Livingstone-Porcupine Hills

Land Footprint Management Plan

Alberta

Livingstone-Porcupine Hills Land Footprint Management Plan

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EXECUTIVE SUMMARY

Recent, rapid growth and expanding human development are impacting the South Saskatchewan Region's natural biodiversity assets and ecosystems. To address these changes and to manage the impacts of competing land-use demands, the Government of Alberta committed to guiding human development on public lands through footprint management planning as specified in the South Saskatchewan Regional Plan.

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. Natural events such as fire, wind, and insect outbreaks have disturbed Alberta's landscapes for millennia, creating cycles of disturbance to which today's ecosystems are adapted. Human footprint is an outcome of land use and can impact water quality, fish and wildlife, recreational and tourism opportunities, and Indigenous peoples' activities on the land.

Through the regional planning process, Albertans clearly identified a priority on the Livingstone area and Porcupine Hills as having high values for components such as headwaters, westslope cutthroat trout, Foothills fescue grasslands, recreation opportunities, and high scenic value. The Livingstone-Porcupine Hills Land Footprint Management Plan provides direction to guide the long-term cumulative effects of human footprint on public lands in the Eastern Slopes - particularly impacts to biodiversity and watersheds. Opportunities for the responsible development of natural resources, tourism, and recreational activities are maintained as identified in the objectives and strategies in the South Saskatchewan Regional Plan.

This land has also provided shelter, food, medicine and enabled a way of life for First Nations since time immemorial. First Nations continue to have a strong connection to this land and the implementation of the Livingstone-Porcupine Hills Land Footprint Management Plan acknowledges and maintains the relationship that Indigenous Peoples have with the land.

Plan Authority

The Livingstone-Porcupine Hills Land Footprint Management Plan ("this Plan") becomes effective as a subregional plan under the South Saskatchewan Regional Plan and in accordance with Section 13(5) of the *Alberta Land Stewardship Act*.

Under the overarching umbrella of the *Alberta Land Stewardship Act*, management on Crown Lands within the Livingstone-Porcupine Hills will be delivered through existing legislation where applicable such as the *Public Lands Act, Water Act, Forests Act, Provincial Parks Act, Environmental Protection and Enhancement Act* and other existing policies and strategies.

This Plan will be implemented as part of the Implementation Plan of the South Saskatchewan Regional Plan. The regulatory and enforceable components of this Plan will be the management thresholds described in Sections 2.2 and 3.1 below. These will be implemented by departments and agencies through the regulatory system. This will include: Public Land Use Zones to be enacted in this region effective 2018 under the *Public Lands Act*; the motorized trail system on the Public Land Use Zone maps; the forest management plan requirements; and the regulatory approvals.

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COMMON TERMINOLOGY

For ease of interpretation, some commonly used terms are provided with some context as to how they are to be understood:

Cumulative effects, *cumulative impacts* – the combined effects of past, present and reasonably foreseeable future land-use activities on the environment.

Disturbance – means human activity that moves or removes one or more of the following features of the public 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[1]:

(i) vegetation	(vi) wetland
(ii) soil	(vii) water body or watercourse
(iii) subsoil	(viii) air flow or wind currents
(iv) bedrock	(ix) ambient sound volumes
(v) landform	(x) light or shade

Footprint, *human footprint* – as set out in Section 1(1)(m) of the Public Lands Administration Regulation, 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. This includes temporary and permanent human landscape alterations including patches and linear corridors of disturbance (e.g. roads, trails, well sites, industrial sites, land clearings, etc.). Footprint also includes the duration, timing and other factors (e.g. noise, scenic value) that are attributes related to the physical land disturbance.

Indigenous peoples – for the purposes of this Plan, "Indigenous peoples" means "Aboriginal Peoples of Canada" within the meaning of Section 35 of the *Constitution Act*, 1982. For the reasons stated in the South Saskatchewan Regional Plan, the focus on conversation with the region's Indigenous peoples has been with First Nations. All First Nations in the planning area adhered to a Treaty, under which they hold treaty rights within the meaning of Section 35 of the *Constitution Act*, 1982.

Motorized access – means the use of highways or designated trails used by a motor vehicle. Motorized access, and its respective disturbance limits, makes no distinction as to the corridor width or type of conveyance used for motorized access.

Threshold, *management threshold* – has the meaning given to it in the South Saskatchewan Regional Plan and may include a limit, target, trigger, range, measure, index or unit of measurement. All thresholds in this Plan are management thresholds and therefore are premised on the ecological response to a disturbance but also consider the socioeconomic realities of conservation decision-making, including the risk associated with greater levels of development.

1 Section 1(1)(m) of the Public Lands Administration Regulation

LIST OF ABBREVIATIONS

GOA	Government of Alberta
ILM	Integrated Land Management
IRMS	Integrated Resource Management System
LFMP	Land Footprint Management Plan (“this Plan”)
PLUZ	Public Land Use Zone
SSRP	South Saskatchewan Regional Plan

PART 1: CONTEXT

1.0 INTRODUCTION

The benefits we receive from biodiversity and healthy, functioning ecosystems are critical to the ongoing prosperity of all Albertans. However, these natural features are sensitive to the impacts of human development. Alberta's historic development and more recent, rapid growth is impacting the South Saskatchewan Region's natural biodiversity assets and ecosystems. To address these changes and to manage the impacts of land-use demands, the Government of Alberta (GoA) committed to guiding human development on public lands through footprint management planning as specified under Implementation Section 3 of the South Saskatchewan Regional Plan (SSRP).

1.1 Purpose

The Livingstone-Porcupine Hills Land Footprint Management Plan ("this Plan") outlines a system to minimize the extent, duration and rate of cumulative footprint to achieve landscapes with healthy, functioning ecosystems that provide a range of benefits to communities and all Albertans. Footprint management planning applies to the identified public lands[2] in the Eastern Slopes of the South Saskatchewan Region (see Section 5: Maps – Regional Overview Map). In the Livingstone area and the Porcupine Hills, these landscapes are used for forestry, mining, grazing, tourism and recreational activity. Each of these uses transforms the landscape from its natural condition and contributes to the overall disturbance and human footprint. Efforts to maintain the overall landscape connectivity and ecosystem integrity of the Eastern Slopes are part of a larger legacy of land stewardship for Alberta and North America. This Plan currently only applies to the Livingstone area and to the Porcupine Hills (see Section 1.4 – Planning area).

1.2 Management Outcomes

The purpose of this Plan is accomplished by addressing two coarse components of footprint:

1. **Motorized access** – Research and species at risk recovery planning initiatives in Alberta, have shown that managing human footprint including the extent, duration and rate of disturbance and motorized access are the most significant actions that can be taken to support biodiversity and watersheds (SSRP 2017, p. 61).

2. **Spatial human footprint** – Research and natural resource management in Alberta have shown that the ability of a landscape to be resilient and support biodiversity and healthy, functioning ecosystems is affected by the loss, fragmentation, and alteration of key habitats due to human footprint[3].

2 Public lands are areas of land managed for multiple environmental, social and economic outcomes and are held in trust by the provincial government on behalf of all Albertans.
3 Farr, D., Braid, A., Janz, A., Sarchuk, B., Slater, S., Sztaba, A., Barrett, D., Stenhouse, G., Morehouse, A., Wheatley, M. 2017. Ecological response to human activities in southwestern Alberta: Scientific assessment and synthesis. Alberta Environment and Parks, Government of Alberta. ISBN No. 978-1-4601-3540-2. Available at: <https://open.alberta.ca/publications/9781460135402>

The following three management outcomes provide a system to minimize the extent of motorized access, and to guide the spatial placement and rate of linear and patch footprint development. Each outcome directly relates to objectives described in Part 3 of this document.

Outcome 1: Human footprint and disturbance are effectively minimized so as to sustain biodiversity and watershed values and provide a range of benefits to communities and all Albertans:

- This outcome describes the regulatory and enforceable management thresholds (limits and targets) for motorized access and spatial human footprint (see Section 3.1).

Outcome 2: Operational planning and management are aligned so as to minimize the extent, duration and rate of footprint development:

- This outcome describes the Integrated Land Management (ILM) practices required in operational plans that receive direction on motorized access and spatial human footprint from this Plan (see Section 3.2).

Outcome 3: Service delivery is truly integrated, through clear coordination, collaboration, and proactive decisions across government departments and agencies, to minimize footprint:

- This outcome describes the departmental business processes and integration mechanisms which enable footprint to be managed as a condition of approval and informed decision-making (see Section 3.3).

1.3 Provincial Guidance

The SSRP establishes the long-term vision for the region and it aligns provincial policies to achieve Alberta's environmental, economic and social outcomes. This Plan receives guidance from the SSRP and from the regional environmental management frameworks (i.e. surface water quality, air quality, and biodiversity). To integrate all planning initiatives, this Plan is also intended to support regional biodiversity objectives, and federal and provincial species-at-risk recovery efforts. This Plan is also intended to implement the principles of the United Nations Declaration on the Rights of Indigenous Peoples in a way that is consistent with Canada's Constitution and with Alberta law.

According to SSRP, the management intent for public land in the Eastern Slopes is for integrated management that incorporates the objectives for biodiversity and healthy, functioning ecosystems, to achieve multiple objectives. Watershed management and headwaters protection is the highest priority.[4] Forests will be managed with this as the highest priority (including water storage, recharge and release functions). Practices to manage wildfire risk to communities will be equal in priority to headwaters protection. Other values such as biodiversity, forest ecosystem resiliency (natural disturbance patterns) and timber supply will be key secondary management priorities (SSRP p.58).

4 Carried forward from A Policy for Resource Management of the Eastern Slopes (Eastern Slopes Policy, revised 1984).

In the SSRP, subregional priorities for footprint planning were identified with a focus on key headwaters areas, areas of sensitive terrestrial and aquatic habitat, and other areas of high biodiversity value including for connectivity (p. 61). The SSRP also specifies that footprint planning include approaches and requirements related to the intensity of linear footprint, management of motorized access, mandatory use of Integrated Land Management (ILM) tools; and direction on how and where such requirements will apply (p.69). These are provided in Parts 2 and 3 of this Plan and are consistent with provincial policies, strategies and frameworks, and with the desired vision for the region as stated within the SSRP.

1.4 Planning Area

The Livingstone-Porcupine Hills, combined with the Castle Parks, form a landscape complex that is an integral part of the internationally significant Crown of the Continent Ecosystem. The Crown of the Continent has long been recognized by Indigenous Peoples, scientists, and conservation groups as an ecologically significant area. It comprises the headwaters of North America's three great watersheds (the Saskatchewan, Missouri and Columbia River systems) and is recognized as critical to the protection of wildlife, landscapes and water[5].

The Livingstone-Porcupine Hills subregion (see Maps – Public Land Use Zone) is situated northwest of Pincher Creek, west of Claresholm and surrounds the Municipality of Crowsnest Pass in the Eastern Slopes of the South Saskatchewan Region. It is a mountainous landscape surrounded by a patchwork of farms and ranches. The Livingstone area and the Porcupine Hills are two distinct but adjacent landscapes. Both are known for their viewscapes, iconic wildlife species, diversity of climate regimes and ecosystems (grasslands, forests, foothills, and alpine habitats), key linkage areas, and wilderness. The planning area encompasses approximately 1,401 km^2 within the Livingstone and another 392 km^2 within the Porcupine Hills.

The 'Cowboy Trail' (Highway 22), is the area's main transportation artery. Intersecting Highway 22 are private and public roads accessing historic and current forest harvest areas, oil, gas, and mining sites, as well as grazing lease lands and provincial parks. The metallurgical coal potential and tourism opportunities are significant and important economic resources for the region and the province. Many trails were created by outdoor recreation users who enjoy using public lands for various activities including camping, hunting and fishing, horseback riding and off-highway vehicle use. These activities have all left a footprint on the landscape.

5 Crown Managers Partnership. 2011. Crown of the Continent Ecosystem. Retrieved on August 16, 2017 from: http://crownmanagers.org/crown-of-the-continent-ecosyst/

PART 2: MANAGEMENT TOOLS

2.0 Integrated Land Management

This Plan recognizes that the Livingstone-Porcupine Hills will continue to support concurrent industrial, commercial, and recreational activities. In practical terms this means footprint is managed to sustain industrial purposes and access for commercial and non-commercial recreation and tourism opportunities for all Albertans. ILM is a strategic, planned approach to manage human footprint on the landscape by:

- Actual footprint reduction (including reclamation)
- Working together (coordinated approaches to reduce impacts on other users)
- Reducing the intensity or longevity of footprint (temporal)
- Efficient use of land (spatial)[6]

ILM is a collaborative process promoting responsible use of public lands for all land users. This Section provides direction and clarity to concepts relevant to operational planning (e.g. forestry management plans, recreation management plans). It is expected that as operational or sectorial plans are created and updated, that it is the responsibility of the GOA to enact decisions consistent with the priorities identified in Section 1.3 and with the intent to integrate the management of all activities on public lands. Mandatory practices described in this Plan include:

2.1 Zoning

2.2 Management Thresholds

2.3 Siting to Avoid Valued Features

2.4 Restoration and Reclamation

2.1 Zoning

Zoning is a common tool for land planning that allows better spatial and temporal management of various activities. This Plan utilizes the following zoning tools:

6 From the ILM Tools Compendium (2012), these practices are in addition to the Master Schedule of Standards and Conditions that can be applied to individual dispositions that will enable ILM.

2.1.1 Public Land Use Zones

Where established, Public Land Use Zones (PLUZs) are public lands to which legislative controls apply under authority of the *Public Lands Act*, to assist in the management of industrial, commercial and recreational land uses and resources. The establishment of PLUZs supports this Plan's outcomes through focused efforts to designate motorized trails and to reduce disturbance in the Livingstone-Porcupine Hills. This Plan requires the ability to designate motorized access, on which motorized use is permitted as signed or otherwise identified[7];

2.1.2 Footprint Planning Zones

This Plan uses an intensity-based zonation scheme in which Valued Ecosystem Components (VECs) are spatially represented to determine management intents for different areas, in particular motorized access disturbance limits. VECs spatially represent environmental elements and ecosystem services about which we want to understand the implications of development (e.g. clean water, westslope cutthroat trout, etc.). VECs enable land manager's to build an understanding between planning, human activity, and the condition of the biophysical landscape. This condition is expressed in terms of an indicator. Zones were delineated using VECs modelled in a series of outputs. These outputs were combined with local and expert knowledge and used to create the zones outlined in Part 5: Maps – Footprint Planning Zones. The delineated zones include:

Provincial Park and Protected Area

Zone 1 – Conservation: This zone identifies existing or proposed protected areas or conservation areas determined in the South Saskatchewan Regional Plan and the more recent Castle Parks designations. These zones are characterized by limited human development, limited disturbance, and low impact recreation and are not managed by the Land Footprint Management Plan. Acknowledging Zone 1 areas provides a holistic approach to landscape management and these ecological benchmark areas will enable comparison of the ecological performance of the other zones. This Plan does not prescribe or enact further conservation areas.

Public Lands

Zone 2 – Enhanced: This zone prioritizes high value landscapes while enabling economic and social opportunities with lower intensity disturbances and activity types. In the Livingstone-Porcupine Hills, this zone includes areas of higher overall landscape sensitivity due to the abundance of VECs. These areas translate into a higher risk from fragmentation and more potential damage from human disturbance. Components identified in this zone include the highest value habitats for grizzly bear, mountain goats, bighorn sheep, westslope cutthroat

7 Restrictions may apply differently, or not at all, to First Nations individuals exercising treaty rights.

trout, and important areas for headwaters and biodiversity, including key linkage areas (e.g. elk migratory corridors). Zone 2 is characterized by:

- Low-intensity land uses such as mix of forestry, small-scale industrial or commercial land uses, tourism and recreational uses, well-managed grazing, and traditional land uses.
- Activity-based requirements in operational planning that reduce the extent and duration of industrial and commercial footprint.

Zone 3 – Extensive: This zone enables a broad range of economic and social opportunities with emphasis on reclamation and managing new footprint disturbance. Long-term landscape considerations are made for ecological values over time and space. In the Livingstone-Porcupine Hills, Zone 3 has traditionally received more human disturbance and therefore provides opportunities for re-use of footprint or for reclamation activities.

- Intent is to direct responsible footprint development that aligns with restoration intents (see Section 2.4) for the area;
- There may be areas within the extensive zone where mitigation measures may be required. For example, the multiple-use public lands are generally in an extensive management zone. However, in the Livingstone-Porcupine Hills, there is a need to manage footprint to lower intensity levels in order to restore and preserve sensitive species habitat and headwaters values. Therefore, an enhanced level of management is required.

The zones guide the nature of various activities or considerations required for regulatory approvals. The nature of enhanced management requirements are outlined in Section 3.2.

2.2 Management Thresholds

This Plan establishes and provides for implementation of the following management thresholds:

2.2.2 Disturbance limits on Open Motorized Access (see Section 3.1, Objective 1.1);

2.2.3 Disturbance limits on Restricted Motorized Access (see Section 3.1, Objective 1.1);

2.2.4 Disturbance limits on Near-Stream Motorized Access (see Section 3.1, Objective 1.1); and

2.2.5 Spatial human footprint targets (i.e. interior habitat) based on the draft Biodiversity Management Framework's indicators (see Section 3.1, Objective 1.2).

Disturbance limits will come into effect with the regulatory details upon approval of this Plan in accordance with Section 13(5) of the *Alberta Land Stewardship Act*.

2.2.1 Motorized Access Densities and Limits

This Plan utilizes motorized access densities as a measure to assess, manage, and report on the relationship between the levels of motorized use and a disturbance limit (expressed in kilometres per kilometre squared). As an indicator, the density of motorized roads and trails captures the cumulative impact of human access including:

i) increased use of areas by humans,

ii) increased sedimentation and erosion into streams,

iii) wildlife mortality from route construction or collisions,

iv) stress or negative impacts to wildlife behaviour, and;

v) the spread and increases of undesirable species (e.g. invasive plants).

These impacts are pressures affecting VECs. Motorized access densities make no distinction as to the corridor width or type of conveyance used for motorized access. Managing motorized access considers the relationship between cumulative motorized access and its impacts to a suite of watershed, wildlife and habitat values. Designating a limited amount of well-located motorized access helps to ensure the integrity of ecosystems and watersheds, visual quality objectives, landscape connectivity, and overall wilderness quality.

The disturbance limits on motorized access densities represent undesirable conditions with heightened risk of adverse effects. Exceedances of limits are to be avoided and setting density targets in operational planning should reflect this goal. If a limit is reached or exceeded it requires a management response as described in Section 4.4.4. It is important to note that the limits are not considered to be “manage-up-to” numbers and that a contingency will be held for new developments. Motorized access is classified either as Open Motorized Access or Restricted Motorized Access to better manage for competing land uses public lands outside of parks and protected areas.

2.2.2 Open Motorized Access

Open Motorized Access is motorized access by any person for any purpose on a highway designated by a road authority for public use or on a trail designated for public use as identified on the Livingstone and Porcupine Hills Public Land Use Zone maps. Open Motorized Access means the identified and publicly accessible roads and trails maintained for specified public uses.

Currently, most roads under statutory consent contribute to the Open Motorized Access densities unless specified by the regulator. Surveyed and unsurveyed road allowances where a

highway or trail has been constructed, constitute Open Motorized Access and must be managed as such. Open Motorized Access throughout the planning area will be managed with a limit as set out in Section 3.1, Objective 1.1.

2.2.3 Restricted Motorized Access

Restricted motorized access is motorized access authorized under a statutory consent that includes measures to restrict public access, and mitigate impacts to fish and wildlife, including two or more of the following:

(i) motor vehicle volume restrictions to manage wildlife risks;

(ii) motor vehicle speed limits to manage wildlife risks;

(iii) motor vehicle timing restrictions;

(iv) motor vehicle noise restrictions; or

(v) road construction standards to manage sedimentation and surface erosion risks.

Restricted Motorized Access intended for industrial or commercial roads and trails under disposition (primarily forestry, energy and mining, and for grazing allotment holders) to access allocated resources. Restricted Motorized Access reasonably demonstrates that there are no significant, long-term or irreversible impacts to wildlife, habitat, and/or watercourses (e.g. from surface sedimentation) by meeting conditions set by the Government of Alberta. For example, use is of low intensity, seasonal or temporary, and has access controls to prohibit public use. Restricted Motorized Access throughout the planning area will be managed with a limit as set out in Section 3.1, Objective 1.1. This access is being addressed with its own limit so that industry and commercial interests are more informed to apply Integrated Land Management practices, and to reduce liability for disposition holders.

2.2.4 Near-stream Motorized Access

Near-stream Motorized Access refers to any motorized access that falls within 100 m of a stream on highly erodible soils[8]. Headwaters protection is a priority in the Eastern Slopes and limiting sedimentation near streams and water bodies has been a common practice for many years. This indicator is the most significant predictor of reduced westslope cutthroat trout populations[9]. Near-stream Motorized Access throughout the planning area will be managed with a limit as set out in Section 3.1, Objective 1.1.

8 Highly erodible soils means soils classified as High under 'Erosion Hazard' in the Derived Ecosite Phase dataset or by other means as published by the Minister responsible for the Forests Act.
9 Porter, M., S. Casley, D. Pickard, E. Snead, and K. Wieckowski. 2013. Draft Version 3.2, May 2013. Tier 1 Watershed-level fish values monitoring protocol. Draft report prepared by ESSA Technologies Ltd. for BC British Columbia Ministry of Forests, Lands and Natural Resource Operations and BC Ministry of the Environment (MOE), Victoria, BC. 28 p.

2.2.5 Spatial Human Footprint Targets (Interior Habitat)

In accordance with Section 3.2 of the South Saskatchewan Regional Plan, this Plan outlines a system to minimize the extent, duration and rate of linear footprint development to meet outcomes and objectives for biodiversity and ecosystems in the SSRP. Target-setting is used in this Plan to determine a desirable future condition based on ecosystem needs for biodiversity and watersheds, also considering social and economic dimensions. The approach under this Plan is to identify indicators of biodiversity and watershed condition that will guide targets for total amounts of human footprint at any one time. Within one year of the effective date of this Plan, thresholds to guide spatial human footprint until 2045 will be developed. The system of monitoring, evaluation, and reporting will also be described (see Section 4.4). Note that much of the management response information will be addressed through implementation of the draft Biodiversity Management Framework for the South Saskatchewan Region.

Some of the key considerations (in order of priority) in setting targets are:

- Identifying key indicators for biodiversity and watershed integrity in the region, in particular those that address the impacts of both patches and linear forms of human footprint (e.g. interior habitat and patch size and connectivity, and related trigger levels as described in the draft Biodiversity Management Framework for the South Saskatchewan Region and the emerging final document);
- Identifying targets that ultimately align with the planning hierarchy and support achieving improved performance of biodiversity and watershed integrity indicators and related objectives as expressed through trigger levels for each indicator. Regional trigger levels identified in the environmental management frameworks (i.e. air quality, surface, water quality, biodiversity) should be first assessed as to applicability/ relevance in setting targets for the sub-region in this Plan. In particular, interior habitat reflects habitat quality, as many species require large tracts of intact ‘core’ habitat. Therefore this indicator is sensitive to all linear corridors of disturbance, including motorized ones, and also includes patches of disturbance such as forest harvest areas, industrial sites and land clearings. Interior habitat reflects an inverse relationship to landscape fragmentation. It provides an indication of subregional biodiversity condition as it relates to footprint. This indicator is also strongly correlated with undisturbed land cover and is a useful measure for watershed integrity;
- Locally relevant information on biodiversity (e.g. species- and habitat-specific needs);
- Watershed integrity needs (i.e. footprint levels for continued function of headwaters and other sensitive source areas, in addition to those considered already in regional environmental management frameworks);
- Levels of projected forest harvesting and wildfire risk mitigation needs.

2.3 Siting to Avoid Valued Features

This Plan requires the use of siting criteria to determine the suitability of a location when developing new footprint. In addition to activity-specific processes and direction, elements to be considered in these siting criteria are those relevant to land disturbances as follows: (including those identified in the ILM Tools Compendium (2012) under Siting to Avoid Valued Features[10]):

- Visual quality objectives (including for scenic value)
- Erosion risk potential, both landscape-level and site-level including slope, soil type, moisture
- Indigenous Peoples ancestral, traditional, and continued use sites and other sites of cultural significance
- Water features, including surface and groundwater considerations identified in source water protection planning (e.g. Wet Areas Mapping and Stepping Back from the Water[11])
- Sensitive habitat (e.g. rough fescue grasslands) and/or wildlife features or movement (e.g. from Fish and Wildlife Management Information Systems)
- Species at risk data or inventories (e.g. Alberta Conservation Information Management System)
- Noise considerations for wildlife, other land users, and adjacent private landowners
- Limits and targets outlined for footprint management (see Section 3.1).
- Seek 'multiple win' solutions; maintain opportunities for multiple uses on the landscape (e.g. recreation and tourism, resource extraction, ecosystem services)

2.4 Restoration and Reclamation

This Plan focuses on mitigating risk[12] at all times, particularly where human activities could have foreseeable and negative impacts to biodiversity and watershed integrity, and to avoid exceeding limits. To manage future human activity and due to the amount of pre-existing ('legacy') footprint in the Livingstone-Porcupine Hills, there is a clear need for a well-defined restoration strategy to address the restoration and reclamation needs on this landscape.

The success of this Plan relies on the collaborative and integrated approach of land management across sectors to forecast and respond to anticipated cumulative effects of land disturbances as outlined in Part 3 of this document. To address the systematic restoration and reclamation of disturbed areas, the development of an Eastern Slopes Restoration Strategy must be completed within one year of the effective date of this Plan, with site-specific planning details

10 Integrated Land Management Tools Compendium (2012: p. 63)
11 Stepping Back from the Water (2012): http://aep.alberta.ca/water/education-guidelines/documents/SteppingBackFromWater-Guide-2012.pdf
12 The risk mitigation hierarchy prioritizes avoidance and reduction/minimization before restoration and offsetting – the latter will be explored in the Restoration Strategy through a conservation offset program guided by A Framework for Designing Conservation Offset Programs in Alberta (2016).

for each natural subregion. The intent is to re-establish native plant communities on disturbed sites within the planning areas and to restore ecosystem processes to as natural (normal) state as possible. Elements to be included in the Restoration Strategy include:

- A narrative of the proposed approach, reflecting this Plan's intent for footprint restoration, including scope, objectives, priorities and requirements (permits, license agreements, regulatory approvals);
- A chronological work plan including major tasks, resource allocations, milestones, deliverables, dependencies, and start and end dates;
- Principles that will apply to resource the work, and to manage performance and quality assurance over time;
- An identification of risks applicable to reclamation tasks and proposed strategies to mitigate these;
- A description of proposed deliverables including:
    - A methodology or guidelines to identify site-specific areas requiring restoration and the standards to which reclamation is deemed sufficient. This should include a spatial analysis of legacy footprint which is eligible for reclamation;
    - Criteria for determining sites for natural recovery, sites for active restoration, and disturbance areas for which disposition holders (industry or otherwise) have post-operation reclamation responsibilities
    - Criteria for prioritizing sites where reclamation efforts will be applied, as evaluated by risk and urgency to include (in order of priority):
        - » Any areas with a risk to public safety;
        - » Within watersheds containing critical fish habitat (for Westslope Cutthroat Trout and/or Bull Trout), areas near watercourses that pose a high erosion risk either through slope stability, soil type or resulting from drainage causing sedimentation;
        - » Areas that are an important habitat for species at risk or species of potential conservation concern (e.g. species listed at risk in federal and provincial legislation), particularly easily accessible locations and those that are at risk of continued motorized use;
        - » Native grassland areas that are unlikely to experience natural recovery because of the extent of disturbance or their difficulty to reclaim (e.g., Foothills fescue grasslands), or relatively healthy range sites including those at low risk of colonization by non-native species, especially plants known to be invasive;

    - » Areas of low potential to experience recovery to adjacent grassland, shrubland or forest community without assistance because of large disturbance area and/or severe soil disturbance/compaction (e.g. roads and wide vehicle trails);
    - » Sites colonized by non-native or undesirable plant species including invasive and noxious plants designated under the Alberta *Weed Control Act*;
    - » Areas of high scenic or tourism development value.
- A framework which can be used to incorporate the criteria above into an actionable, place-based plan based on risk, urgency, cost and other socio-ecological factors. This should include a template for reclamation and vegetation management planning (see Section 3.2, Objective 3.2.6) that integrates climate change[13], wildfire risk management, and forestry management for future projects in the Eastern Slopes;
- A review of pertinent literature for best practices and approaches to reclamation in natural subregions and valued ecosystems of the South Saskatchewan Region (e.g. Foothills fescue grasslands). This should explore options for financing reclamation including concepts of offsetting, Green Bonds or other incentive-based approaches.

While an ongoing program of restoration and reclamation requires detailed planning, that will not preclude immediate action to remediate visible, highly eroded sites associated with trail closures or relocations.

13 Climate change is a complex issue that affects all Albertans. Increasing temperatures, more frequent droughts, floods and forest fires will create challenges for wildlife and ecosystems but also for the resource sector and land users. This Plan's purpose of reducing fragmentation and optimizing landscape connectivity is considered to improve ecosystem resiliency to support climate adaptation.

3.0 STRATEGIES AND ACTIONS

This section of the Plan provides the details that link outcomes and management tools to manage human footprint in the Livingstone-Porcupine Hills area. The strategies and actions in this section will have implications for land and resource use. These have been collaboratively developed based on achieving land-use outcomes that optimize benefits across environmental, social and economic dimensions. The following tables provide the objectives, actions, and performance metrics related to the three management outcomes of this Plan. The responsibility column refers to the government department or agency with primary responsibility. The timeline column indicates by when certain frameworks and actions need to be achieved and apply as of the Plan's effective date.

3.1 Detailed Regulatory Limits and Targets

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
3.1.1 Motorized access is managed to sustain biodiversity and watershed integrity	Establish an Open Motorized Access disturbance limit of 0.4 km/km2 in Zone 2	Open Motorized Access: Livingstone: < 386.2 km Porcupine Hills: < 117.6 km	Alberta Environment and Parks	< 1 year
	Establish an Open Motorized Access disturbance limit of 0.6 km/km2 in Zone 3	Open Motorized Access: Livingstone: < 252.9 km Porcupine Hills: < 58.8 km	Alberta Environment and Parks	< 1 year
	Establish a Restricted Motorized Access disturbance limit of 0.6 km/km2 in both Zone 2 and Zone 3 respectively	Restricted Motorized Access: Livingstone: < 832.3 km Porcupine Hills: < 235.2 km	Alberta Environment and Parks	< 1 year
	Establish a Near-stream Motorized Access disturbance limit (within 100 m of a stream on erodible soils) of 0.04 km/km2 in each analysis unit	Near-stream Motorized Access: Livingstone: < 55.4 km Porcupine Hills: < 15.7 km (across all watersheds)	Alberta Environment and Parks	< 1 year
3.1.2 Important ecosystems and habitat are managed to sustain biodiversity and watershed integrity	Within one year of the effective date of this Plan, management thresholds to guide spatial human footprint until 2045, will be developed.	To be determined in 1 year of effective date	Alberta Environment and Parks	< 1 year

3.2 Detailed Integrated Land Management Practices

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
Forestry and Wildfire Management Planning				
3.2.1 Forestry management planning and operations incorporate human footprint requirements for biodiversity and watersheds, and integrate recreation, tourism, grazing, wildfire and other resource uses	Develop forest management plan(s) with values, objectives, indicators and targets that align with the strategic land-use priorities for the Eastern Slopes (e.g. creation of resilient, healthy forests within a natural range of variation that support water storage, recharge and release functions) and align with actions below	Revised C5 Forest Management Plan sets parameters on footprint in accordance with this Plan	Alberta Agriculture and Forestry	Upon revision of Forest Management Plan(s)
	Coordinated access planning (and subsequent approval) of forestry activity will meet management thresholds established in this Plan: • Class 4 forestry roads (1-3 years) consistent with the Timber Harvest Planning and Operating Ground rules are managed as Restricted Motorized Access • Forest Harvest Areas are assessed for their contribution to Spatial Human Footprint and managed to meet the target (Objective 1.2)	Indicators and targets set by Alberta Agriculture and Forestry in revised C5 Forest Management Plan	Alberta Agriculture and Forestry, Alberta Environment and Parks	< 2 years
	ILM applies to all forestry activity. Where possible, forestry operating roads will convert to Restricted Motorized Access, are coordinated with other sectors, and include measures approved by the Government of Alberta. Forestry roads, under a statutory consent, are allowed to continue until the road is no longer needed. Forestry roads will coordinate future access needs with other sectors to reduce the extent of permanent motorized access, before decision to close and reclaim when the resource activity ends (use sequencing)[14]	Indicators and targets set by Alberta Agriculture and Forestry in revised C5 Forest Management Plan	Alberta Agriculture and Forestry	< 2 years
	On the classified land-base, commercial forestry supports multiple objectives including managing non-timber resources such as wildfire risk, forest encroachment onto grasslands, maintaining scenic values, optimizing connectivity, snowpack retention, and water quality[15]	Indicators and targets set by Alberta Agriculture and Forestry in revised C5 Forest Management Plan	Alberta Agriculture and Forestry	Ongoing

14 Refers to use of multi-use corridors and coordinated physical access controls in the ILM Tools Compendium, 2012.
15 Consistent with objectives 1.1.1.1, 1.1.1.2, 1.1.1.3, 1.1.2.1, 1.2.1.1 and 3.1.1.1 in the Alberta Forest Management Planning Standard.

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
3.2.2 Wildfire risk management integrates footprint planning holistically through a combination of prescribed fires, natural fires, and forestry activity for relevant sub-areas to minimize losses and risk to human life, communities, watersheds, sensitive soils, natural resources and infrastructure	Complete and coordinate sub-area (Porcupine Hills-Poll Haven, Crowsnest Corridor, Castle-Carbondale) disturbance management plans (e.g. utilizing natural range of variation, specific regime targets, cumulative risk, prescribed fire use and prescribed wildfire guidelines, etc.) and considering footprint parameters and FireSmart Strategies (Hazard and Risk Assessments, Wildfire Preparedness Guides, and Wildfire Mitigation Strategies) for all communities in the planning area	Completion schedule set by Alberta Agriculture and Forestry	Alberta Agriculture and Forestry	< 3 years
	Reduce the area identified by the Catastrophic Fire Indicator	% area reduction set by Alberta Agriculture and Forestry	Alberta Agriculture and Forestry	< 3 years
	Complete Emergency Response Plans for all identified Human Life Values-at-Risk considering footprint parameters	Emergency Response Plans are complete and municipalities have signed off on the respective plan(s)	Municipal governments	< 3 years
Commercial and Industrial Development Planning				
3.2.3 Planning and development of energy (including renewables) and mining incorporate human footprint requirements for biodiversity and watersheds, and integrate forestry, recreation, tourism, grazing, wildfire and other resource uses	The Government of Alberta will work with industry proponents to comply with motorized access limits for new coal, mineral, oil or gas, and renewable energy developments. Planning for access must demonstrate the application of ILM and align with the Restoration Strategy.	Indicators and targets set by Alberta Environment and Parks	Alberta Energy Regulator, Alberta Environment and Parks	< 1 year
	Coordinated access planning (and subsequent approval) of energy and mining activity will meet thresholds established in this Plan: • Access management by energy- and mining-related transportation corridors is coordinated with other sectors and adheres to motorized access limits (Objective 1.1) • Industrial sites, utility corridors, pipelines and other exploration or seismic disturbances are assessed for their contribution to Spatial Human Footprint and managed to meet the target (Objective 1.2)	Indicators and targets set by Alberta Environment and Parks	Alberta Energy Regulator, Alberta Environment and Parks	< 1 year
	• Single purpose or limited use industrial access corridors will convert to Restricted Motorized Access, are coordinated with other sectors, and include measures approved by the regulator	Indicators and targets set by Alberta Environment and Parks	Alberta Energy Regulator, Alberta Environment and Parks	< 1 year

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
	The SSRP states that where freehold rights exist, opportunities for the responsible exploration, development and extraction of energy resources are maintained – this Plan supports the strategy to maintain physical access to freehold minerals. Any development of freehold minerals will be reviewed by the Alberta Energy Regulator. If development is approved, then dispositions will be issued for access roads and other infrastructure, taking measures to minimize impacts to fescue grasslands and the ecological values of the overall landscape as per the intent of this management plan	Indicators and targets set by Alberta Environment and Parks	Alberta Energy Regulator, Alberta Environment and Parks	Ongoing
	Siting, timing, and site-related footprint requirements for renewable energy developments follow standards and best management practices	See applicable documents (e.g. Wildlife Directive for Alberta Wind Energy Projects, 2017)	Alberta Environment and Parks	Ongoing
3.2.4 Planning and development of commercial recreation and tourism incorporate human footprint requirements for biodiversity and watersheds, and integrate forestry, non-commercial recreation, grazing, wildfire and other resource uses	a) Commercial recreation and tourism proponents will be required to demonstrate motorized access requirements for new tenure. Planning for access must demonstrate the application of ILM and align with subregional plans for recreation management.	Indicators and targets set by Alberta Environment and Parks in consultation with Alberta Culture and Tourism	Alberta Culture and Tourism, Alberta Environment and Parks	< 1 year
	Coordinated access planning (and subsequent approval) of commercial recreation and tourism activity will meet thresholds established in this Plan: • Access by tourism-related transportation corridors is coordinated with other sectors and adheres to motorized access limits (Objective 1.1) • Commercial sites, staging areas, campgrounds, etc. are assessed for their contribution to Spatial Human Footprint and managed to meet the target (Objective 1.2)	Indicators and targets set by Alberta Culture and Tourism and Alberta Environment and Parks (Operations Division)	Alberta Culture and Tourism, Alberta Environment and Parks	< 1 year
	Single purpose or limited use commercial access corridors will convert to Restricted Motorized Access, are coordinated with other sectors, and include measures approved by the Government of Alberta	Indicators and targets set by Alberta Environment and Parks in consultation with Alberta Culture and Tourism	Alberta Environment and Parks, Alberta Culture and Tourism	Ongoing

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
	The SSRP states that work should occur with municipalities, private investors, and landowners to identify areas of high value for tourism to encourage tourism investment and infrastructure development opportunities. Any commercial recreational or tourism development applications will be reviewed by Alberta Environment and Parks. If the development is approved, then dispositions will be issued for access roads and/or other recreational or tourism infrastructure.	Indicators and targets set by Alberta Culture and Tourism and Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks, Alberta Culture and Tourism	Ongoing
Recreation Management Planning				
3.2.5 Recreation management planning and operations incorporate footprint requirements for biodiversity and watersheds, and integrate tourism, grazing, wildfire and other resource uses	Develop recreation management plan(s) with outcomes and objectives that align with the Eastern Slopes priorities and with this Plan. Recreation management planning will demonstrate the application of ILM, including the siting criteria identified in Section 2.3 and also compatibility factors that consider the needs of other land users and adjacent land owners to public lands	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	< 1 year
	Coordinated access planning (and subsequent approval) of recreation and tourism activity will meet thresholds established in this Plan: • Access corridors for motorized recreation is coordinated with other sectors and adheres to motorized access limits and are considered Open Motorized Access (Objective 1.1) • Motorized camping nodes, staging areas, recreation infrastructure are assessed for their contribution to Spatial Human Footprint and managed to meet the target (Objective 1.2)	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	< 1 year
	Coordinated access planning and development of non-motorized recreation must also adhere to mandatory ILM particularly siting criteria to minimize the effects of footprint on sensitive areas	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	< 1 year

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
	Planning and development of motorized recreation sites, manages motorized recreation, including camping on public land to ensure the protection of environmental values including biodiversity, sensitive wildlife and landscape elements, and cultural values	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	Immediately
	Public Land Use Zones will be established whereby off-highway vehicles must stay on signed, designated trails specified for motorized recreational use, or multi-use. Certain areas may be designated for specific recreational uses (e.g. snowmobile areas). 'Wheels out of water' applies to all watercourse crossings, especially in sensitive fish habitat: (as per the Public Lands Administration Regulation)	Public Land Use Zone established as part of Crown Land and recreation management implementation. All watercourses have crossing structures as specified in the Recreation Management Plan	Alberta Environment and Parks	Immediately
	Alberta Environment and Parks may close or restrict motorized and non-motorized access to protect ecological values, to ensure public safety, or for management purposes (e.g. during periods of heavy rainfall, thin snowpack for snowmobiles, or for wildfire risk or species management requirements, etc.)	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	Ongoing
	Manage the impact of recreational motorized access to wildlife through key mountain passes in partnership with Parks and authorities in British Columbia	To be determined following regular meetings held with staff in BC Ministry of Forest, Lands, Natural Resource Operations (Cranbrook) to discuss and address issues	Alberta Environment and Parks	< 2 years
Management of Grazing and Range				
3.2.6 Range (or grazing allotment) management and vegetation management planning incorporate footprint requirements for biodiversity and watersheds, and integrate wildfire, with a focus on Foothills Fescue grasslands and riparian health	As a part of restoration and reclamation, develop a vegetation management plan, including specifications for range vegetation inventories, and range and riparian health assessments. Results are used to develop and update range planning. Vegetation inventories will be used to measure changes to fescue communities.	A vegetation management plan, coordinated with restoration and reclamation is completed to improve range and riparian health for fescue communities. Other indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	< 3 years
	Coordinated access planning (and subsequent approval) of motorized access for grazing activity will meet thresholds established in this Plan. Any development of new trails for range management purposes will require coordination among sectors and prior review and approval for ILM. Allotment holders receive a permission placard for off-highway vehicle use off designated roads or trails to conduct range management activities	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	Ongoing

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
	Apply range management practices such that range and riparian communities are maintained or improved. Allotment holders will consider projects that will reduce or mitigate impacts from livestock use (e.g. development of off-stream watering facilities, protection of springs, practices that reduce risks of invasive species introduction)	Strategies and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	Ongoing
	All proposed activities are reviewed to ensure impacts to Foothills fescue[16] grasslands, riparian areas and groundwater seeps, particularly those that are largely intact, are avoided wherever possible.[17] Avoiding disturbance to Foothills fescue grassland, riparian areas and groundwater seeps, is a priority for all siting criteria. Where impacts cannot be avoided, detailed mitigation plans (including construction and reclamation plans) are required	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks	Ongoing
	Manage and monitor invasive species, insect and pathogen infestations according to Government of Alberta policies, legislation and best practices	Indicators and targets set by Alberta Environment and Parks (Operations Division)	Alberta Environment and Parks, Alberta Agriculture and Forestry	Ongoing
Restoration and Reclamation Management Planning				
3.2.7 Restoration is planned to sustain biodiversity and watershed integrity	Work with stakeholders and adjacent land managers to ensure wildlife connectivity corridors are enhanced throughout the Livingstone, Porcupine Hills and adjacent landscapes	To be determined following regular meetings held with industry, municipalities, land organizations (e.g. Miistakis, Southern Alberta Land Trust, Nature Conservancy of Canada, etc.)	Alberta Environment and Parks	Ongoing
	Rare, significant or sensitive eco-systems and habitats are maintained or enhanced through existing species at risk recovery planning initiatives, best practices, or through measures described in this Plan to manage new footprint disturbance	To be determined in a monitoring program developed by Environmental Monitoring and Science Division, Alberta Environment and Parks	Alberta Environment and Parks	Ongoing
	Develop a strategy to restore linear features in the area to support the above thresholds, to reduce landscape fragmentation, and to integrate use of public land. Details are identified in Section 2.4.	Restoration Strategy completed within timeframe with sites and areas identified and prioritized for restoration and reclamation	Alberta Environment and Parks	Strategy < 1 year; restoration efforts ongoing
	Where possible, plant or re-plant native vegetation using seeds sourced within the respective area; where not possible, use best certified native seed sources or best available alternative sources	Restoration Strategy identifies this directive for restoration and reclamation	Alberta Environment and Parks	Ongoing

16 The "Foothills Fescue PNTs" (i.e., PNT090087) will remain in place as a means of alerting applicants to the presence of fescue communities and the responsibilities associated with operating in these areas (as per Information Letter 2010-02).
17 Principles for Minimizing Surface Disturbance in Native Grasslands 2016 available online at: http://open.alberta.ca/dataset/dbbc914c-a2f7-4df9-8b28-979459883f17/resource/5070c720-58e8-4a1d-baed-256727449611/download/2016-Principles-for-Minimizing-Surface-Disturbance-in-Native-Grassland-September-1-2016.pdf

3.3 Detailed GoA Business Process and Integration Mechanisms

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
3.3.1 Appropriate and effective governance are in place to support the implementation of this Plan	Led by Alberta Environment and Parks, all departments and agencies with a responsibility for approving and issuing dispositions, allotments and tenure, and their respective resource managers, collaborate toward a business process and structural mechanisms to integrate footprint into approvals and decision-making. Concurrent initiatives (e.g. Integrated Approvals Process) may provide a suitable platform for this. Systems and structures must: • Develop the system tools for tracking, monitoring, real-time spatial data and storage for resource managers and users (must support the performance management system) • Provide clarity to staff on dealing with foreclosure, exceedance of limits, footprint calculations, restoration requirements • Provide a means of communication between different sectorial needs on the landscape and how to guide the sequencing of activities over time (10 year outlook) • Consider traditional land use and traditional ecological knowledge in decision-making • Develop a robust monitoring, evaluation and reporting program for biodiversity and watershed indicators which links the actions to manage footprint in this Plan to performance metrics (enabled by the effective date of the plan) • Address outstanding management of pre-existing dispositions including abandoned dispositions, shifting to Restricted Motorized Access, and restoration	Integrated Resource Management System business processes for approvals and decision support are developed as described in Section 4.0 Metrics for service delivery are improved	Alberta Environment and Parks	< 2 years

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
3.3.2 Relevant provisions in Sub-regional Integrated Resource Plans are effectively rescinded (see Appendix B)	Implement necessary regulatory direction (e.g. land disturbance standards) and assess needed alignment with other regulatory tools (e.g. PNTs) and whether gaps need to be addressed	The Livingstone-Porcupine Hills Sub-regional Integrated Resource Plan gets approval to be rescinded (no further outstanding items exist)	Alberta Environment and Parks	< 2 years
	Any remaining Prime Protection (IRP Zone 1) or Critical Wildlife (IRP Zone 2) remains in effect until replaced by biodiversity sensitivity data layers or new surveys that reflect the best and most recent information. The layers must be integrated into approval mechanisms (e.g. Master Schedule of Standards and Conditions, 2017) to direct how those layers are used in decision-making	Biodiversity sensitivity layers are integrated into a decision support tool as described in Section 4.1.2	Alberta Environment and Parks	< 2 year
	Any outstanding provisions are redirected to the appropriate agency for incorporation into suitable policy and planning documents (e.g. Recreation Management Plans)	Outstanding provisions are reviewed by appropriate agencies with direction provided to Alberta Environment and Parks confirming they are incorporated	Alberta Environment and Parks	< 2 years
	As part of reviewing and incorporating the Integrated Resource Plans, the Government of Alberta will integrate a review of the coal categories for the South Saskatchewan Region (SSRP p. 61). New direction, consistent with footprint planning outcomes, will supersede the coal categories and may extend to all large-scale industrial surface disturbances, including coal. This new direction should be consistent with an integrated approach. It will specify where surface exploration and development can and cannot occur based on the best and most recent biodiversity sensitivity data	A strategy is developed for updating Coal Policy and Integrated Resource Plan direction around coal and mineral extraction	Alberta Energy Regulator, Alberta Environment and Parks	< 3 years
3.3.3 Enable accessible and relevant opportunities for the participation of Indigenous peoples in land-use planning and input to decision-making	Partner with First Nations to appropriately collect, use, and apply Traditional Ecological Knowledge and Traditional Land Use information, respecting confidentiality and ensuring security as directed by each participant Nation	Traditional Land Use studies are completed for the Livingstone and Porcupine Hills, direction is used in land-use management	Alberta Culture and Tourism, Alberta Environment and Parks, Alberta Indigenous Relations	< 3 years (Traditional Land-Use studies), ongoing
	Where appropriate, consider and implement buffers or other mechanisms to protect traditional use sites and sites of cultural significance while maintaining access, if appropriate, for the sites.	Methodologies and best practices are developed in partnership with First Nations and used in land-use management	Alberta Culture and Tourism, Alberta Environment and Parks, Alberta Indigenous Relations	Ongoing

Objectives	Strategy/Action	Performance Metric	Responsibility	Timeline
	Provide support and communicate with First Nations regarding their use of traditional use sites. Identify key sites and types of access required to practice traditional uses (ongoing access to Restricted Motorized Access will be arranged through the South Saskatchewan Regional Plan First Nations Implementation Table, or equivalent partnership)	Methodologies and best practices are developed in partnership with First Nations and used in land-use management	Alberta Culture and Tourism, Alberta Environment and Parks, Alberta Indigenous Relations	Ongoing
	Develop cultural awareness and sensitivity training, with First Nations, which will be delivered to GOA lands and field staff and statutory consent holders. Identify opportunities for public education as well. GOA staff must be familiar with the standard operating procedures regarding Public Lands Area Regulations enforcement as it relates to First Nations Treaty Rights and traditional land uses	All operational staff involved in land-use management are trained	Alberta Culture and Tourism, Alberta Environment and Parks, Indigenous Relations	Ongoing

4.0 IMPLEMENTATION

All departments and agencies and resource managers with land use, tenure, and resource management mandates in the Livingstone-Porcupine Hills area will be responsible for leadership and collaboration to enable the purpose and outcomes outlined in this Plan. Footprint management planning requires that land-use which impacts footprint must better forecast and predict cumulative effects, the impacts of new technologies, the impacts of climate change, and how to responsibly manage resources into the future. Alberta's Integrated Resource Management System (IRMS) exists to understand the impact our growth has on communities, our environment and each other as a whole. This coordinated approach includes setting and achieving the environmental, economic, and social outcomes Albertans expect from resource development, while maintaining the community support to develop these resources. The IRMS roles and responsibilities for footprint plan implementation are identified in Table 4.1.2.

4.1 Governance

New ways of doing things require new organizational structures which determine how, who and what, and must provide accountability in decision-making. The related institutional architecture and how it executes decision-making can be referred to as governance. Governance of public lands must evolve as land-use pressures change, new technologies become available, and new science emerges to inform management.

Since footprint management planning and the implementation of this Plan are emergent in the Province of Alberta, novel governance structures will emerge to fulfill the needs created by this Plan and other plans. New business processes for implementation, including better forecasting of footprint development, will be created through direction from this Plan including guidance on approvals, data and informatics, performance management, and enabling accessible and relevant opportunities for the participation of Indigenous peoples in land-use planning and input on decision-making.

4.1.1 Inclusion of Indigenous Peoples in Land-use Planning

The Eastern Slopes include the hunting and gathering, and ceremonial places that lie within traditional territories of multiple First Nations. The Livingstone and Porcupine Hills areas provided sustenance, materials, medicines, and sacred places for First Nations since time immemorial and is expected to continue to do so for generations yet to come. Indigenous communities are intimately connected to the land and are therefore their ancestral, traditional, and continued uses of public lands are at risk from the impacts of climate change, industrial development, and unmanaged recreational use.

The GOA prioritizes renewing and strengthening relationships with Indigenous Peoples, and all government departments have been mandated to implement the principles of the United Nations Declaration on the Rights of Indigenous Peoples in a way that is consistent with Canada's

Constitution and with Alberta law. For the Livingstone-Porcupine Hills area, the completion and integration of Traditional Land Use studies to support planning and land-use decisions that respect First Nations Treaty rights and ancestral, traditional, and continued land uses, is a priority. First Nations involvement in subregional footprint management planning processes has occurred regularly through one-on-one meetings and at the South Saskatchewan Regional Plan First Nations Implementation Table. Implementation of this Plan is expected to be consistent with First Nations ability to continually exercise their Treaty rights and to acknowledge and maintain the relationship that Indigenous Peoples have with the land and the importance of their activities on that land.

4.1.2 IRMS roles and responsibilities in footprint plan implementation

Stage	Environment and Parks, Planning Branch	Environment and Parks, Operations Division	Environment and Parks, Monitoring and Science Division	Alberta Energy	Energy Regulator	Agriculture & Forestry	Indigenous Relations	Land-Use Secretariat	Related Parties
Development of LFMPs	□	◊	◊	◊	◊	◊	◊	○	◊
Governance and business process	□	◊	◊	○	◊	◊	○	◊	◊
Monitoring, Evaluation, Reporting									
Sharing results to inform reporting	◊	◊	□	○	◊	◊	○	○	○
Status of Ambient Environmental Condition	○	○	□	○	◊	◊	○	○	○
Status of Management Response	◊	□	○	○	○	○	○	○	○
Coordination of reporting into Regional Plan reporting	□	◊	○	○	○	○	○	◊	○
Communication related to reporting	◊	◊	□	○	○	○	○	◊	○
Management Response									
Determination of threshold exceedance	◊	□	○	○	◊	◊	○	○	○
Investigation	◊	□	◊	◊	◊	◊	○	○	○
Development and evaluation of potential management actions	◊	□	◊	◊	◊	◊	◊	○	◊
Oversight and delivery of management actions	◊	□	◊	◊	◊	◊	○	○	◊
Evaluation of effectiveness	◊	◊	□	◊	◊	◊	◊	○	○
Review of LFMP (every 5 years)	□	◊	◊	◊	◊	◊	◊	◊	◊

□ = lead, group/person who is ultimately accountable & responsible for completion of activity or work

◊ = participant, group/person who needs to provide feedback and contribute to an activity

○ = informed, group/person who needs to know of a decision or action

4.2 Access Coordination Mechanisms

Footprint management planning in the Livingstone-Porcupine Hills area requires a proactive and coordinated approach by the GOA. Access coordination is led by department land managers and disposition regulators and enables all sectors to manage motorized access to sustainable, long-term levels that are below the disturbance limit. This Plan requires the following mechanisms to be used by GOA to support ongoing access coordination planning:

4.21. Integrated Approvals Process – a one stop portal for applications which allows a predetermination of how motorized access densities are impacted;

4.22. Cumulative Effects Management System Decision Support Tool – a digital interface to track, monitor, and evaluate changes to motorized access densities which allows for proactive decision-making;

4.23. Guiding Principles – a list of management principles which guide decision-making to incorporate consistent valuations of how to navigate the complexities and uncertainties of conservation and resource use.

4.2.1 Integrated Approvals Process

A core function of the Operations Division within Environment and Parks is to receive, evaluate, decide upon, and manage the application of natural resource and industrial activities that operate under the *Public Lands Act, Water Act* and *Environmental Protection and Enhancement Act*. This Plan requires that footprint be assessed as a condition of approval.

Integrating approvals will streamline the business processes to manage the full life cycle of the approval from application to closure and restoration. Institutional structure will be needed to implement appropriate, underlying data architecture and stewardship, information technology to simplify the client-facing application process, automate processes where appropriate and reduce manual handling of approval data and information in the system. The GOA is already working to integrate approvals and develop the respective business process. This is a natural part of the ongoing organizational change necessary for evolving toward better and more efficient ways of doing things over time. A key requirement of the resultant approvals system is that it is agile and flexible to ensure ongoing developments and improvements can be made quickly and efficiently and in response to accelerating change. A prerequisite of system agility is the establishment of integrated data inventory, storage, and management and client interface with appropriate governance stewardship, built to accommodate accelerating changes in technology, business requirements, policy and legislation.

4.2.2 Cumulative Effects Management System Decision Support Tool

Alberta Environment and Parks is currently developing a Decision Support Tool (DST) to build the underlying data architecture described above to make approvals decisions. It is proposed that this tool or a similar process tool be created specifically to support decision-making around footprint. The current tool will serve to report on biodiversity indicators so that decision-makers (Alberta Energy Regulator, Alberta Environment and Parks, and Alberta Agriculture and Forestry) can query real-time current conditions, compare this condition to regional or subregional thresholds, and evaluate the impacts of proposed new development activities. The successful development of this system will serve as a prototype to develop applications for other indicators, such as human footprint.

The successful management of footprint is predicated on understanding the current and future landscape conditions with the ability to assess potential impacts, in order to proactively make decisions. Building a decision support tool for footprint is an important step to coordination across Government of Alberta departments and improving client service delivery. It is expected that the future priorities for this project are to expand to the South Saskatchewan Region, make the tool available to external proponents, and incorporate scenario modelling for future states – including for restoration. This will enable footprint to be factored into all decision-making for land management and resource use in the South Saskatchewan Green Area.

Success will be defined by tangible demonstration of:

- Consideration of cumulative effects management indicators and thresholds from this Plan in the decision-making process used by the Alberta Energy Regulator, Alberta Environment and Parks and Alberta Agriculture and Forestry;
- Multiple decision-makers accessing a single authoritative source of information on habitat condition and footprint, and following consistent methodologies in assessing impacts in relation to thresholds;
- An up-to-date inventory of project applications and approvals that is accessible across decision-makers;
- A business process that can be communicated to proponents or project applicants on how their project impacts indicators and thresholds;
- Transparency of how the management system has been enhanced to enable effective implementation of the Land Footprint Management Plan.

4.2.3 Guiding Principles

The following management principles will guide decision-making for the Livingstone-Porcupine Hills area and can be used to avert disputes regarding resource priorities and second-order allocations:

Accountability: Land managers and regulators must operate with a common objective to minimize footprint. For example, to reduce the extent of motorized access, land managers must understand the attribution of Open and Restricted Motorized Access, how these access types are to be accounted for separately and managed distinctly, and how to communicate conditions and potential constraints to proponents;

Integrated management: This Plan deems recreation, forestry, wildfire, grazing and other operational plans to support coordinated access planning. This requires each of these plans to understand the motorized needs of the respective activity and how it contributes to the overall motorized access levels in the subregion. This Plan allocates motorized access such that industrial activity will have precedence over public motorized recreation. For example, recreation management plans must consider the levels of motorized trails designated for off highway vehicle use. These trails will detract from the overall Open Motorized Access available for other future applicants;

The Precautionary Principle: The GOA recognizes that the lack of certainty regarding a potential threat to the environment should not be used as a reason for not taking action to avert the risk of serious or irreversible harm to the environment. For example, approvals, investments, and operational planning must consider the impacts on future opportunities and the ability of Valued Ecosystem Components to withstand further impacts;

Evidence-based decision making: Decisions on actions and management responses are informed by natural and social science, local knowledge, and Indigenous world views, perspectives, and traditional knowledge.

20 Headwaters Action Plan. 2014. Oldman Watershed Council. p. 26

4.3 Operational Transition

Many components of implementing this Plan will require a one to three year period as of the Plan's effective date where current activities are gradually transitioned to align with the outcomes and objectives and create the necessary business processes. Some components of this Plan can be implemented in practice before the respective operational plans can be amended (e.g. C5 Forest Management Plan). Other transitional components include:

1. Adherence to designated roads and trails, and recreation requirements to be defined in the draft Livingstone-Porcupine Hills Recreation Management Plan;

2. Alignment with other subregional planning initiatives, in particular the recreation plans mentioned above, the Castle Parks Management Plan[18], and the Pekisko Heritage Rangeland Management Plan[19]. The Livingstone-Porcupine Hills Land Footprint Management Plan is the main proactive management action to implement the regional draft Biodiversity Management Framework[20] and to support related outcomes in the South Saskatchewan Regional Plan.

4.4 Management Response

This Plan aims to proactively manage motorized access and spatial human footprint by preventing limits from being reached or exceeded. If limits are exceeded, or triggers are reached, Alberta Environment and Parks is responsible for responding appropriately, by initiating a management response. In the context of this Plan, the terms 'management response' and 'management actions' have distinct meanings: The management response is a set of steps that will be undertaken if a limit or trigger is reached or exceeded. Part of the management response is determining the need for management actions. Management responses begin with verifying current condition; if a limit is reached or exceeded, there is a commitment that steps will be taken to return to conditions below the limit. Management responses should leverage existing programs where possible. Steps in a management response include:

1. Verification – ensure integrity of collection data;

2. Preliminary assessment – determine conditions relative to triggers or limits;

3. Investigation – determine cause and parties responsible;

4. Mitigative management actions – halt the problem, set a goal and manage the problem until the goal is met;

5. Assess implementation effectiveness – other monitoring, modeling, and reporting is used to assess and communicate on the status of conditions;

18 Castle Management Plan – draft Castle Provincial Park and Castle Wildland Provincial Park (2017)
19 South Saskatchewan Regional Plan (amended 2017; Strategy 3.13 p. 73, 135, 136)
20 South Saskatchewan Regional Plan (amended 2017; p. 56, Strategy 3.1 p. 68, p. 132)

6. Communication – accountability and transparency are necessary to a successful management response. In the event of a management response, a report specifying the details and the effects of the management response shall be made publicly available.

4.4.1 Management actions

Management actions are determined once the cause, trends, and urgency are investigated and become more stringent depending on the severity. Management actions are a subset of the overall management response and will be place-based, and focused on minimizing land disturbance. There is a range of options available when determining what kind of actions should be taken. A mix of tools, both discretionary and mandatory, can be used in a coordinated way. Alternatively, discretionary measures provide other options and approaches that can lead to effective results. Incentives for discretionary approaches can be created in different ways, for example, a market based approach related to ecosystem services. Typical mitigative management actions, enacted by a collaboration of resource managers if a limit is reached or exceeded, will include a combination of mandatory and discretionary measures, for example:

- Integrated Land Management practices to avoid unnecessary disturbance and/or reduce the amount of infrastructure, for example:
    - Adjust location of the project;
    - Avoid new footprint by requiring the use of existing disturbance (e.g., use existing infrastructure and align new infrastructure with existing infrastructure to avoid additional disturbance);
    - Cluster projects to reduce footprint, including sharing of infrastructure;
    - Set requirements for improved project design / revise the scope of the project;
    - Reduce impact of construction phase (e.g., access roads);
    - Prevent permanent disturbance that can pose as a risk to species through improved design;
    - Adjust timing or intensity of development;
- Reclamation requirements:
    - Enforcement of conditions of statutory consent, Operating Ground Rules, etc.
    - Application of reclamation criteria and any requirements for legacy disturbances (e.g. well pads);
- Conservation offsets such as offsets to require restoration of legacy footprint as a component of new project approvals;

- Restrictions on further land disturbance, such as setting of disturbance standards (under the Public Lands Administration Regulation);
- Changes to fish and wildlife regulations;
- Lowering of fish and wildlife harvest levels;
- Revisions to land use authorizations;
- Revisions to operational policies and performance standards;
- Municipal bylaws – if considered appropriate and enacted by local governments as necessary.

To confirm that desired outcomes are met, Alberta Environment and Parks will provide oversight of management actions, evaluates the effects of each action, retains accountability for the overall effectiveness of the actions, and communicates progress. New approaches may also be developed and the intent is to encourage innovative practices.

4.5 Performance Management

Measuring performance is an integral part of planning to enable monitoring, evaluation and reporting on the implementation progress and the effectiveness of this Plan. This valuable information guides decision-making and supports continuous improvement towards achieving plan outcomes. To facilitate performance measurement, a performance management system will be developed that outlines how outcomes are developed and realized through plan implementation, review and reporting. The Land Footprint Management Plan identifies outcomes, objectives, and actions that can be evaluated using performance metrics. These metrics are monitored and analyzed on a regular and ongoing basis to determine the progress of plan implementation. The actions developed through the planning process and their effectiveness in achieving the desired outcomes, will be monitored. Agencies responsible for implementation will report annually on progress on implementing their respective management actions. Alberta Environment and Parks will coordinate the collection of this information which will then be summarized and incorporated into the regional planning status reporting cycle.

This Plan is intended to sustain biodiversity and watershed integrity by directing that three kinds of management actions take place in the region:

1. Management of motorized access (Section 3.1, Objective 1.1);
2. Managing spatial human footprint (Section 3.1, Objective 1.2);
3. Directing ILM practices (Section 3.2).

4.5.1 Monitoring

Monitoring performance includes monitoring the specific actions taken, as well as progress towards achieving the outcomes. Measuring whether management actions are completed is done on an annual basis while measuring progress towards outcomes entails longer-term data monitoring as this is progress towards a specified end or desired condition could take years to be realized.

A monitoring strategy will be developed immediately. Development of the strategy will be coordinated by Alberta Environment and Parks in collaboration with all departments and agencies responsible for implementation, subject matter experts (including Indigenous peoples), local stakeholders, and advisory groups. Collaborative monitoring provides an opportunity to share information and expertise while still allowing respective monitoring programs as a component of a plan monitoring strategy. A monitoring strategy will:

- Identify the key questions to be answered by monitoring activities;
- List and define each attribute to be monitored, and explain:
    - The relevance of each attribute to biodiversity and watershed integrity and, where applicable, valued ecosystem components;
    - The linkage between each attribute and one or more management actions listed under Section 3.1, with reference to existing scientific evidence where applicable;
- Explain the data collection, analytical, and quality assurance protocols used to monitor each attribute;
- Specify the location and monitoring schedule of each monitoring site (note that monitoring sites would be located within and outside the Livingstone-Porcupine Hills);
- Describe the statistical approaches that will be used to answer each key question, which may include:
    - Assessing the relationships between biodiversity and ecosystem health attributes versus anthropogenic disturbance, across one or more gradients of anthropogenic disturbance;
    - Comparing differences in biodiversity and ecosystem health attributes before versus after plan implementation (Before After Impact Control);
    - Comparing the levels of biodiversity and ecosystem health attributes in the Livingstone-Porcupine Hills (after plan implementation) compared to one or more reference areas;
- Identify the roles and responsibilities of each organization involved in monitoring;
- Identify milestones and the reporting schedule over the initial monitoring period (five years);

- Provide an estimated budget (expenditures and revenue) over the initial five-year monitoring period;
- Explain how monitoring findings would potentially inform the five-year plan review, and subsequent decisions to amend, renew, or otherwise adjust this Plan.

As part of developing a monitoring strategy, a performance metric framework will be populated to contain the specific details for each metric, including: relevance, data collection frequency or availability, reporting frequency, data sources, and data storage. A standard performance metric framework is under development by Alberta Environment and Parks and will be used for this Plan's monitoring strategy.

4.5.2 Evaluation

Evaluation is the systematic assessment of the design, implementation or results of a plan for the purpose of reporting, learning, making adjustments to priorities or decision-making. In order to assess the effectiveness of plan implementation, performance metric data and information needs to periodically undergo a rigorous analysis and interpretation to determine the extent to which this Plan is achieving the intended outcomes. This will include evaluation against baseline conditions and/or established limits and targets. Also as part of evaluation, the efficiency with which resources were used, and results or outputs achieved, needs to be examined. The relevance of this Plan, in light of current priorities, also needs to be included as part of evaluation.

The tool for tracking performance metric data and information will be the performance metric framework, which will be critical for determining how effective this Plan has been in achieving outcomes. Tracking of inputs and implementation progress through the status of strategies and actions to understand which have been completed, which are in progress, and which have not yet started and why, is also important to assist evaluation of plan efficiency. Assessing the effectiveness of these actions, and specifically the impact of these actions on biodiversity and watershed integrity, is challenging because:

- Biodiversity and watershed integrity are not easily defined or measured;
- The impacts of management actions on biodiversity and watershed integrity are incompletely understood;
- Management actions beyond the three types listed above, that are directed in this Plan, may also impact biodiversity and watershed integrity;
- Additional management actions not considered in this Plan, plus natural disturbances such as wildfire and weather, may also impact biodiversity and watershed integrity.

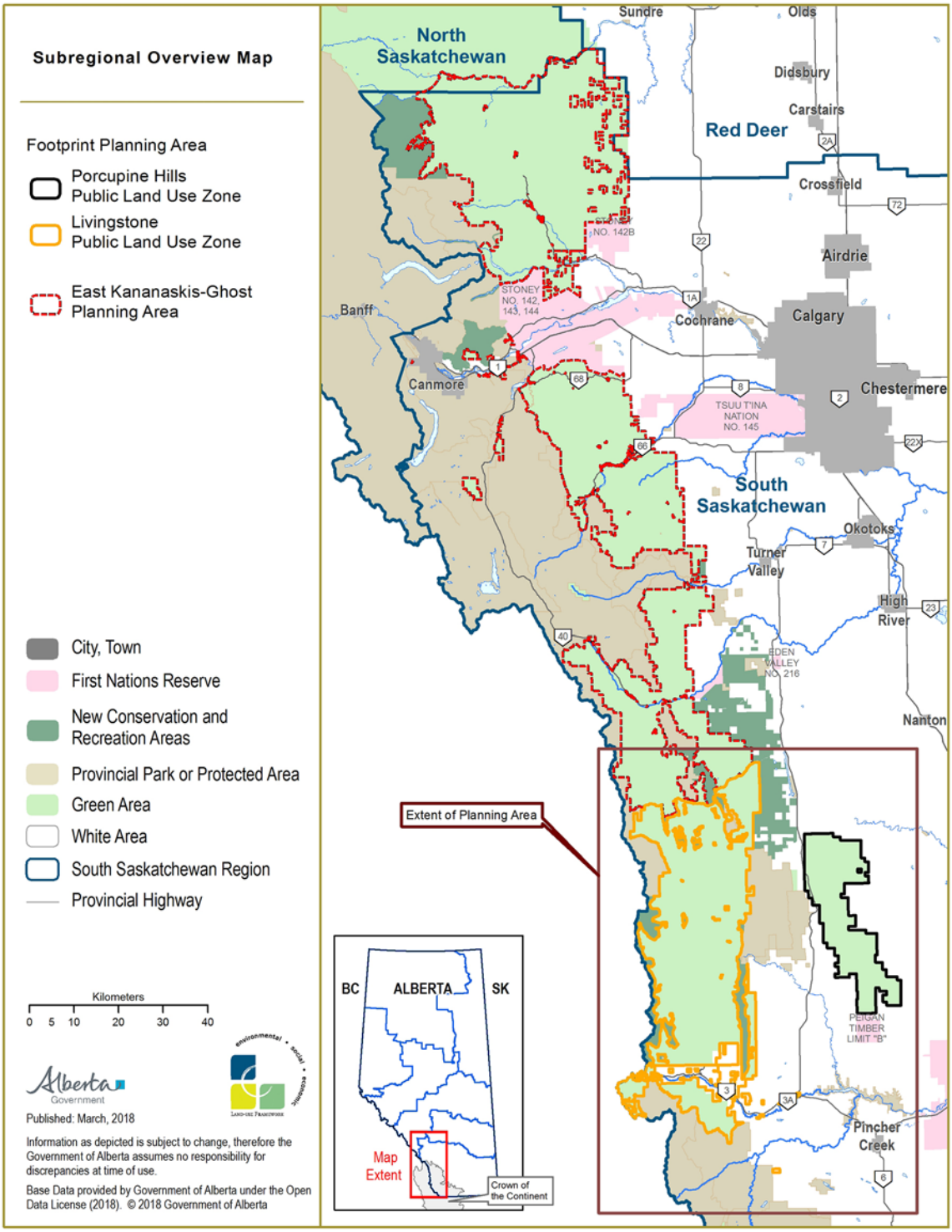
4.5.3 Reporting

Reporting is an essential component of any planning process. The results of evaluation and changes arising from implementation need to be shared broadly. Government will use various mechanisms to formally communicate on plan progress, including the release of reports that speak directly to this Plan, as well as communications that address more specific aspects of this Plan. Reports will provide evidence that progress is being made towards achieving the outcomes. They will adequately communicate progress on metrics and include technical information.

Reporting on implementation progress (strategies and actions) is anticipated to be done annually. Reporting on progress towards achieving strategic outcomes is anticipated to be undertaken after the five-year plan review and following the comprehensive ten-year review. Plans developed under the Land-use Framework are scheduled for review at least once every five years following plan approval, with a report made available to the public. Five year reviews will examine how well this Plan is progressing towards achieving outcomes and include an assessment of the performance metrics. At least once every ten years following plan approval, a comprehensive review is anticipated to be undertaken which will include a thorough evaluation of plan effectiveness, efficiency and relevance. This could result in this Plan being amended, replaced, renewed or repealed. First Nations and public consultation is anticipated to be a part of the formal ten-year review.

Plan reviews can also be triggered by the ongoing review of the performance metrics. If this Plan is meeting the expected objectives, no further action is required until the five and ten year scheduled reviews. Should analysis of the performance metrics show that this Plan is not meeting expected objectives, a review the performance components may be conducted, or a review of the Plan in its entirety, can be initiated. This Plan is intended to be adaptive in order to advance footprint management in the Eastern Slopes.

5.0 MAPS


Subregional Overview Map
Footprint Planning Area
Porcupine Hills Public Land Use Zone
Livingstone Public Land Use Zone
East Kananaskis-Ghost Planning Area
City, Town
First Nations Reserve
New Conservation and Recreation Areas
Provincial Park or Protected Area
Green Area
White Area
South Saskatchewan Region
Provincial Highway
Kilometers
0 5 10 20 30 40
Alberta Government
Published: March, 2018
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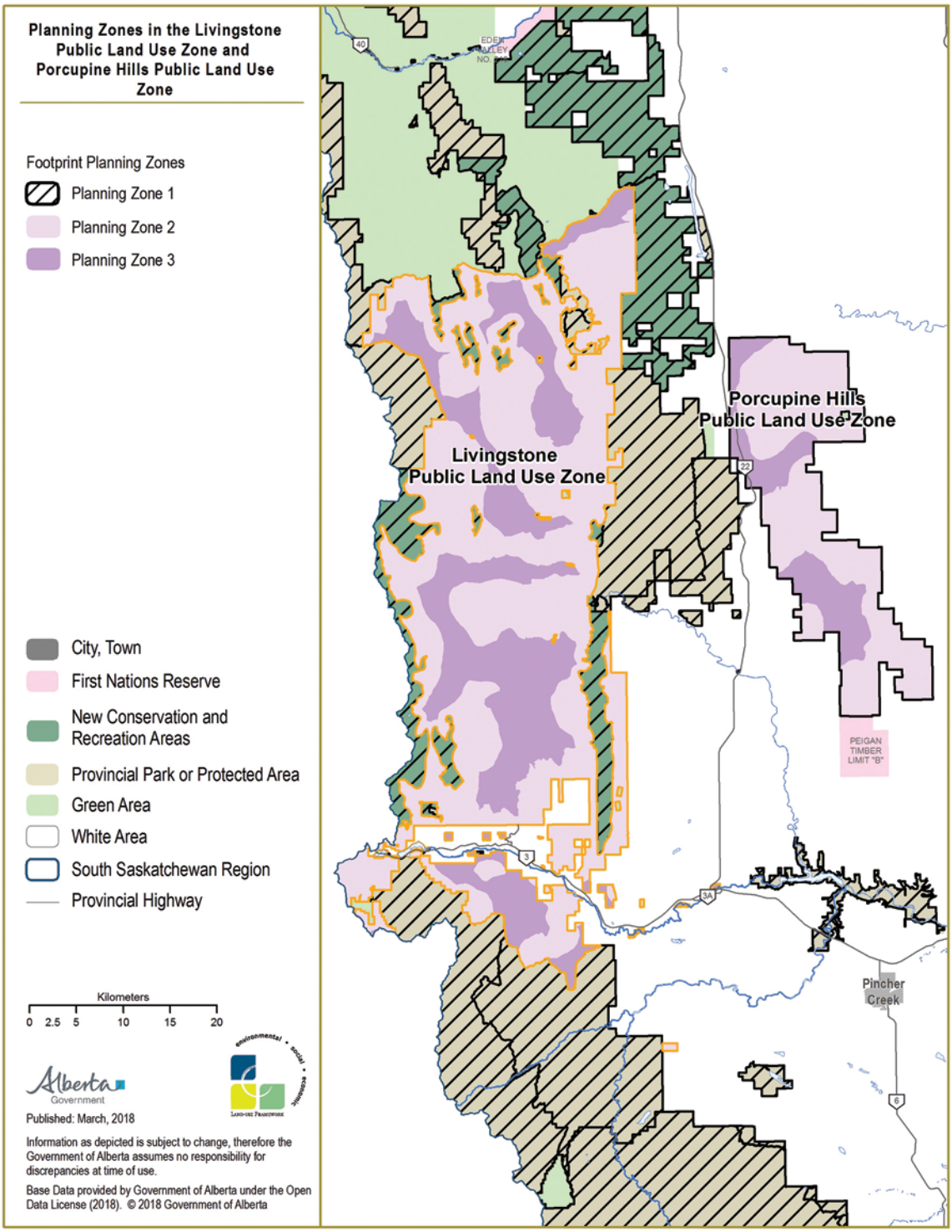
North Saskatchewan
South Saskatchewan
Red Deer
Sundre
Olds
Didsbury
Carstairs
Crossfield
Airdrie
Calgary
Chestermere
Cochrane
Banff
Canmore
Okotoks
Turner Valley
High River
Nanton
Pincher Creek
STONEY NO. 142B
STONEY NO. 142, 143, 144
TSUU T'INA NATION NO. 145
EDEN VALLEY NO. 216
PEIGAN TIMBER LIMIT "B"
Extent of Planning Area
BC
ALBERTA
SK
Map Extent
Crown of the Continent


Planning Zones in the Livingstone Public Land Use Zone and Porcupine Hills Public Land Use Zone
Footprint Planning Zones
Planning Zone 1
Planning Zone 2
Planning Zone 3
City, Town
First Nations Reserve
New Conservation and Recreation Areas
Provincial Park or Protected Area
Green Area
White Area
South Saskatchewan Region
Provincial Highway
Kilometers
0 2.5 5 10 15 20
Alberta Government
Published: March, 2018
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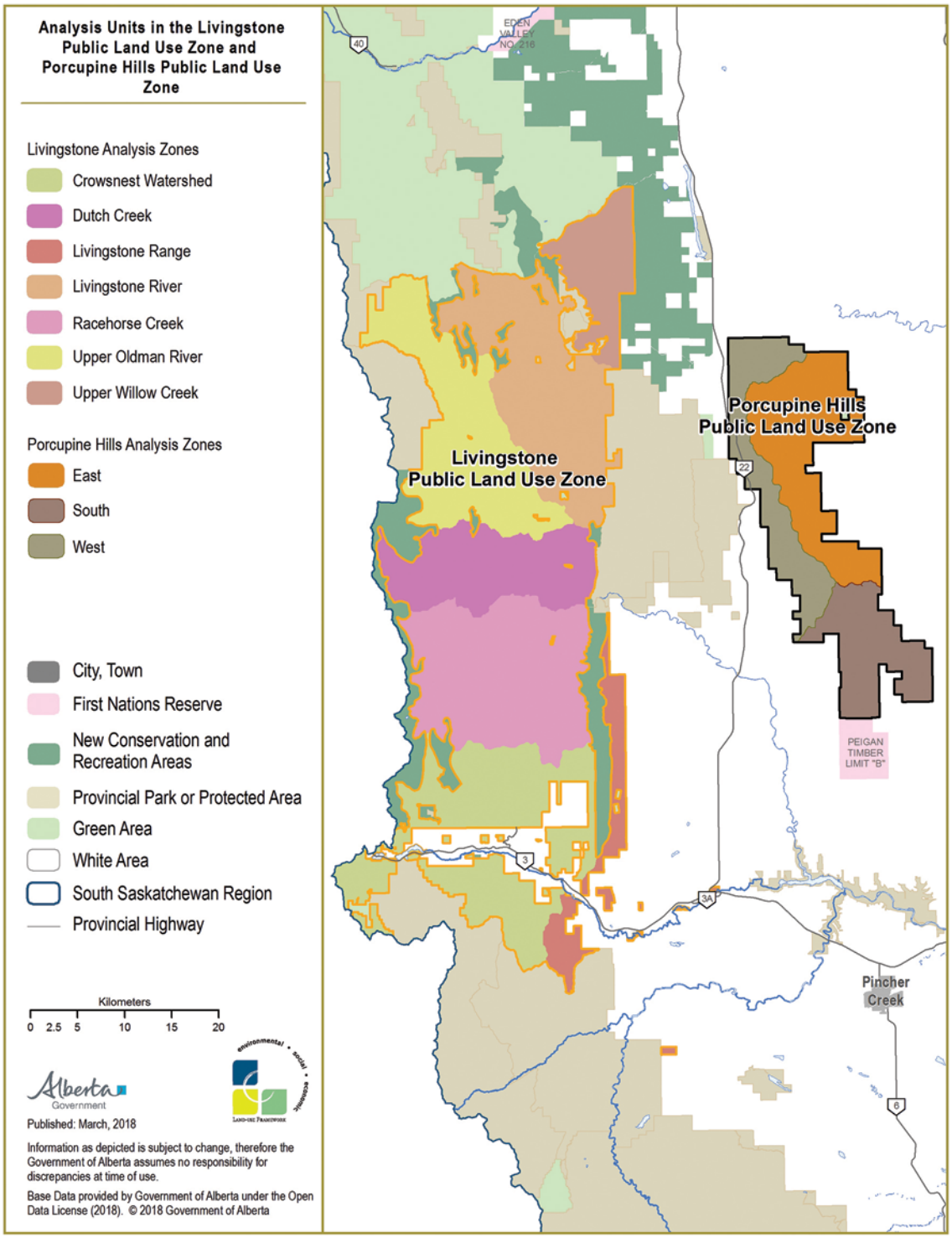
Livingstone Public Land Use Zone
Porcupine Hills Public Land Use Zone
PEIGAN TIMBER LIMIT "B"
Pincher Creek
40
22
3
3A
6


Analysis Units in the Livingstone Public Land Use Zone and Porcupine Hills Public Land Use Zone
Livingstone Analysis Zones
Crowsnest Watershed
Dutch Creek
Livingstone Range
Livingstone River
Racehorse Creek
Upper Oldman River
Upper Willow Creek
Porcupine Hills Analysis Zones
East
South
West
City, Town
First Nations Reserve
New Conservation and Recreation Areas
Provincial Park or Protected Area
Green Area
White Area
South Saskatchewan Region
Provincial Highway
Kilometers
0 2.5 5 10 15 20
Alberta Government
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Livingstone Public Land Use Zone
Porcupine Hills Public Land Use Zone
EDEN VALLEY NO. 216
PEIGAN TIMBER LIMIT "B"
Pincher Creek
40
22
3
3A
6

APPENDICES

Appendix A: Glossary of Terms

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 (Land-use Framework, 2008).

Catastrophic fire indicator – Large, contiguous areas within a region where the occurrence of intense wildfire that is uncontrollable with conventional suppression methods (greater than 4000kW/m - air suppression is less effective) is more likely to occur. The size threshold used to define large contiguous areas will vary based on desired land-uses within a region and their tolerance for wildfire disturbance.

Commercial recreation - Instructing/guiding/outfitting activities on public land and/or water for which a consumer pays a fee (e.g. commercial trail riding, dog tours, heli-ski tours, fishing, bird hunting, off-highway vehicle tour, etc.). Typically these operations are not supported by capital investment in permanent infrastructure, such as fixed roof structures (Outdoor Recreation Glossary of Terms).

Conservation – The responsible preservation, management and care of our land and of our natural and cultural resources (Land-use Framework, 2008).

Conservation offset – An action taken to counteract impacts from development that remain after efforts have been taken to avoid and minimize those impacts (Alberta Conservation Offset Framework, draft).

Corridor, *wildlife corridor* – A physical linkage, connecting two areas of habitat and differing from the habitat on either side. Corridors are used by organisms to move around without having to leave the preferred habitat (draft Biodiversity Management Framework, 2017).

Crown of the Continent – The region that includes and surrounds Waterton-Glacier International Peace Park (a UNESCO World Heritage Site) in southwestern Alberta, southeastern BC, and northwestern Montana (draft Castle Management Plan, 2017).

Cumulative effects – The combined effects of past, present and reasonably foreseeable land-use activities, over time, on the environment (South Saskatchewan Regional Plan, amended 2017).

Designated trail – A linear feature which, through regional and subregional planning processes or management plans, is identified for a specific activity or activities. Trails are mapped, signed, and maintained.

Disturbance – In respect of public land, means human activity that moves or removes one or more of the following features of the public 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 (Public Land Administration Regulation, 2011):

(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.

Ecosystem function – Processes that are necessary for the self-maintenance of an ecosystem such as primary production, nutrient cycling, decomposition, etc. The term is used primarily as a distinction from values (South Saskatchewan Regional Plan, amended 2017).

Ecosystem services – Outputs (goods and services) derived from ecosystems that benefit people. These include provisioning services, regulating services, supporting services, and cultural services. Ecosystems, and the biodiversity contained within them, provide a stream of goods and services essential for society's well-being. It is synonymous with 'Ecosystem Goods and Services' (draft Biodiversity Management Framework, 2017).

Ecosystems – The interaction between organisms, including humans, and their environment. Ecosystem health/integrity refers to the adequate structure and functioning of an ecosystem, as described by scientific information and societal priorities (South Saskatchewan Regional Plan, amended 2017).

Footprint – *human footprint* – As set out in Section 1(1)(m) of the Public Lands Administration Regulation, 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. This includes temporary and permanent human landscape alterations including patches and linear corridors of disturbance (e.g. roads, trails, well sites, industrial sites, land clearings, etc.). Footprint also includes the duration, timing and other factors (e.g. noise, scenic value) that are attributes related to the physical land disturbance.

Foreclosure – The reduction in availability of development of future options if the capacity of a valued ecosystem component to absorb change or further impacts has been taken up by approved and to-be-approved activities (Sinclair et al. 2016).

Headwaters – The source and upper tributaries of a stream or river (South Saskatchewan Regional Plan, amended 2017).

Highly erodible soils – Means soils classified as High under 'Erosion Hazard' in the Derived Ecosite Phase dataset or by other means as published by the Minister responsible for the *Forests Act*.

Indicators – These are identified as part of the performance management system and are a measure of state or condition.

Indigenous Peoples – For the purposes of the present document, "Indigenous Peoples" means "aboriginal peoples of Canada" within the meaning of Section 35 of the *Constitution Act*, 1982. For the reasons stated in the South Saskatchewan Regional Plan, the focus on conversation with the region's Indigenous Peoples has been with First Nations. All First Nations in the planning area adhered to a Treaty, under which they hold treaty rights within the meaning of Section 35 of the *Constitution Act*, 1982.

Limit, *disturbance limit* – A management threshold that establishes a maximum amount of land disturbance that may occur in a given area in order to prevent undesirable change in the condition of a given landscape. It can be described specific to types of disturbance, for example linear or non-linear footprint, and is based on an assessment of environmental, social and economic priorities in a given area. It may be used in areas where it is necessary to take active steps in footprint management to address one or more key drivers for the area in either a proactive or responsive manner.

Linkage areas – Broader regions of connectivity important to maintain ecological processes and facilitate the movement of multiple species.

Motorized access – Means the use of highways or designated trails used by a motor vehicle.

Motor vehicle – Has the same meaning as in the *Traffic Safety Act*.

Open motorized access – Means motorized access by any person for any purpose on a highway designated by a road authority for public use within the meaning of the *Traffic Safety Act*, or on a trail designated for public use as identified on the Livingstone Public Land Use Zone map or the Porcupine Hills Public Land Use Zone map as published by the Designated Minister, but does not include restricted motorized access.

Near-stream motorized access - Means motorized access on highly erodible soils within 100 metres of a water body.

Public land – Land owned by the Government of Alberta, which makes decisions about how it is used and managed, including for agriculture, forestry, resource development, habitat conservation and protection of watersheds and biodiversity (South Saskatchewan Regional Plan, amended 2017).

Public land use zones - Are areas of public land to which legislative controls apply under authority of the *Public Lands Act*, to assist in the management of industrial, commercial and recreational land uses and resources.

Reclamation – The process of reconverting disturbed land to its former or other productive uses (Glossary of Reclamation and Remediation Terms Used in Alberta 7th Edition, 2002).

Restoration – The process of restoring site conditions as they were before the land disturbance (Glossary of Reclamation and Remediation Terms Used in Alberta 7th Edition, 2002).

Restricted motorized access – Means motorized access authorized under a statutory consent that includes measures to restrict public access, and mitigate impacts to fish and wildlife, including two or more of the following:

(i) motor vehicle volume restrictions to manage wildlife risks;

(ii) motor vehicle speed limits to manage wildlife risks;

(iii) motor vehicle timing restrictions;

(iv) motor vehicle noise restrictions; or

(v) road construction standards to manage sedimentation and surface erosion risks.

Spatial – Relating to, or occupying, space (draft Biodiversity Management Framework, 2017).

Target, *disturbance target* – A management threshold that establishes a quantitative goal for land disturbance in a given area to improve the performance of an environmental indicator(s) in the biodiversity management framework or other guiding plans. It can be described specific to types of disturbance, for example linear or non-linear footprint, and is based on an assessment of environmental, social and economic priorities in a given area. It may be used in a variety of geographic areas where it is desirable to work towards and promote deliberate footprint management practices in proactive manner.

Temporal – Relating to time (draft Biodiversity Management Framework, 2017).

Threshold – Has the meaning given to it in a regional plan and may include a limit, target, trigger, range, measure, index or unit of measurement (*Alberta Land Stewardship Act*, 2009).

Tourism – Activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited (United Nations World Tourism Organization).

Valued ecosystem components – The environmental element of an ecosystem that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance. The value of an ecosystem component may be determined on the basis of cultural ideals or scientific concern.

Watershed – All lands enclosed by a continuous hydrologic-surface drainage divide and lying upslope from a specified point on a stream (South Saskatchewan Regional Plan, amended 2017).

Watershed integrity – Means the capacity of a watershed to support and maintain the full range of ecological processes and functions essential to the sustainability of biodiversity and of the watershed resources and services provided to society. The effects of groundwater in contributing to watershed integrity are acknowledged.

Appendix B: Livingstone-Porcupine Hills Subregional Integrated Resource Plan Review Summary

Currently for the area, the Livingstone-Porcupine Hills Sub-Regional Integrated Resource Plan (1987) sets the land-use direction through provisions that provide management direction for various activities. The 1987 Integrated Resource Plan will remain in effect until all provisions have been reviewed for their relevance and incorporated as appropriate under the implementation strategies of subregional planning or issue-specific plans in the region.

Under the Land-Use Framework, the Government of Alberta has affirmed an enhanced Integrated Resource Management System for managing the province's land and natural resources. Footprint management planning is a key component to the system and builds on the objectives of regional planning while representing Alberta's resource management policy for public lands and resources within defined planning areas. All land use decisions are aligned within the planning system.

The Livingstone-Porcupine Hills Sub-Regional Integrated Resource Plan included 484 provisions with 83 per cent of them considered either aligned with current plans, directives, and other land management tools. The remaining 17 per cent have been redirected for consideration on a localized scale during the development of various plans such as the Livingstone-Porcupine Hills Land Footprint Management Plan, recreation management plans, and/or tourism destination plans under the South Saskatchewan Regional Plan, or Wildlife Land Use Guidelines, Forest Management Plans, Operating Ground Rules, Range Management Plans, and Wildlife Management Plans.

Forty provisions were identified to be addressed by the implementation of the Livingstone-Porcupine Hills Land Footprint Management Plan or to be redirected to sectorial plans for consideration on a localized scale, for example, through Recreation Management Plans, Operating Ground Rules, Range Management Plans, etc. The relevant provisions are incorporated through policy into this Plan's implementation.