



Ministry of
Forests, Lands, Natural
Resource Operations
and Rural Development



Provincial Timber Management Goals, Objectives & Targets

Ministry of Forests, Lands, Natural
Resource Operations and Rural
Development

Province of British Columbia

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Foreword

While timber has been a mainstay of the British Columbia economy for decades, specific management goals, objectives and targets have often been assumed or buried in various plans or other documents rather than consolidated and clearly described on a provincial basis. The following document provides a co-ordinated provincial vision and a set of detailed timber management goals, objectives and targets to assist forest managers in sustainably managing B.C.'s complex, multi-value public forests.

It is important to understand that forest management goals, objectives and targets have different scales and levels of detail. The high-level provincial timber management goals, objectives and targets described in this document provide context and guidance for planning at the local level. The intent is for this provincial guidance to be regularly revisited and refined as necessary to address changing forest conditions, climate change, evolving public priorities, improvements in scientific knowledge, and local level use and experience.

To make provincial goals and objectives a reality, local timber management targets and strategies are required at the management unit level (e.g., timber supply area). It is key that local-level planning (e.g., integrated silviculture strategies), supported by risk and scenario-based analysis, be done to support the selection of targets and the integration of management strategies for both timber and non-timber resource values. Local-level planning also provides the venue for continuous monitoring of the achievement of local targets, which facilitates adaptive management and the refinement of effective and efficient targets and/or strategies.

I encourage all readers to review the full document and use this guidance in their local-level planning and practices to support sustainable forest management for present and future generations. If there are any questions, comments or feedback to improve this document, please direct them to the Office of the Chief Forester.



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Introduction

British Columbia has the largest and most diverse public forests in Canada. Managing forests for timber,¹ water, wildlife, recreation and other values over the long term is, therefore, very important and complex. Clearly defined goals and objectives for B.C.'s forests assists forest managers in meeting public expectations for the sustainable management of this broad array of forest resources.

This document brings together and augments the goals, objectives and targets in the ministry service plan, forest legislation (e.g., *Forest Planning and Practices Regulation*), and other ministry reports, such as *Rationales for Allowable Annual Cut Determinations*, to provide this information in a single location.

High-level provincial timber management goals, objectives and targets provide the context and guidance for local-level planning. These provincial goals, objectives and targets should be regularly revisited and refined as necessary in order to address changing forest conditions, climate change, evolving public priorities, and improvements in scientific knowledge. Over time, this document will be improved to address those considerations and incorporate user feedback and experience.

Local timber management targets and strategies are particularly meaningful at the management unit level. Local-level planning, supported by risk and scenario-based analysis, can assist in the selection of targets and the integration of management strategies for all relevant resource values. Continuous monitoring of the achievement of goals, objectives and targets, along with a clear feedback loop, provides the basis for refining targets and/or management strategies (see Appendix 1).

The provincial hierarchy of goals, objectives and targets at various levels includes:

- **Vision for B.C. provincial forests** – provides a provincial context for timber management goals, objectives and targets.
- **Provincial timber management goals, objectives and targets** – provides context and direction to help guide the development of supporting local management unit targets.
- **Local (management unit) timber targets** – rationalizes provincial goals, objectives and targets within the context of local conditions, needs and values. Local targets guide timber management activities such as harvest practices and silviculture.

This document focuses on timber objectives within the context of integrating timber with societal goals, objectives and targets for other natural resource values associated with B.C.'s public forests. Objectives for the full suite of natural resource values will be developed over time and ministry staff will continue to focus on developing integrated management strategies that optimize the achievement of all objectives.

¹ BC's *Forest Act* defines 'timber' to mean trees, whether standing, fallen, living, dead, limbed, bucked or peeled.

Timber management goals, objectives and targets (including local management unit targets) build upon, and therefore need to be revised based on, a wide variety of key information, including:

- First Nations management objectives;
- Forest inventory (e.g., vegetation resource inventory);
- Forest research;
- Forest health strategies;
- Timber supply reviews;
- Tree improvement (e.g., improvements in genetic worth);
- Climate change;
- Wildfire and fuel management;
- Fish and wildlife values, as well as other non-timber values;
- Incremental silviculture investments (e.g., Forests for Tomorrow); and
- Cumulative effects assessment and management information.

Goals are long-term aims.

Goals are more about the grand vision, or things that should be accomplished along the way, rather than specifically how to arrive at a desired outcome. Goals will often enter into undetermined territory and, therefore, the exact endpoint may be uncertain.

Objectives are concrete attainments that can be achieved by following certain actions.

Objectives are concrete and can be clearly linked to timelines, budgets and activities. Timber management objectives define the strategic condition that needs to be attained to achieve the timber management goals. These objectives are linked to a set of management targets.

Targets numerically specify desired management results to be achieved.

Targets specify a desired condition that can be measured, tracked and reported to support the attainment of goals and objectives. Targets may be updated over time based on factors such as changing forest conditions and new information.

Strategies are planned actions taken to achieve one or more objectives.

Strategies generally involve determining actions to achieve defined objectives and mobilizing resources to execute the actions.

The Vision for B.C. Provincial Forests

‘Sustainable forest management’ has been defined to mean management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things, while providing environmental, economic, social and cultural opportunities for present and future generations.²

The ministry’s vision for the sustainable management of B.C.’s provincial forests³ includes:

- Managing forests to meet present needs without compromising the ability of future generations to meet their needs;
- Providing stewardship of forests based on an ethic of respect for the land;
- Maintaining and restoring proper ecosystem function and promoting ecological resilience for influences such as climate change;
- Balancing economic, social, spiritual, ecological and recreational values of forests to meet the needs of people and communities, including First Nations; and
- Conserving biological diversity, soil, water, fish, wildlife, scenic diversity, and other forest resources.⁴

The timber management goals, objectives and targets that follow are intended to be aligned with the vision for B.C.’s provincial forests.

Balancing Timber with Other Values

The purposes and functions of the ministry include the following:⁵

“plan the use of the forest and range resources of the government, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated, in consultation and cooperation with other ministries and agencies of the government and with the private sector.”

Timber management goals, objectives and targets are developed consistent with legal actions⁶ that protect or conserve non-timber values, and in consideration of management objectives for other values and uses. The ministry engages in equitable, respectful and effective communications to ensure all parties, including First Nations, are informed and, where appropriate, consulted on actions and decisions in a timely manner.

Timber management objectives are needed to guide how economic interests are balanced with environmental and social opportunities both in the present and the future. They are also fundamental to the establishment of policies and practices needed to help ensure the health and competitiveness of the forest sector and to foster an industry that is sufficient to support the local, regional and provincial economies at levels desired by society, while ensuring broader provincial economic, social and environmental objectives are met.

² Canadian Council of Forest Ministers’ 2008 *Marking Canada’s Progress in Sustainable Forest Management*.

³ ‘Provincial forests’ are as defined in the *Forest Act*.

⁴ Adapted from the Preamble to the *Forest Practices Code of British Columbia Act*.

⁵ *Ministry of Forests and Range Act*.

⁶ ‘Legal actions’ refer to direction provided through legislation, such as aboriginal title, establishment of parks and protected areas, and orders under the *Land Use Objectives Regulation* and the *Government Actions Regulation*.

Timber management strategies seek to optimize benefits for multiple values (e.g., improve habitat for wildlife or reduce fuel loads in the wildland/urban interface, while producing high-value timber).

The Province has a role to appropriately balance resource values in a consistent manner across all sectors and government agencies.

Forest and Range Practices Act – Context – Sections 5-10 of the *Forest Planning and Practices Regulation of the Forest and Range Practices Act* outlines ‘objectives set by government’ for timber and a variety of non-timber values. These “objectives” are legally applicable to forest stewardship plans developed by forest licensees and B.C. Timber Sales.

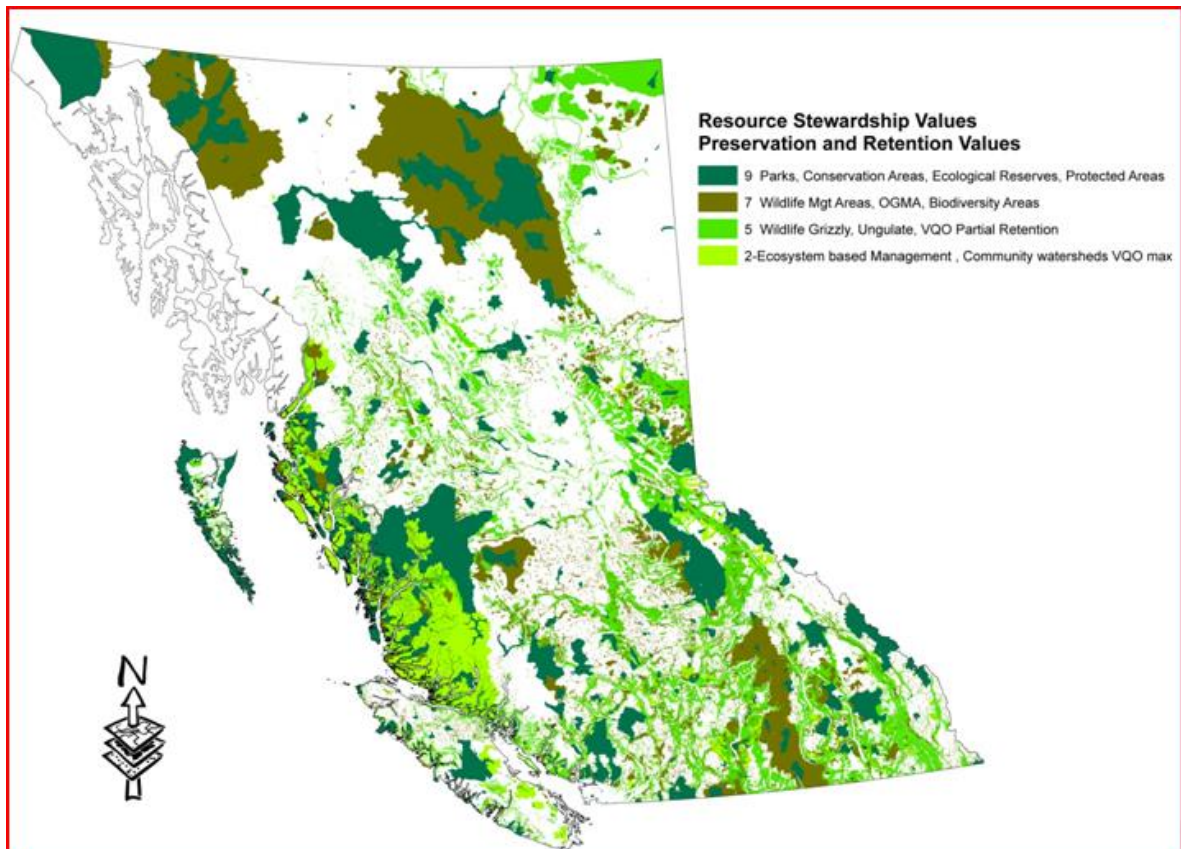
Similarly, timber management goals and objectives must be achieved through management strategies that are integrated with those of other values. The entire forest land base in British Columbia has existing non-timber goals and objectives.

As an example, Map 1 below indicates the extent of non-timber areas designated as:

1. Parks, Conservancies, Ecological reserves, Protected areas;
2. Wildlife Management Areas, Old Growth Management Areas, Biodiversity Areas; and Retention Visual Quality Objectives (VQOs);
3. Wildlife, Grizzly, Ungulate, Partial Retention VQOs; and
4. Ecosystem-based Management, Community Watersheds.

Note: Commercial timber harvesting is precluded or integrated with the various designations so that non-timber values goals and objectives are attained.

Map 1: Composite map showing a range of non-timber designations in B.C.



Timber Volume Flow Over Time



Timber volume flow over time describes what has traditionally been the focus of sustainable forest management. The provincial aim is not a strict even flow regime, but rather predictable and reliable flows to support economic and social objectives. Timber flow will be managed in an integrated manner with other key forest values.

Provincial Goal

Promote resilient and diverse forest ecosystems to provide a sustainable flow of economically valuable timber that generates public revenue, and supports robust communities and healthy economies for a vigorous, efficient and world-competitive timber processing industry.

Provincial Objectives

1. Manage timber in an adaptive manner to address the dynamic nature of natural processes and the inherent uncertainty of managing over long timeframes.
2. Achieve forecasted long-term harvest flows through the application of timber management activities, including harvest practices and silviculture investments.
3. Use available data to continuously improve timber flows, verify assumptions, and reduce uncertainty.
4. Promote and support the innovative utilization of economically available fibre.

Provincial Targets

- Based on a 22-million hectare timber harvesting land base (THLB),⁷ produce:
 - A mid-term timber supply of at least 57 million m³/year; and
 - A long-term timber supply of at least 65 million m³/year.⁸

⁷The THLB area and timber supply targets are based on a roll-up of the results from timber supply reviews (TSRs) for all TSAs and TFLs in BC. TSRs consider the management of non-timber values and uses. Current TSRs provide local management unit targets that can be rolled up for the Coast, Northern Interior and Southern Interior areas.

⁸ The long-term target is based on 65 million m³/year projected from TSRs.

Local Targets

Local targets should incorporate assumptions and outcomes from the most recent TSR and associated forward-looking strategies available in individual management units.⁹ Local targets should include, but not be limited to, the following:

- Harvest Billing System (HBS) harvest volumes relative to annual allowable cut (AAC) volumes;
- HBS harvest volumes by species relative to the inventory profile;
- Harvest performance in terrain versus TSR assumed performance; and
- Harvest performance in haul distance versus TSR assumed performance.

Strategies

Example strategies that can be employed at the local management unit level include:

- Conduct regular analyses (consistent with Section 8 of the *Forest Act*)¹⁰ of current and projected future forest conditions, exploring a range of feasible management options to set harvest levels and other criteria to manage timber supply.
- Ensure timber supply forecasts are consistent with legal actions that protect or conserve non-timber values.
- Regularly update timber supply forecasts to reflect harvesting and silviculture practices, and changing conditions and values.
- Design harvesting and silviculture plans and activities to have smooth harvest flow transitions between the short, mid and long term.
- Plan and implement harvesting and management activities consistent with mid-term and long-term local management unit timber supply targets, such as:
 - Stand and/or species profile priorities for harvesting;
 - Harvest age, timber size criteria, and utilization standards; and
 - Access to timber over all profiles of the THLB.
- Monitor harvesting and silviculture activities for consistency with management unit plans and assumptions.
- Assess and mitigate risks to timber flows (including risk from insects, disease, fire and windthrow) within the context of climate change and other long-term influences.
- Encourage maximum use of avoidable waste through full merchandising and innovative technology.
- Utilize continuous improvement strategies as new and better information becomes available.

⁹ For example, integrated silviculture strategies, among other initiatives, can provide management unit level specific harvest-level targets, and helps develop five-year plans for silviculture investments (see <http://www.for.gov.bc.ca/HFP/silstrat/index.htm>).

¹⁰ The Chief Forester must determine an allowable annual cut at least once every 10 years after the date of the last determination.

Timber Quality



Timber quality is defined by species, log sizes and grades, end use, and economic value that combine to achieve desired characteristics in the marketplace. In order to minimize risks and maintain future options, a diverse growing stock (or inventory) of timber quality is desirable.

Provincial Goal

Maintain a diversity of timber-related economic opportunities through time.

Provincial Objectives

1. Proportions of high-value species¹¹ within each management unit will be maintained at no less than pre-harvest levels¹² based on the forest inventory.
2. Restock new forests with trees that will produce high-quality fibre (including sawlogs) as the primary product objective.¹³
3. Ensure a proportion of the growing stock will produce future logs of premium grade.¹⁴

Provincial Targets

- To produce a minimum of 10% premium grades annually from B.C.'s forests, both now and in the future.

¹¹ High-value species include western redcedar, yellow-cedar, Douglas-fir, western larch, spruce, pine, and other species that have explicit regional or local strategic objectives related to value.

¹² Based on trends over the past 10 years.

¹³ 84% of the BC annual timber harvest goes to lumber mills, 5% to chip/pulp mills, 8% to plywood and veneer mills, and 3% to panel/mdf mills. Of the volume that goes to the lumber mills, about 47% ends up as lumber. From the scaled harvest plus bark, about 1/3 goes to lumber, 1/3 to bioenergy and 1/3 to pulp, paper, and other products. Dymond, C.C. 2012. Our Logs' Story from Truck to Product. BC Forest Science Program Extension Note 107, Victoria, BC. <http://www.for.gov.bc.ca/hfd/pubs/docs/En/EN107.pdf>.

¹⁴ Premium grades are defined as logs having qualities such as larger diameter, narrow ring width, low taper, and few or no knots, such that the particular quality or combinations of qualities commands higher than average prices in a free market. Specifications may vary by tree species and forest region.

Local Targets

- Local targets should incorporate assumptions and outcomes from the most recent TSR and associated forward-looking strategies available in individual management units. Local targets should include, but not be limited to, the following:
 - Harvestability criteria performance versus TSR harvestability assumptions for harvestable volume and harvestable age; and
 - Produce a minimum of 10% premium grades reported to HBS in the last five reporting periods.

Strategies

An example strategy that can be employed at the local management unit level includes:

- Continuous improvement in the understanding of stand establishment, development and management for timber quality characteristics will ultimately improve associated management objectives and targets.

Tree Species Composition



Tree species composition is an important overall forest resource consideration as it influences timber values, health, resilience, and non-timber values. Tree species diversity is a fundamental climate change adaptation strategy. Tree species composition overlaps with other timber management goals such as timber quality and stand productivity.

Provincial Goal

Maintain or enhance timber and non-timber values, forest health, and resilience through the management of tree species composition.

Provincial Objectives

1. Where it is ecologically feasible, reliable and productive, use a resilient mix of species at both the stand and landscape scales to reduce long-term forest risks and maintain future options.
2. Promote reforestation of species compositions that reduce vulnerability from climate change and forest health impacts on timber and other forest values.
3. Reduce the occurrence of species where future risks (ecological and economic) are disproportionately high compared with other species.
4. Plant trees that are well adapted to the climate of the areas in which they are planted, contain adequate genetic diversity, and form part of diverse forest ecosystems across the landscape.

Provincial Targets

- At least 80% of harvested areas are planted with more than one species.
- The change in pre- and post-harvest tree species composition in the last five reporting periods is within +/- 2 percentage points. The pre-harvest species composition is measured using HBS volumes, and the post-harvest tree species composition is measured using RESULTS forest cover inventory label stems/ha at the time of free growing.

Local Targets

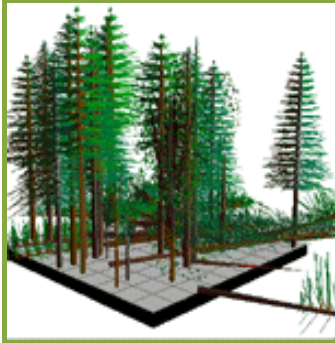
- Initial tree species targets for each management unit will be set using the process outlined in the [Species Monitoring Report](#) data package.
- Additional local targets should incorporate assumptions and outcomes from the most recent TSR and associated forward-looking strategies available in individual management units.

Strategies

Example strategies that can be employed at the local management unit level include:

- Create landscape-level species targets for all TSAs to promote resilience at meaningful ecological scales, analysing and reporting trends annually against these targets.
- Management will successfully adapt by continuously improving the understanding of resilience and adaptability in the face of influences such as climate change. Increased understanding of the role of tree species compositions at various scales will ultimately improve objectives, targets and management success.

Stand Productivity and Growing Stock



Management of stand productivity and growing stock focuses on trends in standing timber (all ages) over the management unit through time. This encompasses the health, genetics, density, and stocking of various stands so that they can productively utilize site resources, balanced against the various risks that can threaten the growing stock through its life span.

Provincial Goal

Maintain or improve the productivity of the growing stock in provincial forests.

Provincial Objectives

- After significant and sudden changes to growing stock from natural disturbances and salvage harvesting, cost-effective management options with timely management unit analysis and planning will be developed for the consideration of government.
- Target full site occupancy of growing space after making effective allowances for other values and risks.
- The proportion of high-risk species¹⁵ across a management unit will not be increased, and, where future risks for such species are disproportionately high compared with other species, they will be gradually reduced.
- Decisions at the stand level will not be made solely on the basis of return-on-investment data, but will consider stand-level risks and management unit objectives and targets.
- Tree seed selected for improved growth or pest tolerance is used, where available.
- Risks to productivity and growing stock (including risks from insects, disease, fire and windthrow) will be reduced across the forest within the context of climate change and other long-term influences.

¹⁵ High-risk species – Species with a high risk of mortality during its development stages due to a range of biophysical influences, including climate change (e.g., lodgepole pine in some provincial ecosystems as identified through vulnerability analyses or district forest health strategies).

Provincial Targets

- Free-growing stems per hectare exceed 75% of the target stocking 80% of the time.
- The average planting regeneration delay is less than two years on harvested areas.
- By 2020, 75% of all trees planted will be grown from selected seed with an average genetic gain of at least 20%.

Local Targets

- Local targets should incorporate assumptions and outcomes from the most recent TSR and associated forward-looking strategies available in individual management units. Local targets should include, but not be limited to, the following:
 - Species planted versus TSR assumed performance;
 - The area planted versus TSR assumed performance;
 - The planted regeneration delay versus TSR assumed performance; and
 - By 2020, 75% of all trees planted will be grown from select seed with an average genetic gain of at least 20%.

Strategies

Example strategies that can be employed at the local management unit level include:

- Planning will be done to support mid- and long-term economic development, and to provide some flexibility to adapt to random events. Planning will ensure that harvest levels and total growing stock levels are sufficiently robust to provide some flexibility in harvest scheduling and location.
- Stands should normally not be harvested before they reach 95% of the culmination of mean annual increment; however, this can be modified through locally based planning processes.
- Manage merchantable growing stock levels over time to provide for sufficient harvest availability and operational flexibility.¹⁶
- Management will adapt with continuous improvement in the understanding of stand dynamics, growth, yield, and potential risks, as well as approaches to manage risks over time to ultimately improve associated management objectives and targets.

¹⁶For example, with a ratio of 20:1, there is 20 times the AAC volume that is merchantable and unconstrained that a planner can choose from, versus a ratio of 5:1, where there is much less area suitable for harvest. The accuracy of the underlying assumptions (e.g., slope, growth rates, utilization, etc.) become more critical as the ratio gets smaller because there is less flexibility in the string of assumptions in the analysis. There is no ideal ratio: a ratio of 5:1 may be suitable if the data are good and the AAC is stable. Conversely, it may indicate a significant logistical bottleneck if the data are speculative, the AAC is predicted to go through a large step down, and/or other pressures limit harvest area choices.

Inherent Site Capacity



From a timber perspective, inherent site capacity is about the biophysical attributes of the land as they relate to timber productivity. While the focus for this goal is timber, site capacity is important for all values. Site capacity is mostly influenced by soil attributes, hydrological flows and balances, and associated processes such as decomposition and nutrient cycling.

Provincial Goal

Maintain the inherent site capacity in provincial forested ecosystems.

Provincial Objectives

1. The permanent footprint of roads, trails, and landings will not exceed what is necessary for logical and efficient natural resource management.
2. Access construction and maintenance will maintain natural drainage patterns and flows, and will not contribute to slope failures or chronic erosion over the long term.
3. Harvesting, silviculture and other management activities will not result in significant soil compaction and/or erosion on growing sites, temporary trails, and work areas that will be reforested.
4. Harvesting, silviculture and other management activities will be conducted in a manner to provide for the maintenance or recovery of proper nutrient cycling and soil nutrition.

Provincial Targets

- The area-weighted permanent access structures per cent reported to RESULTS in the last five reporting periods is less than 5%.¹⁷

¹⁷ Adapted from the Ministry of Forests' Service Plan 2005/06-2007/08 Performance Measure, where the outcome indicator ' % of annual harvest area with soil loss due to establishment of permanent access roads should be less than 5% based on a 5-year rolling average.' The 5-year average for soil loss for 2008/09 to 2012/13 was 3.6%.

Local Targets

- Local targets should incorporate assumptions and outcomes from the most recent TSR and associated forward-looking strategies available in individual management units. Local targets should include, but not be limited to, the following:
 - The area-weighted permanent access structures per cent reported to RESULTS in the last five reporting periods is less than 5%.
 - The area of non-productive roads, trails and landings in RESULTS (NP-UNN and NP-RD in RESULTS forest cover) versus TSR assumed performance.

Strategies

Example strategies that can be employed at the local management unit level include:

- Management will adapt with continuous improvement in the understanding of influences and processes that affect site capacity to ultimately improve associated management targets.
- Design harvesting and silviculture plans and activities to minimize the impact of roads, trails and landings.
- Encourage the rehabilitation of temporary access structures.

Appendix 1

Key linkages between provincial goals, objectives, strategies, management units, and performance measures.

