caribou range. The current status of Red Earth caribou is stable.

At Moose (Gardiner) Lake, index netting surveys conducted from 2008-2019 indicate the abundance of walleye has steadily declined. Over this time, the population has declined from moderately abundant in 2008 to very low (essentially collapsed) in 2019. Very few immature, young walleye were present in 2019. From 2008-2019 northern pike have remained at low abundance, with few small fish present.

At Buffalo (Namur) Lake, fisheries monitoring indicate the lake trout population is abundant and sustainable under current conditions. A broad range of sizes, including young and old fish, was present in the last survey in 2018. The fish ranged from six to twenty-six years of age.

7.4 Fish and Wildlife Management

Many birds and mammals, especially larger species, are mobile; management units are typically much larger than the area delineated by the 10KMZ, which makes focused wildlife management strategies specific to Moose Lake inappropriate. However, applicable legislation and policies, including the policies and legislation listed in section 7.1, may also promote the health and abundance of certain species in the 10KMZ.

Lake dwelling species of fish are relatively localized and tend not to move as much as river dwelling species and so are more easily managed. Specific fisheries management strategies such as to restore walleye and northern pike populations in Moose (Gardiner) Lake, are more easily implemented.

Actions to support fish and wildlife populations should consider not only conservation measures, but look to implement proactive and innovative management approaches and strategies that compliment habitat maintenance, connectivity and reclamation efforts.

Sustainability of many fish and wildlife species can also be enhanced through the maintenance of habitat quality and connectivity, and by reducing human pressures on populations. Management of access to important fisheries and wildlife habitats can provide excellent mitigation for regulated and unregulated human activities and reduce impacts on populations.

Fisheries management within the 10KMZ

Fisheries management in Alberta involves several steps in an ongoing cycle of adaptive management, including: population assessments to determine a fishery's stock status, *i.e.*, relative population abundance; development of fisheries management objectives; implementation of management strategies (e.g. fishing regulations) to achieve management objectives; monitoring of the effectiveness of management strategies. Fishery management objectives are developed with the input of user groups.

Fisheries management objectives should be established for the lakes and connecting watercourses in the 10KMZ. Alberta Environment and Parks will develop lake-specific fisheries management objectives for Moose (Gardiner) and Buffalo (Namur) lakes based on the principle that First Nations and Métis traditional land use and cultural practices are an important component in the development of those objectives. The Technical Advisory Committee my provide recommendations for such objectives.

To achieve the long-term goal of sustainable populations and fisheries, further management actions may be necessary to rebuild the pike and walleye populations to self-sustaining levels at Moose (Gardiner) Lake

Wildlife management within the 10KMZ

Wildlife management and habitat conservation objectives for the 10KMZ will be identified and considered when revising broader wildlife management plans, habitat management plans, or species recovery plans that encompass any portion of the 10KMZ. The Technical Advisory Committee may provide recommendations to the Government of Alberta for such objectives. The broader plans will consider, as appropriate, hunting tag allocations, habitat variability and monitoring with the goal of restoring and/or maintaining self-sustaining populations of local species. Management objectives and associated plans will recognize that conservation of populations, followed by rights under section 35 of the Constitution Act, 1982 are priority considerations.

Red Earth Caribou

The Government of Alberta will actively seek the collaboration and participation of Indigenous peoples and affected stakeholders in the recovery and sustainability of the Red Earth Caribou.

7.5 Fish and Wildlife Monitoring

The Technical Advisory Committee will make recommendations to the Government of Alberta for hunting tag allocations, habitat variability and monitoring that includes culturally significant species.

Project-specific wildlife mitigation and monitoring

Companies of projects with an EPEA approval will be required to develop and implement a wildlife mitigation and monitoring plan. Proponents should seek and, if provided, incorporate input from the Fort McKay First Nation, Fort McKay Métis, and other affected Indigenous communities, including community-specific Indigenous knowledge.

Wildlife habitat models used in regulatory applications for projects in the 10KMZ should incorporate 10KMZ data,—Moose Lake sub-regional data, and Northern Athabasca Oil Sands Region data, as available—to be consistent with Section 2.4.2 of the "Guide to Preparing Environmental Impact Assessment Reports in Alberta" (updated April 2016) .It is expected the Technical Advisory Committee will provide recommendations for fish and wildlife monitoring programs to support data collection to validate wildlife habitat models where data appropriate for the region are not currently available.

OSE activity plans and *in situ* project-level conservation, reclamation and closure plans will include reclamation targets to re-establish wildlife habitat in conservation, reclamation, and closure management areas. Input and guidance from Fort McKay First Nation, Fort McKay Métis, and other Indigenous groups must be sought, and if provided, is incorporated, where appropriate, to establish wildlife habitat reclamation targets and design and implement reclamation performance monitoring.

7.6 Fish and Wildlife Performance Measures

The Technical Advisory Committee will recommend performance measures to assess the achievement of the fish and wildlife outcomes inside the 10KMZ.

8. Access

Access concerns specific to Indigenous users are to ensure that there is access to traditionally and culturally important lands and resources and to manage the potential impacts of increased access so that traditional uses and culturally important lands are not disrupted.

Resource development sector concerns regarding access are primarily related to being able to effectively and economically have access to, and develop the resource with certainty around required reclamation, access management requirements, safety, and maintenance responsibilities.

Management Intent

Access, including any new access within this zone is managed to minimize creation of additional footprint and to reduce user impacts to ecosystem intactness, fish and wildlife biodiversity and habitat, and to support traditional use.

Management Outcomes

- land and water access is maintained for traditional use and enjoyment of the surrounding land and waterscapes
- new access minimizes new disturbance in the management zone
- Resource development sector has access to develop resources

Management Actions

- Companies will plan access roads and rights of way using Integrated Land Management principles to reduce disturbance while allowing for multiple uses where appropriate.
- Companies will plan access routes in a manner that discourages motorized recreational (i.e. avoid ring roads)
- Where practicable, companies will avoid developing access routes across navigable waters.
- Where practicable, companies will avoid developing access routes through critical habitat of species at risk
- To the extent possible, access currently used by Registered Fur Management Agreement (RFMA) holders will not be disturbed, or impeded.
- Seek input from potentially affected land users (e.g. Indigenous traditional land users, trappers, guide / outfitters,) will be required by government or companies prior to undertaking any restoration activity or resource development activity impacting current access routes.

- Companies shall discourage the use of project-specific access routes by their staff and contractors for recreational purposes.
- Companies shall prohibit staff and contractors from carrying firearms for recreational purposes within the project development area
- Posted speed limits shall be set to mitigate potential negative effects to wildlife, traditional and recreational land users
- Entry points and intersections of access routes or linear disturbance undergoing restoration will require rollbacks or other physical barriers to deter further access and promote forest growth.

Moose Lake Trail

Parts of the historical route to the Moose Lake reserves have been placed under dispositions held by oil sands companies. The Government of Alberta will continue to investigate how best to establish and maintain a Moose Lake Trail in collaboration with anticipated trail users and affected parties.

Outcome

The Moose Lake Trail is intended to provide consistent, reliable, and safe access for members of the Fort McKay First Nation to the Moose Lake reserves. Other Indigenous persons with a historical pattern of traditional land use in the 10KMZ, especially the Fort McKay Métis, will also benefit from the Moose Lake Trail.

Management action

Access to the Moose Lake Trail shall be managed to reduce non-essential use.
Where practicable, resource developers should minimize their non-essential use of the Moose Lake Trail; this may involve using alternate routes such as the Dover Road.

9. Governance and Implementation

The Moose Lake Technical Advisory Committee (TAC) will be convened by the Government of Alberta as an informal committee to support the implementation of the Moose Lake Plan, track progress and report on the achievement of the plan's outcomes and provide guidance on continuous improvement. The TAC will not have a regulatory, or auditing function and will serve in an advisory capacity to support plan implementation and provide recommendations to the responsible Executive Director at Alberta Environment and Parks.

9.1 Technical Advisory Committee

The TAC is charged to undertake activities necessary to ensure the effective implementation of the Moose Lake Plan and will seek input from TAC participants including Fort McKay First Nation, Fort McKay Métis, and industrial stakeholders) whenever required to improve implementation or recommend corrective action.

The roles and responsibilities of the TAC will be further defined in a Terms of Reference that will reflect the intent and purpose of this committee. Specific activities will be identified through annual work plans and budgets.

The TAC work will initially focus on providing monitoring recommendations, assisting with the implementation of footprint tracking and reporting mechanisms, and developing and recommending culturally relevant criteria to support reclamation criteria milestones. While all TAC work identified in this plan is relevant to overall plan outcomes, these responsibilities may commence in pace with resource development activity on the landscape.

Management intent

To facilitate technical cooperation, implement the Moose Lake Plan, and support the effective management of the Moose Lake 10KMZ. The TAC will:

- develop a work plan that articulates steps necessary to complete the outstanding elements of the Moose Lake Plan;
- develop and implement a system to manage the ongoing monitoring, evaluation and reporting of strategies and actions within the work plan; and
- evaluate implementation of the Moose Lake Plan and provide recommendations to Alberta Environment and Parks on adjustments required to achieve the vision and outcomes of the plan.

Representation and Governance

The TAC will be convened by the Government of Alberta as an informal committee and have representation from Fort McKay First Nation, Fort McKay Métis, Government of Alberta, oil and gas sector, forestry sector, the Alberta Energy Regulator, and other Indigenous groups / organizations and stakeholders as appropriate. A Terms of Reference will be developed by the TAC to define governance structure, representation, internal decision-making and dispute resolution, and any other matters identified by its members.

Sub-committees may be established and dissolved by the TAC based on need. Membership of any sub-committee will be determined by the TAC based technical expertise and a fair representation of TAC membership.

The TAC will endeavor to make internal decisions and recommendations by consensus. Issues or internal decisions that cannot be resolved by the TAC will be elevated to the Minister of Alberta Environment and Parks.

Final decision-making authority rests with the Government of Alberta. Transparent reporting mechanisms will be used when recommendations from the TAC are not followed.

The TAC will provide an annual report to the responsible Executive Director of Alberta Environment and Parks that will also be publically available.

Meetings may be scheduled, if required, between the Minister of Alberta Environment and Parks ,and Chief of the Fort McKay First Nation to review the implementation of the Moose Lake Plan and progress towards desired outcomes for the the 10KMZ, and to provide guidance to the TAC as necessary.

9.2 Monitoring and Performance Management

A monitoring program, including community-based monitoring, will be established through the TAC to evaluate the implementation of the Moose Lake Plan and whether its vision and outcomes are being achieved. Opportunities to leverage existing programs, such as the Oil Sands Monitoring Program, will also be incorporated where possible to support monitoring efforts in the 10KMZ. Monitoring activities may include the following:

Land and footprint monitoring

The TAC will monitor:

- and track footprint management and reclamation efforts within the 10KMZ in relation to disturbance limits, Interior habitat and effectiveness in meeting plan outcomes;
- the effectiveness of reclamation in the 10KMZ;
- progress on the designation, operation and maintenance of a Moose Lake Trail from the Fort McKay hamlet to the Moose Lake reserves in support of plan outcomes; and
- potential negative impacts to traditional land uses and cultural practices, and safety considerations arising increased use of a new or improved access route.

Air quality monitoring

The Government of Alberta will contribute financial support for the existing Namur Lake Air Monitoring Station and work with Fort McKay First Nation to explore the future incorporation of that station into the Oil Sands Monitoring Program regional ambient environmental monitoring network.

The TAC will:

- assess the need for a continuous ambient air monitoring station on or near the perimeter of the 10KMZ; and
- work with industry stakeholders to provide a recommendation for noise, odour, dust, and light complaint processes, and explore effective mitigation measures.

Water and wetlands monitoring

The TAC will:

- Initiate a common groundwater-surface water interaction model within the first year following the approval of the Moose Lake Plan to predict potential effects from development and to support decisions on water use applications consistent with the plan's outcomes;
- establish additional baseline monitoring of water balance, water levels and water quality in the Moose (Gardiner) and Buffalo (Namur) lakes, and the Ells River, subject to resource availability;
- prioritize expansion of the regional groundwater monitoring network within the 10KMZ and regularly evaluate its effectiveness;
- monitor and evaluate water quality/quantity values and trends;
- monitor wetland loss and replacement activities within the 10KMZ to meet plan outcomes;
- provide recommendations to Alberta Environment and Parks for field protocols to identify Indigenous wetland values in collaboration with Fort McKay First Nation and Fort McKay Métis; and
- provide recommendations for groundwater recharge field assessment methods in collaboration with the Fort McKay First Nation and Fort McKay Métis.

Fish and wildlife monitoring

TAC will:

- monitor the intactness of fish habitat and habitat continuity;
- provide input into AEP's development of fisheries management objectives for Moose and Buffalo lakes;
- provide recommendations to AEP in monitoring the effectiveness of the fisheries management strategies to achieve fisheries management objectives;
- monitor biodiversity and habitat suitability.

9.3 10KMZ Data Management and Availability

Data collected to support outcomes and management direction should be open, transparent, and publicly accessible. The TAC could serve a logistical role to support

ensuring applicable data is available and standardized for ease of tracking, reporting and disseminating. A system developed to manage and disseminate relevant data will support company-based, regulatory-based monitoring and/or assessment programs. Applicable data could include:

- regulatory data submitted to the appropriate agencies;
- community-based monitoring program data;
- data collected from permanent sampling plots established within restoration and reclamation treatment areas ;
- data to validate that interior habitat is being maintained at 85 percent in the 10km zone and that management actions are effective at reducing buffered footprint; and
- data to validate that air, water and wetlands, fish and wildlife, and governance outcomes are being achieved for the 10KMZ and meet the intent of the Moose Lake Plan.

10. Plan Review

Once the Moose Lake Plan is implemented, its effectiveness in achieving the stated vision and outcomes needs to be shared broadly. Alberta Environment and Parks will use various mechanisms to communicate progress to applicable Indigenous groups and organizations, the resource development sector, and others as identified. Information provided may include reports that speak directly to the plan, and other communication to address more specific aspects of the plan. Reports will provide status of progress being made toward achieving the outcomes based on identified metrics.

The plan is intended to be reviewed by government following the first five years after its implementation and at least once every 10 years thereafter. Such a review would include consideration of management direction for management themes described in this plan including those land management components specific to surface activities permitted on vacant crown land, issuing dispositions for metallic /industrial minerals, or future PNG activities. Any review / revisions would be evaluated for compatibility with the objectives of the plan.

A review will include a thorough evaluation of its effectiveness in meeting outcomes. Adjustments to the plan would be undertaken in a collaborative nature, including engagement of Indigenous communities and potentially affected stakeholders. Reporting on progress towards achieving outcomes will be a component of each review.

Plan reviews can also be triggered by the ongoing review of performance metrics. If the plan is meeting the expected outcomes, no further action is required until the 10-year review. Should the performance metrics show the plan is not meeting expected outcomes, a review of the poorly performing component may be conducted or a revision of the plan in its entirety can be initiated. Other considerations that might trigger a plan revision may include:

- significant impacts to the planning area attributable to natural disturbances such as flood, wildfire, climate change effects, *etc*.;

- new government policy or statutory changes that have implications for the Moose Lake Plan.

Glossary

Unless otherwise noted by reference to specific legislation or other government documents, the definitions provided here are expressly to support implementation of the Moose Lake 10KMZ Management Plan.

10KMZ: the ten-kilometre zone extending from the Fort McKay First Nation's Moose Lake reserves 174A and 174B to which the Moose Lake Plan applies.

adaptive management: for the purposes of the plan, this means a management approach that involves monitoring and performance evaluation followed by adjusting management action to achieve the intended outcome. Adaptive management also allows information to be fed back into the project planning and design process so that future reclaimed project areas will meet the intended objectives. A tenet of ecological management, in which human resource users are flexible to change the way they interact with the environment, based upon need and the availability of new information. (Source: adapted from the "Glossary of Reclamation and Remediation Terms Used in Alberta"; 7th Edition, May 2002).

agreement: means, when referring to Crown minerals and subsurface reservoirs, an agreement as defined under the Mines and Minerals Act.

best available technology economically achievable (BATEA): refers to technology that can achieve superior industrial performance (*e.g.*, reducing industrial emissions) and that has been demonstrated to be economically feasible through successful commercial application across a range of regions and factors (*e.g.*, fuel types).

best management practices: management practices or techniques recognized to be the most effective and practical means to meet specific goals, while minimizing adverse environmental and other effects. Also called beneficial management practices. For the purposes of the Moose Lake Plan, the Technical Advisory Committee will provide recommendations for best management practices for the 10KMZ.

biodiversity: the assortment of life on earth—the variety of genetic material in all living things, the variety of species on earth and the different kinds of living communities and the environments in which they occur.

conservation: except where the term applies to conservation areas, "conservation" means, […] the planning, management and implementation of an activity with the objective of protecting the essential physical, chemical and biological characteristics of the environment against degradation. (Source: section 1(l) of the *Environmental Protection and Enhancement Act*).

cumulative effects: change to the environment caused by a project in combination with other past, present, and planned projects in the region. (Source: "Glossary of Environmental Assessment Terms and Acronyms Used in Alberta," updated February 2010; Alberta, 2010).

decision-maker: means a person who, under an enactment or regulatory instrument, has authority to grant a statutory consent, and includes a decision-making body.
(Source: section 2(1)(e) of the *Alberta Land Stewardship Act*).

disturbance: in respect of provincial Crown land, means human activity that moves or removes one or more of the following features of provincial Crown land or that alters or results in the alteration of the state of one or more of those features from the state in which it existed before the human activity occurred, and includes any change in the intensity, frequency or nature of the human activity: (i) vegetation; (ii) soil; (iii) subsoil; (iv) bedrock; (v) landform; (vi) wetland; (vii) water body or watercourse; (viii) air flow or wind currents; (ix) ambient sound volumes; (x) light or shade. (Source: section 1(i) of the *Public Lands Administration Regulation*).

disturbance limit: for the purpose of this plan, means the cumulative land disturbance associated with the buffered footprint of all development activities allowed within the mixed-use area of the 10KMZ.

ecosystem: the interaction between organisms, including humans, and their environment. Ecosystem health and integrity refer to the adequate structure and functioning of an ecosystem as described by scientific information.

ecosystem function: the interactions between organisms and the physical environment, such as nutrient cycling, soil development, water budgeting, and flammability. (Source: 2010 Reclamation Criteria for Well sites and Associated Facilities for Cultivated Lands, Forested Lands, Native Grasslands).

effect: includes (i) any effect on the economy, the environment, a community, human health or safety, a species or an objective in a regional plan, regardless of the scale, nature, intensity, duration, frequency, probability or potential of the effect, and (ii) a cumulative effect that arises over time or in combination with other effects. (Source: section 2(1)(h) of the *Alberta Land Stewardship Act*).

edge effect: means the distance over which the influence of development footprint extends into the adjacent habitat.

Equivalent land capability

"equivalent land capability" (as per section 127 of Public Lands Administration Regulation (PLAR) means a condition in which the ecosystem processes on the land within the right of

way are capable of producing goods and services of a quality and in a quantity that is at least equivalent to that which existed before (a) a disposition identified by the director was issued in respect of the land, or (b) the pipeline was laid down, constructed or installed within the right of way, whichever the director directs. (2) Except where a pipeline is lawfully constructed above the surface of the right of way, an operator that lays down, constructs or installs a pipeline within the limits of a right of way must (a) bury the pipeline, and (b) restore and reclaim, to the director's satisfaction, the right of way to an equivalent land capability within one year after the date of execution of the agreement, in the case of the first pipeline constructed in the right of way, and within one year after the date of an approval under section 125(1), in the case of an additional pipeline in the right of way. (3) If the director considers it appropriate to do so, the director may, in writing, extend the one-year period provided by subsection (2) at any time before or after it expires. (4) If the director considers it appropriate to do so, the director may, in writing, waive or vary the requirements of subsection (2)(b).

environment: means the components of the earth and includes (i) air, land and water, (ii) all layers of the atmosphere, (iii) all organic and inorganic matter and living organisms, and (iv) the interacting natural systems that include components referred to in subclauses (i) to (iii). (Source: section 2(1)(j) of the *Alberta Land Stewardship Act*).

footprint: means the impact or extent of a disturbance and includes the intensity, frequency and nature of any uses or activities related to the disturbance. (Source: section 1(m) of the Public Lands Administration Regulation. For the purposes of this plan, the following terms also apply:

- **buffered footprint:** the footprint plus a defined area that extends beyond the boundary of the footprint intended to account for edge effects. Buffered footprint is used to calculate Interior habitat
- **non-resource development footprint**: the footprint created by traditional, recreational, or commercial land uses excluding resource development.
- **resource development footprint:** the footprint created by an industrial company—oil sands, forestry, aggregate, *etc*.—for resource extraction.

Indigenous peoples: for the purposes of this plan, means aboriginal peoples of Canada within the meaning applied by Canadian courts to s. 35 of the *Constitution Act*, *1982*.

Integrated Land Management (ILM): A strategic, planned approach to managing and reducing the human-caused footprint on the land, including resource development. The goals of ILM are to reduce land-use disturbance relative to what would occur in the absence of integration efforts, and foster a stewardship ethic in all land users. (Source: "Alberta Public Lands Glossary of Terms"; Alberta, 2018).

Interior habitat (IH): for the purposes of this plan, the intact native terrestrial vegetation and aquatic cover—pre-development natural landscape—within the 10KMZ and/or a specific

leased area that is a specified distance from development footprint—that area within which impacts are felt and called the "edge effect"—and so not impacted by that development. Intact habitat is required for ecosystem function and is important for the meaningful exercise of section 35 rights. This plan has set an outcome of 85 percent intact Interior habitat at any given time.

keep clean areas clean: preventive measures that aim to avoid or minimize the increase of overall ambient concentrations of pollutants in air zones at the green management level.[27]

legacy seismic: for the purposes of the plan, unless otherwise specified, this refers to 2D seismic programs.

limit: the point beyond which an unacceptable risk to a desired outcome occurs; the limit is the value of an indicator representing the point, if exceeded, that the system moves to an undesirable state and management action must be taken.

management action: for the purposes of this plan, includes strategies, directives, enforcement orders, *etc*., that the Government of Alberta or its agencies are responsible to implement or to ensure that they are implemented by other parties active within the 10KMZ.

provincial Crown land: (also referred to as ''public land") provincial Crown land includes lands administered as public lands under the *Public Lands Act*, parks under the *Provincial Parks Ac*t and highways under the *Highways Development and Protection Act*. Crown lands are owned by the Crown and managed for the benefit of all Albertans.

reclamation: means any or all of the following: (i) the removal of equipment or buildings or other structures or appurtenances; (ii) the decontamination of buildings or other structures or other appurtenances, or land or water; (iii) the stabilization, contouring, maintenance, conditioning or reconstruction of the surface of land; (iv) any other procedure, operation or requirement specified under the *Environmental Protection and Enhancement Act*, Public Lands Act, or associated regulations.

Reserve or reserve lands: lands held by the federal Crown "for the use and benefit of the respective band for which they were set apart"[28] . In this plan, refers to the Fort McKay First Nation's Moose Lake reserves 174A and 174B.

section 35 rights: rights recognized and affirmed in section 35 of the *Constitution Act, 1982*, which pertains to aboriginal and treaty rights of the aboriginal peoples of Canada.

[27] "Guidance Document on Air Zone Management," i.
[28] *Indian Act*, s. 18(1).

target: the desired level of performance; must be quantifiable and specify a period.

overage credit: additional hectares of buffered footprint allocated to a company from the unallocated pool if its allocation is insufficient to proceed with its project.

threshold: ordinarily has the meaning given to it in a regional plan and may include a limit, target, trigger, range, measure, index or unit of measurement.[29]

trigger: a measurement above a target or threshold that, if exceeded, requires an immediate assessment and corresponding management action.

watershed: The area of land that catches precipitation and drains into a larger body of water such as a marsh, stream, river, or lake. A watershed is made up of several sub-watersheds that contribute to its overall drainage; all lands enclosed by a continuous hydrologic-surface drainage divide and lying upslope from a specified point on a stream or other waterbody.[30] Watersheds that are relevant to this plan include the combined Moose (Gardiner) and Buffalo (Namur) lakes watershed and the Ells River watershed; the Ells River is the drinking water source of the Hamlet of Fort McKay.

[29] Alberta Land Stewardship Act, 2009.

[30] "Glossary of terms relate to water and watershed management in Alberta," 1st Edition. https://www.ualberta.ca/-/media/ualberta/faculties-and-programs/centres-institutes/water-initiative/waterterminology.pdf

Appendix 1: Recovery Milestones

Principles and processes outlined in section 4.9 and will apply, where appropriate, throughout the recovery milestones. For example, Technical Advisory Committee (TAC) input and participation throughout reclamation, reforestation, or restoration process.

Footprint type	Milestone #1 50% buffer reduction	Milestone #2 100% buffer reduction	Milestone #3 Footprint removal
Legacy Seismic	**Restoration** complete (as per *Provincial Restoration and Establishment Framework for Legacy Seismic Lines in Alberta*).	**Survival assessment** complete (as per *Provincial Restoration and Establishment Framework for Legacy Seismic Lines in Alberta*).	**Establishment survey** complete (as per *Provincial Restoration and Establishment Framework for Legacy Seismic Lines in Alberta*).
Forestry Footprint	**Reforestation** complete (as per *Reforestation Standard of Alberta*).	**Establishment survey** complete (as per *Reforestation Standard of Alberta*).	**Performance survey** complete (as per *Reforestation Standard of Alberta*).
Below Ground Pipelines	N/A	Forest cover is re-established on top of below ground pipelines: • Residual linear corridors must be 4 m wide or less with line of sight limited to 50 m or less; and • Access through residual linear corridors is effectively restricted.	Reclamation certificate issued.
Geophysical Programs (e.g. Seismic Footprint)	• Access through residual linear corridors is effectively restricted.	• Natural regeneration demonstrates a natural recovery trajectory within three years of disturbance (i.e. shrub and forbs are well established, and heights are on track to become similar to surrounding vegetation).	Letter of clearance issued.
Oil Sands Exploration (OSE) Footprint	• Planting or natural regeneration approaches may be used, as determined by the revegetation strategy in the company's approved Activities Plan. • Input and guidance from Fort McKay First Nation, Fort McKay Métis and other Indigenous peoples is sought, and if provided, is incorporated, where	• Company has met all commitments made under the Activities Plan approved by AER. • A detailed site assessment to support a reclamation certificate application has been completed, and meets requirements under the Coal and Oil Sands Evaluation Program Reclamation Requirements. • One or more species identified by the TAC were found during detailed site assessment (DSA)	Reclamation certificate issued.

Footprint type	Milestone #1 50% buffer reduction	Milestone #2 100% buffer reduction	Milestone #3 Footprint removal
	appropriate, in the Activities Plan approved by the regulator (e.g. planting one or more species identified by the TAC). • Sites are abandoned and access through residual linear corridors is effectively restricted.	completed as part of reclamation certificate application. • Reclamation certificate application has been submitted to the regulator.	
Production Footprint (e.g. EPEA approved footprint	• Input and guidance from Fort McKay First Nation, Fort McKay Métis and other Indigenous peoples is sought, and if provided, is incorporated, where appropriate, in a company's conservation and reclamation (C&R) planning process and C&R plan (e.g., Conservation and Reclamation Closure Management Area – CRCMA). • Fort McKay First Nation, Fort McKay Métis and other Indigenous peoples are invited to be involved in the implementation of a permanent reclamation program (e.g., guidance /support for the development of the temporary reclamation plan; planting; monitoring). • Revegetation of these permanently reclaimed areas has involved planting one or more species identified by the TAC. • Sites are abandoned and access through residual linear corridors is effectively restricted. • Areas have been reported as having been permanently reclaimed in a company's annual C&R report submitted to the regulator.	• Monitoring programs seeking the involvement of Fort McKay First Nation, Fort McKay Métis and other Indigenous peoples have demonstrated that permanently reclaimed areas are on the trajectory to meet revegetation outcomes set out under the company's approved C&R plan. • Reclamation certificate application has been submitted to the regulator.	• Reclamation certificate issued.