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Glossary of Terms:

afforestation	The establishment of a forest or stand of trees in an area where there was no previous tree cover.
age class distribution	The age structure of a forest is often expressed as the area of the forest consisting mainly of trees of the same age (i.e., by age class) or by proportions of trees in different age classes
Aquatic Habitat Protection Permits	Obtained prior to beginning work on forest developments like road developments such as culvert and bridge installation; maintenance and removal; low-level crossings; ford crossings; and temporary crossings.
Aquatic Habitat Protection Program	protects aquatic habitat from impacts that may arise from development projects or activities, large or small, that are conducted in or near water in Saskatchewan
Criterion	Criteria describe a set of basic social, economic and environmental values that the public wants to sustain or conserve in forests.
Defined Forest Area	(DFA) a specified area of forest, including land and water (regardless of ownership or tenure), to which the requirements of this Standard apply
Element	the subcategory used to define the scope of each SFM criterion
Fire Cycle (55 year)	A fire return interval (55 years) calculated using a negative exponential distribution, applied using the current age class structure on the landscape.
Fire salvage operations	Salvaging viable timber from an area that was previously burned in a forest fire.
Forest Estate Model	Forest estate models are useful for projecting the impacts of stand management activities on the forest inventory over time. The forest estate model used for the Tolko FMP is Patchworks™.
Forest health	a condition of forest ecosystems that sustains their complexity while providing for human needs
Forest inventory	the systematic collection of data and forest information for assessment or analysis
Forest Patch	the ecosystem scale at which a relatively homogenous forest unit can be identified
Forest stand	is a contiguous community of trees sufficiently uniform in composition, structure, age and size class distribution, spatial arrangement, site quality, condition, or location to distinguish it from adjacent communities
Free to Grow (FTG) assessment	An assessment of forest regeneration which provides assurance that achievement of the desired forest condition is likely and is conducted in accordance with timelines.
Geographic Information System (GIS)	a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data
Habitat	is the physical environment where an animal lives and that provides the necessities of life
Harvest event	Harvesting events are planned harvest activities comprising one or more harvest blocks, together with undisturbed forest within and between harvest blocks. They are further defined as the gross area described by a collection of proposed harvest blocks that are no more than 500 m from each other and harvested within a 10-year period. Harvest blocks beyond 500 m from each other are considered to be in separate events.
Heritage Assessment (HRIA)	(or Heritage Resource Impact Assessment) assessment to determine if heritage resources could be impacted by proposed forestry activities
Improved stock	Seedlings produced from seed as a result of tree improvement programs in which parents are selected based upon favorable genetics.
Indicator	A variable that measures or describes the state or condition of a value.

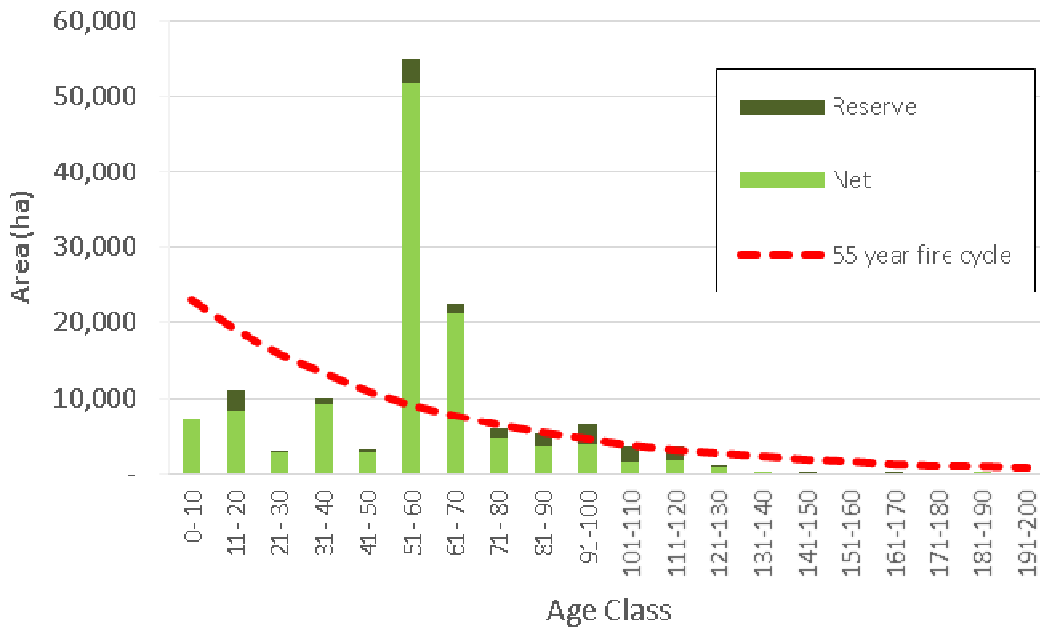
Natural disturbance event	A natural event that can impact a tree, forest stand, or large swaths of forest. Includes fire, insect infestation, tree disease, wind events or other weather related events to cause mechanical damage (e.g., ice storm, excessive snow, etc).
Objective	A broad statement describing a desired future state or condition of a value.
Patchworks	A sustainable forest management optimization model that enables the incorporation of real-world operational considerations into the strategic planning framework.
Permanent structures	Forest roads, culverts, bridges, gravel pits, etc.
Planting records	All records associated with a planting program that may include # seedlings, species, stock type, seedlot, planting density, planting quality, location, planting date, contractor name, and other information.
Reclamation	In the case of a forest road it may involve removal of the running surface, decompaction, rolling back of organics and other material, stabilization, and promoting vegetation to grow on the disturbed site.
Recruitment stands	Replacement stands to meet a target
Riparian area	the interface between land and a river or stream
Scaled volume	Log volume that has been calculated through log scale rules or by weight to volume conversion.
Seedlings	A tree grown from seed sown in an organic plug as container stock.
Seedlot	A particular batch of seeds, often collected from a specific zone.
Soil disturbance	Could include rutting, compaction, removal of organics, etc, above allowed limits.
Species group	Tree species with similar characteristics
Spur road (in-block)	Temporary low grade forest road that allows extraction of fibre from a harvest block.
Stand replacing disturbance	Events that cause change in the structure and composition of a forest ecosystem, beyond the growth and death of individual organisms.
Suckering	Or coppice. Tree regeneration through new growth from cut stumps or roots.
Tactical plan	Shows how the forest management plan will be implemented operationally.
Target	A specific statement describing a desired future state or condition of an indicator.
Term Supply License	(TSL) Term Supply Licence is a licence with a term of up to ten years, conferring rights to harvest specified forest products as well as responsibilities for forest management including renewal obligations. A Term Supply Licence may be volume-based or area based.
Timber harvesting landbase	The total landbase in a planning area excluding areas like buffers, protected areas, stands deemed unproductive, or sensitive wildlife areas. This is the area where harvesting is likely to occur.
Value	A DFA characteristic, component, or quality considered by an interested party to be important in relation to an SFM element or other locally identified element.
Water crossings	Could include a bridge, culvert or similar structure that allows a forest road to cross a watercourse without adversely affecting the channel or banks and maintains water flow.
Wild seed	Tree seed collected from natural mature trees.
Yield curve	Normally associated with a strata (species mix) and shows volume (m ³ /ha) over time (years) for deciduous and coniferous species.

Indicator 1. Age class distribution on the TSL’s Managed Forest Landbase (MFLB).

Criterion	1.0 Biological Diversity
Element	1.1 Ecosystem Diversity
Value	1.1.1 Natural Range of Variation
Objective	1.1.1.1 Conservation of the biological diversity of Saskatchewan’s forests

Target:

Any continuing shift of the age class distribution of the Managed Forest area of the TSL towards the age class distribution associated with a 55 year fire cycle (negative exponential) represented by the dashed red line on the graph below.



Harvesting activity will be focused on shifting the age class distribution towards the 55 year fire cycle line in order to emulate natural disturbance patterns.

Target Acceptable Level of Variance:

No variance* (Any continuing shift is acceptable to meeting target).

Timeframe to Achieve Target:

Shifting of the age class distribution is expected to begin immediately with current harvesting directed at older stands; however, it will take decades to achieve the target age class distribution.

Strategy to Achieve Target:

Tolko will harvest older stands first where they are not being retained to meet the old plus very old seral requirements in Indicator 2.

Source of Management Data:

Most current TSL forest inventory is updated annually for stand age (growth) and depletions from natural stand replacing disturbances and harvesting.

Monitoring and Reporting:

Reporting /assessment is to be done every 5 years (2023, 2028)

Monitoring will include gathering harvest and other stand replacing disturbance datasets. Updates to the forest inventory will be done annually and include recognition of new stand ages (growth) and depletions from natural disturbance (ex. fire, wind, flood) and harvesting

5 year reporting will compare the current age class distribution to the 2015 age class distribution shown above.

Reporting will be for the Managed Forest (excluding areas not managed by Tolko).

An example reporting table is provided below for 2023 (reporting will also occur in 2028):

Monitoring Year:		2023				
Age class	2015 Age Class Distribution		2023 age class distribution		Long-term Target Distribution (based on 55 year fire cycle curve)	
	Area (ha)	%	Area(ha)	%	Area (ha)	%
10	7,258	5.28%			22,832	17%
20	11,089	8.07%			19,036	14%
30	2,831	2.06%			15,872	12%
40	9,983	7.27%			13,233	10%
50	3,102	2.26%			11,033	8%
60	54,896	39.97%			9,199	7%
70	22,394	16.31%			7,670	6%
80	5,827	4.24%			6,395	5%
90	5,160	3.76%			5,331	4%
100	6,415	4.67%			4,445	3%
110	3,622	2.64%			3,706	3%
120	3,581	2.61%			3,090	2%
130	1,040	0.76%			2,576	2%
140	3	0.00%			2,148	2%
150	68	0.05%			1,791	1%
160	0	0.00%			1,493	1%
170	69	0.05%			1,245	1%
180	0	0.00%			1,038	1%
190	2	0.00%			865	1%
200	0	0.00%			722	1%
210	0	0.00%			602	0%
220	0	0.00%			502	0%
230	0	0.00%			418	0%
240	0	0.00%			349	0%
250	0	0.00%			291	0%
260+	0	0.00%			242	0%
Total	137,339	100%			137,339	100%

Indicator 2. Amount of old and very old forest by species group within each of the TSL's Ecological Management Units

Criterion	1.0 Biological Diversity
Element	1.1 Ecosystem Diversity
Value	1.1.1 Natural Range of Variation
Objective	1.1.1.1 Conservation of the biological diversity of Saskatchewan's forests

Target(s):

Tolko has been approved for an alternate proposal to the FMP standard targets for old and very old retention. This proposal is based largely on Anderson's 2007 work in the adjacent Mistik FMA. The full rationale for the proposal is documented in Appendix A of the *"Tolko Industries Ltd. Term Supply Licence Forest Estate Modelling Assumptions Document, August 2017"*. The alternate targets are outlined in the following table. Targets will be applied to each species group in the Green/Sled and the Makwa/Bronson units independently.

Species Group Label	Description	% Old+Very Old	% Very Old
H	Hardwood stands	10%	5%
HS-SH	Mixedwood stands	8%	4%
S(BSJ_L)	Black Spruce leading softwood stands	6%	3%
S(JLP)	Jack Pine leading softwood stands	6%	3%
S(WSF)	White Spruce/Balsam Fir leading softwood stands	7%	3%

Targets will ensure representation of the older stands across the landbase so that unique habitats and biodiversity are sustained.

Target Acceptable Level of Variance:

No variance allowed except for where insufficient old or very old stands currently don't exist to meet the targets. In this case, recruitment stands are to be identified that allows the target to be met as soon as possible.

The amount of old and very old forest by species group by Ecological MU cannot be drawn below minimums as a result of harvesting activity.

Where a species group / MU unit is drawn below minimum as a result of wildfire, wind or other catastrophic disturbance, recruitment areas need not be identified. Rather, old and very old targets will be reassessed in the next FMP that will occur within the next 10 years.

Timeframe to Achieve Target:

Immediate where sufficient stands exist, and as soon as possible where insufficient stands exist.

Because the Makwa/Bronson unit has a relatively young age class distribution, Old+Very Old requirements in the Makwa/Bronson unit are expected to take up to 25 years to be met for H and HS-SH species groups. Very Old requirements in the Makwa/Bronson are expected to take up to 45 years to be met for H, 25 years for HS-SH and S(BSJ_L), and 20 years for S(JLP) species groups. All other targets are expected to be met within 5 to 10 years.

Strategy to Achieve Target:

A minimum of 10% of the MFLB for species groups H, 8% of the MFLB for species groups HS-SH, 6% for S(BSJ_L) and S(JLP), and 7% for S(WSF) is to be old or very old forest at all times. A minimum of 5% of the MFLB for H stands, 4% for HS-SH stands, and 3% for S(BSJ_L), S(JLP), and S(WSF) is to be very old forest at all times. Where targets are not met initially, harvesting can still occur as long as sufficient area is held to meet the target as soon as possible.

The following patch size targets will be set for Old plus Very Old seral:

Patch Size (ha)	Target
0-100	10%
101-3500	80%
3501+	10%

These targets are setup in the forest estate modelling software used by Tolko (Patchworks) so as not to impact harvest levels. They are meant to encourage the model to retain larger patches of old/very old seral on the landbase in order to create interior habitat.

Source of Management Data:

Species groups and age definitions are as follows:

Species group	Species associations included in the species group	Old Age (yrs)	Very Old Age (yrs)
H, HS (hardwoods)	AOH, TAB, HPM, HSM	91 - 100	>110
jP leading stands	JLP	91 - 100	> 110
S and SH (Softwoods not jP)	BSJ, BSL, WSF, SMW, PMW	101 - 120	> 120

Ongoing assessment will utilize Tolko GIS Layer identifying the old and very old seral retention areas.

Monitoring and Reporting:

Monitoring and reporting is to be done annually on the impacts to (intrusion into) the mapped retention areas. Annual reporting will summarize any areas impacted by harvesting or road building, and any impacts from natural disturbances. It will also summarize any offsetting additional reserves put in place. Report will be completed through GIS analysis of the reserve areas relative to the previous year's harvested area information (blocks and road right-of-way) and any natural disturbance events.

Current Status of Indicator

The following table summarizes the current seral stage condition within the Tolko TSL:

Management Unit	Species Group	MFLB	Net Area	Very Old					Old & Very Old				
				MFLB	Net Area	% in MFLB	% in Net area	Target %	MFLB	Net Area	% in MFLB	% in Net area	Target %
Makwa/Bronson	H	68,963	66,684	1	0	0%	0%	5%	746	711	1%	1%	10%
	HS-SH	8,922	8,289	84	47	1%	1%	4%	212	148	2%	2%	8%
	S(BSJ_L)	2,984	1,818	40	15	1%	1%	3%	65	40	2%	2%	6%
	S(JLP)	845	785	8	8	1%	1%	3%	63	34	7%	4%	6%
	S(WSF)	4,352	3,948	17	10	0%	0%	3%	255	158	6%	4%	7%
	Total	86,066	81,525	150	80	0%	0%		1,341	1,091	2%	1%	
Green/Sled	H	18,253	15,964	654	557	4%	3%	5%	2,585	1,603	14%	10%	10%
	HS-SH	12,565	11,126	754	728	6%	7%	4%	2,620	2,279	21%	20%	8%
	S(BSJ_L)	15,943	5,804	459	248	3%	4%	3%	4,366	907	27%	16%	6%
	S(JLP)	3,360	3,251	182	148	5%	5%	3%	285	246	8%	8%	6%
	S(WSF)	1,151	966	57	49	5%	5%	3%	269	180	23%	19%	7%
	Total	51,272	37,112	2,105	1,731	4%	5%		10,124	5,215	20%	14%	
Grand Total		137,339	118,636	2,256	1,811	2%	2%		11,466	6,305	8%	5%	

Indicator 3. Size distribution of harvest events created or influenced by harvesting initiated after 01/04/2018

Criterion	1.0 Biological Diversity
Element	1.1 Ecosystem Diversity
Value	1.1.1 Natural Range of Variation
Objective	1.1.1.1 Conservation of the biological diversity of Saskatchewan’s forests

Target and Acceptable Level of Variance:

Harvest event size distribution, as measured each 5 years (first assessment 2023), will be as follows:

Harvest event size (ha)	Target % of Area Harvested	Acceptable Range
>0-4	0%	0%
5-60	10%	5-15%
61-800	60%	50-70%
801-1800	20%	10-30%
1801-4000	10%	5-15%
4000+	0%	0%

It is expected that natural processes will continue to generate small events from >0ha to 4 ha (e.g., insect attack, blowdown, spot fires, etc) and large events >4000 ha (e.g., forest fires). With this in mind, Tolko will focus harvesting activities within the moderate sized classes. Large harvest sizes exceeding 4000 ha could create a negative public perception of Tolko’s forest operations and fragmenting the forest with very small harvest blocks would not emulate a natural pattern in the boreal forest and lead to increased harvesting cost.

Timeframe to Achieve Target:

Average harvest event size to be achieved within 10 years or less unless otherwise approved. Harvest occurring prior to 2018 can contribute to event statistics where harvest during the plan term influences the event’s size (e.g., salvage of adjacent blowdown, harvesting adjacent block, etc.).

As old harvesting become >10 yrs. old and new harvesting is implemented each year, event size distribution can change radically from year to year.

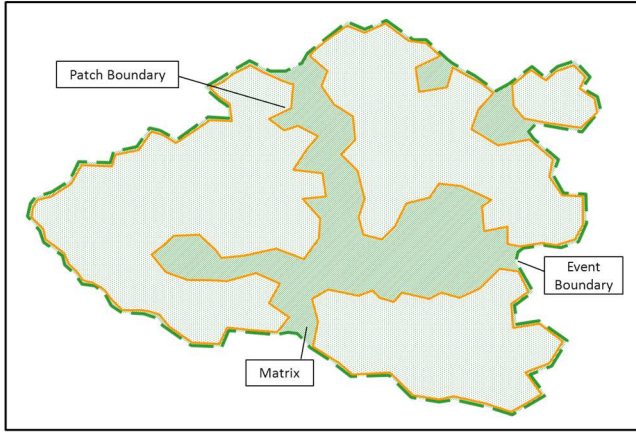
Strategy to Achieve Target:

Event planning will be a key focus of operational planning and will be guided by the events in the tactical plan. As it is expected to be difficult to meet the larger event size targets through harvesting, an ongoing focus is to be placed on identifying suitable areas for large events.

Source Management Data:

Harvest block data representing harvested areas in the TSL less than or equal to 10 years of age at the time of assessment (but limited to harvesting implemented since 01/04/2018 or previous harvesting that is part of an event influenced by harvesting since 01/04/2018).

Harvesting event sizes are calculated using the total or gross area of harvested areas (blocks) that are less than 10 years old and within 100m of each other plus the unharvested matrix between these blocks. (See figure below). Non forested areas falling within the matrix areas are to be excluded from the event area.



Monitoring and Reporting:

Monitoring and reporting will be assessed annually for completed events to provide ongoing feedback. After 10 years (in 2028), a comparison relative to the target size distribution will occur.

An example reporting table is provided below.

Monitoring year:		20__					
Harvest event size (ha)	Target % of area harvested	2018	2019	2020	2028
0-4	0						
5-60	10						
61-800	60						
801-1800	20						
1801-4000	10						
4000+	0						

Current Status of Indicator

Based on an analysis of past harvest event sizes on the TSL, there are 22 events with four events from 0.33 ha to 27.5 ha, remaining 18 events between 119.4 ha and 926.7 ha, an overall average of 330.8 ha, totaling 7,278.1 ha.

Indicator 4. Area of live representative tree residuals left in harvested areas (excluding salvage harvest)

Criterion	1.0 Biological Diversity
Element	1.1 Ecosystem Diversity
Value	1.1.1 Natural Range of Variation
Objective	1.1.1.1 Conservation of the biological diversity of Saskatchewan's forests

Targets:

Tolko has been approved for an alternate proposal to the FMP standard targets for in-block retention. This proposal is based largely on Anderson's 2007 work in the adjacent Mistik FMA. The full rationale for the proposal is documented in Appendix A of the *"Tolko Industries Ltd. Term Supply Licence Forest Estate Modelling Assumptions Document, August 2017"*. The alternate targets are listed below:

For events with at least 20ha of harvested area (i.e. no retention if <20 ha):

- Total Event Retention is at least 9% of the harvest event area and made up of insular or proximal retention.
 - Insular Retention to be at least 4%
 - This retention must be trees in islands or clumps or singles with no connection to the block boundary.
 - This retention must be representative, merchantable timber (i.e. similar stand types to what was harvested).
 - Proximal Retention to make up the remainder (maximum 5%)
 - This retention must be forest within/adjacent to the harvest area and connected to the block boundary.
 - Retained stands must be merchantable ($\geq 60 \text{ m}^3/\text{ha}$) or if not merchantable, be approved by the Forest Service to meet the functional requirements of structural retention. Ideally, this forest captures riparian areas, wetland edges, springs, snags, species refuges, connectivity, or other forest left for non-timber values.

Targets to be met on each event at the completion of harvesting, (e.g. variation can occur at the block level but not at the event level).

Salvage areas are excluded from the target, as retention in these areas is addressed by indicator 12. Areas with forest health concerns (i.e. mistletoe) preventing the retention of insular retention are also excluded from this target.

Insular retention is defined as per the Forest Management Planning Standard that describes:

- Dispersed residuals: composed of single trees or groups of up to four trees completely separated from the surrounding undisturbed forest, wetland, or openings by harvested ground, or

- Clump residuals: a contiguous area of less than one hectare that includes more than four trees and is enclosed within a harvest area and separate from the surrounding undisturbed forests, wetlands, or openings; and diverse in size and shape, or
- Island Residuals: a contiguous area of at least one hectare in size that is completely enclosed within a harvest area and is separate from the surrounding undisturbed forests, wetlands, or openings; and diverse in size and shape.

Proximal Retention is undisturbed trees within the harvest area (Limited to a maximum of 5% area of the total harvest event) which are connected to a portion of the harvest area boundary and further classified as one of the following:

- Peninsular Retention: retained trees extending into the harvest area where the width of the residual edge that is common with the harvest area boundary is less than the residual length perpendicular to the harvest area boundary and may extend across the harvest area and connect with the opposite harvest area boundary,
- Non-peninsular retention: retained representative trees oriented along the harvest area boundary and adjacent to non-merchantable or non-productive stands.

All Retention types are to:

- be representative of the range of the merchantable trees in the harvest event. This may also include trees growing on steep slopes within a harvest area or residual trees retained to protect understorey spruce; and
- fall within the landbase under the management of the licensee

Retained trees within and proximal to a harvest block will provide wildlife habitat, structure, and biodiversity.

Target Acceptable Level of Variance:

Under achievement of the target is unacceptable. Overachievement is undesirable because of negative impacts on timber supply. Where planned deviations are exceptionally high (i.e. greater than 30%), these blocks should be identified and approved through the operating plan to ensure that the intent of the greater retention levels are for environmental, ecological or social reasons.

Timeframe to Achieve Target:

Targets are to be achieved in 2023 for the five year period of 2018/19-2022/23, and in 2028 for the period 2023/24-2027/28. Events completed within those timeframes will provide the basis for assessment.

Strategy to Achieve Target:

Each event will be targeted for 9% retention, with insular retention comprising at least 4% and proximal retention making up the remainder to a maximum of 5%.

Tolko will get feedback from annual monitoring results and will vary levels of retention as necessary to achieve the target of 9% retention for all areas harvested in the five year periods ending in 2023 and 2028.

Source of Management Data:

Post-harvest mapping of harvested areas and internal retention within these areas using imagery. Where individual trees are retained and not visible on the imagery, photos of the retention and an estimate of trees/ha retained will be provided by Tolko.

Monitoring and Reporting:

Annual reporting will be completed along with assessment of five year averages of the previous period in 2023 and 2028.

Retention for each harvested area will be measured through remotely sensed data and/or post-harvest field assessment. Single trees will contribute based on basal area retained. For example, if 30 m² of basal area was retained in a harvest area and the average basal area for the stand was 15 m²/ha, then the single trees would contribute 2 ha of retention toward the block total.

An example table for annual reporting is provided below.

Monitoring Year:		20**						
Event ID	Harvest area (ha)	Clump/Island Insular retention (ha)	Single tree insular retention basal area equivalent (ha)	Proximal - Peninsular Retention	Proximal - Non-Peninsular Retention	% Proximal Retention (target < /=5% by event)	% retention	% insular retention <4% in any block? (Y/N)
Total/Average								

An example table for 5 year reporting, 2023 and 2028, is provided below.

Assessment Period:	20__ to 20__			
Monitoring Year	Harvested Area (ha)	% retention	# events with proximal retention >5%	# of blocks where insular retention <4%
20__				
20__				
20__				
20__				
20__				
Total/Average 20**-20**	Total	(Area weighted Avg)		Total

Current Status of Indicator

Historical practice in the TSL is to leave 1% to 6% of pre-harvest volume of conifer/deciduous in the block, average 3%, with the retention consisting of representative sizes and species.

Indicator 5. Regeneration of wS in H stands consistent with Silviculture Ground Rules (SGRs).

Criterion	1.0 Biological Diversity
Element	1.1 Ecosystem Diversity
Value	1.1.1 Natural Range of Variation
Objective	1.1.1.1 Conservation of the biological diversity of Saskatchewan's forests

Target:

Achieve density targets (stems/ha) for white spruce (wS) in H Cover Species Group (CSG) at Establishment and Free-to-Grow (FTG).

Target Acceptable Level of Variance:

Overachieving wS densities is not a concern unless it compromises the objective of maintaining the pre harvest stand type. There is no variance for under achieving the target for stands logged during the term of this plan. Stands logged and regenerated under previous FMP's are not subject to the target.

Timeframe to Achieve Target:

Assessed annually starting in the 2018-2019 operating year, but only blocks logged after April 1, 2018 will be held to meeting the target at establishment and FTG surveys. The first assessment will occur after 5 years of harvesting and the areas regenerated to FTG. A FTG call may be made at Establishment survey (year 5-7) if stocking and height thresholds are met. Year 14 is the absolute end point for compliance.

Strategy to Achieve Target:

Renewal prescriptions in operating plans will adhere to the SGR's. If monitoring identifies that the target is not being achieved, Tolko will intensify their softwood planting programs accordingly.

Source of Management Data:

Cutover summaries and forest inventory data identify the stand types that had establishment and FTG surveys completed in a given year. The area of H types within the blocks can be identified and linked with survey results (density of wS and hardwood stems for each block/strata).

Monitoring and Reporting:

Monitoring is to be undertaken each year following the completion of all regeneration survey programs. Each surveyed block/strata will have a total number of stems per hectare identified by hardwood and wS. The percentage of wS stems will be calculated by blocks/strata and then area weighted to get the average for all H types in the survey year.

Annual results will be averaged each 5 years in 2023 and 2028.

Annual Summary example:

Block	Area (ha)	H Strata Type	HWD stems/ha	SWD stems/ha (focus is wS)	% softwood stems/ha (focus is wS)
				Area Weighted Average:	

Current Status of Indicator

At the TSL level, an average of 2.5% of the volume in H stand types comes from softwood species.

Indicator 6. Area of cover species groups (H, HS, SH and S) regenerated and predicted at rotation age relative to the harvested area of the same CSG.

Criterion	1.0 Biological Diversity
Element	1.1 Ecosystem Diversity
Value	1.1.1 Natural Range of Variation
Objective	1.1.1.1 Conservation of the biological diversity of Saskatchewan's forests

Target:

The harvested area of any Cover Species Group (H, HS, SH, S) should be the same as the regenerated area for that same CSG over a 5 year period.

This target aims to ensure that forest operations does not shift the area of species groups thereby maintaining the level of biodiversity.

Target Acceptable Level of Variance:

A 5% variance in the proportion of CSG harvested vs regenerated is acceptable. For example, if 1000 ha were logged in the period being assessed and 500 ha (50%) of which were H stands prior to logging, the area of H stands regenerated (predicted at rotation) should be between 480 (48%) and 520 (52%) ha.

Timeframe to Achieve Target:

Effective immediately, the first assessment will occur after 5 years of harvesting and the area regenerated to FTG.

Strategy to Achieve Target:

The SGR's (section 4.1) are designed to ensure the distribution of stand types on the landbase remains the same before and after harvesting. Planting prescriptions in operating plans will adhere to the SGR's. If monitoring identifies that the objective is not being achieved, Tolko will revise prescriptions accordingly.

Source of Management Data:

Harvest areas are tracked in the GIS system and pre-harvest stand types are identified from the forest inventory. FTG surveys will provide stem densities by hardwood / softwood.

Monitoring and Reporting:

Monitoring and reporting will be undertaken each year following FTG survey completion.

For the blocks surveyed in a given year, GIS will be used to attribute the areas with the pre-harvest stand type(s). H >=75% HWD, HS 50%-75% HWD, SH 25-49.9% HWD, S<25% SWD

Annual results will be averaged each 5 years, 2023 and 2028.

Monitoring Year:	20__		
CSG Type	Harvested Area (ha)	Area Predicted at Rotation (ha)	Difference (%)
H			
HS			
SH			
S			
Total			0%

Current Status of Indicator

Tolko operations are consistent with the SGRs to ensure the hardwood is suckering and regenerating following harvest and that softwood species are planted to meet requirements.

Indicator 7a. Area of Elk habitat within the Makwa/Bronson Management Unit of the TSL.

Criterion	1.0 Biological Diversity
Element	1.2 Species Diversity
Value	1.2.1 Quantity and Quality of Forest Habitat
Objective	1.2.1.1 Maintain habitat for identified forest dwelling species

Targets:

Maintain long term average of habitat levels as planned within Forest Estate Model.

Elk is a species of economic importance for local hunters and outfitters therefore maintenance of its habitat is essential.

Target Acceptable Level of Variance:

-15% from target habitat levels at 5 year assessment.

Timeframe to Achieve Target:

Over the 10 year FMP term.

Strategy to Achieve Target:

A report will be produced.

The annual monitoring report will identify the amount of Elk habitat present in the Makwa/Bronson Management Unit. This information will provide opportunity to discuss whether Elk habitat is being adequately managed and whether modifications to forest management practices are required.

In 2023 and 2028, 5 year assessments will be conducted including a map produced to quantify the Elk habitat within the TSL compared to predicted levels from Forest Estate Model.

Source of Management Data:

Most current TSL forest inventory will be used where this has been updated annually for stand age (growth) and depletions from natural disturbance (ex. fire, wind, and flood) and harvesting.

The Forest Estate Modelling Assumptions document (May 2017, page 32) defines Elk “cover” as stands with provincial forest types AOH, HPM, HSM, PMW and TAB, and stands greater than or equal to 20 years of age in the provincial forest type WSF. These stands will be tracked in patch sizes greater than or equal to 5 hectares. Areas within 250 meters of existing and planned permanent roads will be not be considered as elk habitat.

Monitoring and Reporting:

Monitoring is to be undertaken December 1 each year.

GIS analysis will classify each stand in the Makwa/Bronson Management Unit as either being Elk cover or not, this area will then be summarized.

An example table for annual reporting is provided below showing model predicted values for the first 5 years of the plan.

Monitoring Year:	20__	
Habitat Type	Current Area Available (ha)	Predicted Habitat Area (ha)
Elk Cover		

Each 5 years, 2023 and 2028, a map may also be produced.

Current Status of Indicator

2018 Estimates from Forest Estate Modeling:

Period	Year	Elk Cover (ha) : Total	Elk Cover (ha) : Patches > 5 ha
0	0	70,478	69,941
1	5	71,212	70,665
2	10	71,570	71,019
3	15	71,881	71,322
4	20	72,251	71,682

Indicator 7b. Area of Pine Marten habitat within the TSL.

Criterion	1.0 Biological Diversity
Element	1.2 Species Diversity
Value	1.2.1 Quantity and Quality of Forest Habitat
Objective	1.2.1.1 Maintain habitat for identified forest dwelling species

Targets:

Maintain long term average of habitat levels as planned within Forest Estate Model.

Pine Marten is an indicator species of older forest structures and health of forests within the Tolko TSL.

Target Acceptable Level of Variance:

-15% from target habitat levels at 5 year assessment.

Timeframe to Achieve Target:

Over the 10 year FMP term.

Strategy to Achieve Target:

A report will be produced.

The annual monitoring report will identify the amount of Pine Marten habitat present in the TSL. This information will provide opportunity to discuss whether Pine Marten habitat is being adequately managed and whether modifications to forest management practices are required.

In 2023 and 2028, 5 year assessments will be conducted including a map produced to quantify the Pine Marten habitat within the TSL compared to amount predicted by forest estate modelling.

Source of Management Data:

Most current TSL forest inventory will be used where this has been updated annually for stand age (growth) and depletions from natural disturbance (ex. fire, wind, and flood) and harvesting.

The Forest Estate Modelling Assumptions document (May 2017, page 32) defines Marten habitat as stands 81 + years old and belonging to provincial forest types WSF, BSL, BSJ, SMW, and HSM are tracked in the following patch size classes; (1) 0-3,000 ha, (2) 3,001 – 5,000 ha, (3) 5,001-10,000 ha, and (4) >10,000 ha. Patches <500m apart are considered to be part of the same patch.

Monitoring and Reporting:

Monitoring is to be undertaken December 1 each year.

GIS analysis will classify each stand in the TSL for its value as Pine Marten habitat or not. The area will then be summarized by patch size.

Each five years, 2023 and 2028, a digital map of Pine Marten habitat will be produced.

An example table for annual reporting is provided below showing model predicted values for the first 5 years of the plan.

Monitoring Year:	20__		
Habitat Type	Patch Size	Area of habitat within patches (ha)	Area predicted by Forest estate model (ha)
Pine Marten	0-3000		
	3001-5000		
	5001-10000		
	>10000		

Current Status of Indicator

2018 Estimates from Forest Estate Modeling:

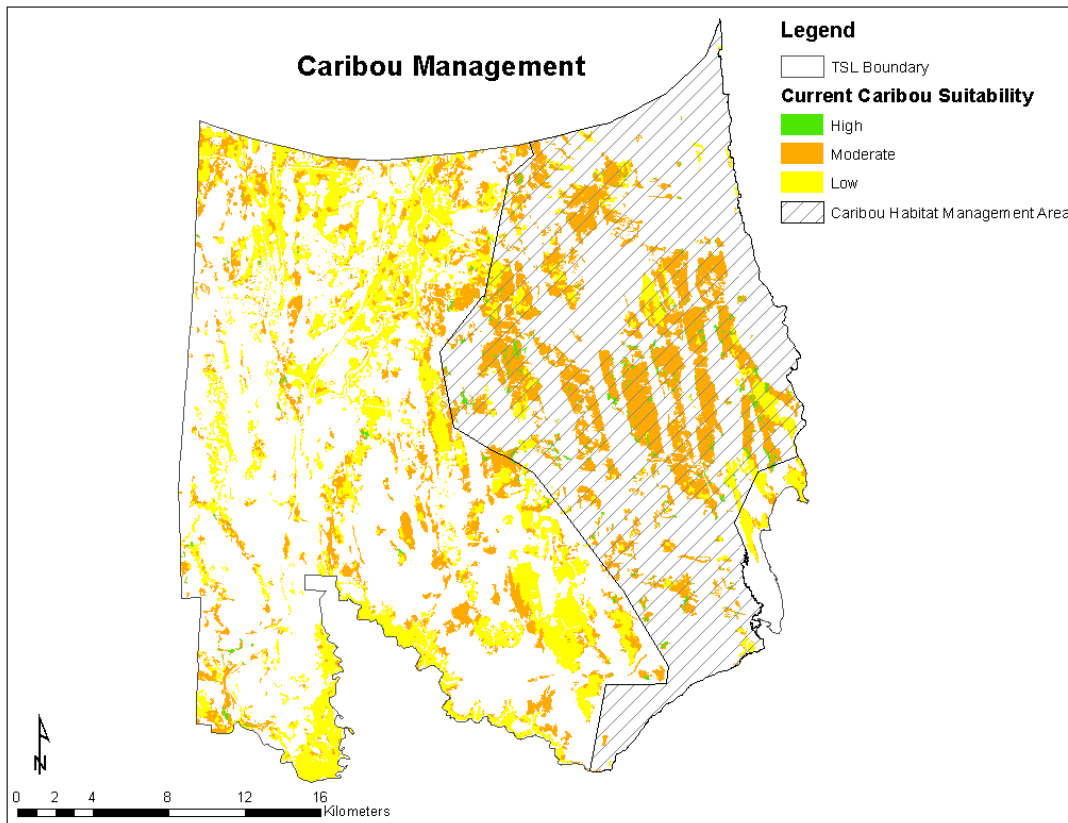
Period	Year	Pine Marten Habitat				Total
		0-3000ha patches	3K – 5,000 ha patches	5K-10,000 ha patches	>10,000 ha patches	
0	0	7,619	0	0	0	7,619
1	5	6,979	0	0	0	6,979
2	10	5,687	0	0	0	5,687
3	15	6,312	0	0	0	6,312
4	20	5,428	0	0	0	5,428

Indicator 7c. Area of Woodland Caribou habitat within the Green/Sled Management Unit.

Criterion	1.0 Biological Diversity
Element	1.2 Species Diversity
Value	1.2.1 Quantity and Quality of Forest Habitat
Objective	1.2.1.1 Maintain habitat for identified forest dwelling species

Targets:

No harvesting operations within an interim Caribou Habitat Management Area in the Green/Sled Management Unit until a range plan is developed and caribou management requirements are defined.



Proposed Caribou Habitat Management Area

Woodland Caribou is a wildlife species at risk and it is a requirement of the Federal government to protect this species and develop range management plans.

Target Acceptable Level of Variance:

0% variance.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

New harvesting will not be planned within the mapped Caribou Habitat Management Area. Road building in this zone will be avoided.

The Forest Estate Model will be configured to not allow harvesting in this area for the first 10 years.

Source of Management Data:

GIS layer of the Caribou Habitat Management Area.

Monitoring and Reporting:

Monitoring is to be undertaken December 1 each year.

Tolko will provide information, including a map, to support that no harvesting occurred within the Caribou Habitat Management Area.

Current Status of Indicator

This is a new indicator as the Caribou Habitat Management Area in an interim measure until a Range Plan is developed and caribou management requirements are defined.

Indicator 8. Percentage of planted seedlings from wild seedlots.

Criterion	1.0 Biological Diversity
Element	1.3 Genetic Diversity
Value	1.3.1 Natural Genetic Diversity
Objective	1.3.1.1 No loss of natural genetic diversity through forest management activities

Targets:

100% of seedlings planted are produced from wild seed sources. (No genetically modified seed sources are being used.)

≥0% seedlings from improved seedlots

Note: Wild seed includes both seed collected from natural sources and seed collected from improved stock.

Target Acceptable Level of Variance:

No variance

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko will purchase seedlings only from those growers verifying that no genetic modifications are present in the seedlings being purchased, and that seed sources are limited to seed collected from natural sources and/or seed collected from improved stock.

Source of Management Data:

Tolko will use purchase or production records. Seedling purchases will have a record of seed source.

Monitoring and Reporting:

Monitoring is to be undertaken each year following planting season.

Review of planting records will classify the number of seedlings purchased and their seed source as 1) collected from natural sources, or 2) collected from improved stock.

Reporting will occur annually and be summarized each 5 years, 2023 and 2028.

An example table for annual reporting is provided below.

Monitoring Year:		20__			
Year	Total number seedlings planted	Seed collected from natural sources (A)		Seed collected from improved stock (B)	
		# of seedlings planted	% of total seedlings planted	# of seedlings planted	% of total seedlings planted
2018					
2019					
2020					
2021					
2022					

Current Status of Indicator

100% of all seedlings currently used by Tolko are grown from wild seedlots.

Indicator 9. Percent of harvested areas >2ha that are free-to-grow within the 14yr assessment window.

Criterion	2.0 Ecosystem Condition and Productivity
Element	2.1 The stability, resilience and rates of biological production in the forest ecosystem
Value	2.1.1 Natural Ecosystem Processes
Objective	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems

Targets:

100% of blocks will meet free-to-grow (FTG) standards as set out in the Forest Regeneration Assessment Standard.

Target Acceptable Level of Variance:

No variance.

Timeframe to Achieve Target:

Blocks have 14 years from the start date (silviculture obligation tracking begins) to meet FTG standards.

Strategy to Achieve Target:

Tolko will undertake planting and other silvicultural treatments as necessary to achieve free-to-grow within 14 years after the start date.

Tolko will conduct interim assessments of previously harvested blocks as necessary to identify any additional treatments required to ensure free to grow status will be achieved within the allowable period.

Source of Management Data:

Tolko will use harvesting and free growing assessment records.

Monitoring and Reporting:

Each year, FTG assessments will be conducted on blocks where the silviculture obligation start date occurred \leq 14 years prior. The surveys will indicate if blocks/stratums are FTG or not. The percentage of area found not meeting FTG standards will be reported. In some cases, the establishment survey will also be the FTG survey.

Each five years, 2023 and 2028, data will be summarized for the previous five year period.

Both annual and five year reporting will be used for performance assessment.

An example table for reporting is provided below.

Monitoring Year:		20__	
Year 0 – Start Date*	Area of blocks where harvest recorded as completed	Year by which free to grow must be achieved	% of Area achieving free to grow status <u>as of monitoring year</u>
2013**		2027	
2012		2028	
...			

*Start Date will be from end of harvest year (e.g., block harvested between April 1, 2012 and March 31, 2013 will have a start date of 2013).

**Blocks harvested in the 2012-2013 year will be the first surveyed under this FMP.

Current Status of Indicator

Majority of deciduous blocks are meeting free-to-grow targets at establishment survey (7 years) and blocks with planted conifer will achieve free-to-grow targets by 14 years.

Indicator 10. Cumulative area (ha) of net land base converted to other land uses by the licensee (e.g. roads, landing strips/pads, gravel pits etc.).

Criterion	2.0 Ecosystem Condition and Productivity
Element	2.1 The stability, resilience and rates of biological production in the forest ecosystem
Value	2.1.1 Natural Ecosystem Processes
Objective	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems

Targets:

<20 ha of net land base converted to other land uses by the licensee (e.g. roads, landing strips/pads, gravel pits, etc.) annually.

Target Acceptable Level of Variance:

A 20% variance is allowed around the annual limit, but no variance is allowed on 5 year cumulative totals.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko will minimize loss of forest lands to roads, landing strips/pads, gravel pits, etc. by designing harvest and other developments to achieve an appropriate balance of harvesting efficiency and loss of forest lands to roads and other permanent structures. All in-block spur roads will be reclaimed according to standards within 2 years of harvest.

Gains in forested area through rehabilitation of permanent access structures and afforestation efforts will count against losses.

Source of Management Data:

Records of permanent access development, rehabilitation, and afforestation.

Monitoring and Reporting:

Monitoring is to be undertaken each year to report on the amount of permanent access created and rehabilitated and areas afforested during the previous year.

Permanent structures will be roads, gravel pits, etc. having a projected lifespan of >5 years. Class 1 and 2 roads are considered permanent access structures.

Maintained trails where the running surface is to be <3m width, gravel borrow pits < 0.1ha, and winter roads where the soil has not been significantly compacted or exposed will not be considered permanent structures.

The area attributed to permanent access is to be that portion of the right-of-way that will not be able to grow trees. This is assumed to be the road’s running surface and ditches (Class 1 - 12m, Class 2 - 10m width).

An example reporting table is provided below. This reporting table is also suggested for indicator 12.

Monitoring Year:		20__	
Year	Area of Permanent access structures created during previous harvesting year (ha)	Area of Permanent access structures rehabilitated and area afforested during previous harvesting year (ha)	Total area of permanent access structures (ha)
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027			
2018-2027*			

*report in 2028.

Current Status of Indicator

Development of permanent access is minimized by Tolko. All permanent access records are within Tolko’s GIS system.

Indicator 11. Cumulative area (ha) of net landbase impacted by stand-replacing natural disturbance (fire, wind, insect, disease).

Criterion	2.0 Ecosystem Condition and Productivity
Element	2.1 The stability, resilience and rates of biological production in the forest ecosystem
Value	2.1.1 Natural Ecosystem Processes
Objective	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems

Targets:

Maximum of 11,152 hectares (10%) of Timber Harvesting Landbase disturbed by natural disturbance each 10 years.

Disturbed = stand replacing (loss or death of $\geq 50\%$ of the volume in a stand).

Target Acceptable Level of Variance:

No variance. Once the threshold is met, a new HVS assessment is triggered to examine the sustainability of the current HVS in light of significant losses from natural disturbances.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko will annually map and record the gross area of 'stand replacing' natural disturbance events greater than 100 hectares in area. Using GIS analysis the area of net landbase within the gross extent will then be determined.

As more information becomes available, Tolko will refine this gross area to establish the actual area of 'stand replacing' disturbance, reducing from the gross extent to account for undisturbed or not significantly disturbed areas within the larger disturbance event. Using GIS analysis the area of net landbase significantly disturbed will be determined.

Source of Management Data:

Inventory of natural disturbances and their extents as may be obtained from the Province or directly collected by Tolko.

As available data allows, more precise assessments will be undertaken by Tolko or the Province of the actual pattern of disturbance intensity, within the extent of the overall disturbance.

Monitoring and Reporting:

Monitoring is to be undertaken each year to assess disturbances that occurred during the previous calendar year. Tolko will, for each natural disturbance event during the previous year, record and report the extent of the disturbance.

In following years, for each natural disturbance event, Tolko will, as information becomes available, report the actual area of productive forest within the extent significantly affected by natural disturbance. This GIS process will require Tolko to overlay the disturbance area on the most updated landbase to determine productive forest impacted by the event.

Productive forest shall be considered significantly affected by natural disturbance when the losses to total stand volume meet or exceed 50%.

Monitoring will be used to determine if/when a re-assessment of the HVS is required.

Below is an example reporting table with historical data included.

Monitoring Year:		2015			
Year of Natural Disturbance	Number of Event (events >10ha)	Event extent – Area Gross landbase (ha)	Event extent – Net landbase (ha) A	Actual area of significant disturbance – Net landbase (Reduction of volume >=50%) B	Lesser of columns A and B
2005	12	745	399		
2006					
2007					
2008					
2009					
2010					
2011	4	493	287		
2012	3	400	217		
2013	2	295	161		
2014					
Total:	21	1933	1064		
Cumulative area of natural disturbance within the net landbase 2005-2014					1064
10% of net landbase*					11,152

*sourced from Forest Estate Modelling Assumptions document (May 2017)

Current Status of Indicator

As detailed in the table above, there have been 21 events from 2005 to 2014 that totalled 1933 ha of gross landbase including 1064 hectares of net landbase.

Indicator 12. Proportion of each natural disturbance event >100 ha that is salvage harvested (by disturbance type)

Criterion	2.0 Ecosystem Condition and Productivity
Element	2.1 The stability, resilience and rates of biological production in the forest ecosystem
Value	2.1.1 Natural Ecosystem Processes
Objective	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems

Target:

A contiguous area (where possible) covering at least 20% of each stand replacing disturbance event will be reserved from all harvesting activities for a rotation. Where possible, the area reserved from harvest will be free of roads, trails and skid trails; and made up of timber representative of the stand types/ages impacted by the disturbance. For example, if 25% of a fire impacted immature stands, 25% of the unsalvaged area can be immature.

Within salvage areas, retain 4% live insular retention representative of the harvested timber types. Where there are insufficient live residuals, burned or damaged timber can be used to meet the residual target and left in clumps and islands to address safety concerns.

A natural disturbance event is defined as a more or less contiguous area of stands with >50% stand mortality covering at least 100 ha.

Prior to any fire salvage operations, Tolko will assess the intensity of the burn to determine extent of impact to fibre. Deciduous or coniferous timber that only has surface burn on bark with no impact to internal fibre can be salvaged, whereas timber that has been burned below the bark cannot be salvaged due to mill fibre requirements.

Target Acceptable Level of Variance:

Where continuous areas for retention cannot be found, a collection of smaller areas is appropriate.

The presence of existing roads/trails can limit the ability to define retention areas that are free of roads and trails.

Forest health issues like mistletoe may limit the ability to leave 4% live insular retention in salvage areas.

Timeframe to Achieve Target:

Salvage activities must be completed within two (2) operating years of disturbance occurring.

Strategy to Achieve Target:

When salvage harvesting in naturally disturbed areas (an event) exceeding 100 ha, a contiguous area representing at least 20% of the disturbance event will be identified and left unharvested. Within the

salvage harvest area, an area representing 4% of the harvested area will be left as insular retention (live stands preferred over dead stands).

Source of Management Data:

Mapping of salvage harvest areas and the retention areas associated with them.

Monitoring and Reporting:

Monitoring is to be undertaken each year to identify naturally disturbed areas (events) and the extent of area salvage harvested. Disturbance events <100 ha can be ignored.

An example reporting table is provided below.

Monitoring Year:						
Disturbance Event Area (ha)	Type of Damage (fire, wind, insects, disease)	Area of Salvage (ha)	% Insular Retention	Area of Contiguous Retention (ha)	% Area of Contiguous Retention	Meets >= 20% of event reserved from salvage? (Y/N)

Current Status of Indicator

To date, none of Tolko's harvesting on the TSL has been classified as salvage.

Indicator 13. Percent of harvest area falling within approved tactical plan areas

Criterion	2.0 Ecosystem Condition and Productivity
Element	2.1 The stability, resilience and rates of biological production in the forest ecosystem
Value	2.1.1 Natural Ecosystem Processes
Objective	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems

Targets:

</=15% of mapped Tolko harvest areas fall outside of identified tactical plan areas (Decade 1 or 2).

Assessment is to evaluate the implementation of the forest management plan and quality of inventory.

Target Acceptable Level of Variance:

The target can be exceeded only where approved salvage harvesting is required, or where the inventory data used to create the tactical plan blocks was incorrect and harvesting is following the intent of the plan (these instances do not count toward the target). Although very limited in scale, any harvesting by Third parties does not count toward the target because Tolko has limited control over their activities.

Timeframe to Achieve Target:

First assessment will take place in five years (2023).

Strategy to Achieve Target:

Tolko will plan harvests to fall within those areas selected for harvest in the tactical plan. Some areas may occur outside the tactical plan as necessary to address onsite conditions that may be encountered during field assessments and/or any salvage requirements. Where there are deviations from the tactical plan Tolko will identify this within the operating plan and will be available for the public to review during the public process.

Source of Management Data:

Tolko tactical plan shapes (Decade 1 and 2) and actual harvest areas mapped post-harvest.

Monitoring and Reporting:

Monitoring is to be undertaken each year and examine the overlap between tactical plan harvest polygons with actual harvest areas from the previous harvesting year (less any exempt areas described under Variances above).

Annual reporting followed by summary of cumulative results for the previous five year period will occur in 2023 and 2028.

An example reporting table is provided below.

Monitoring Year:		20__		
Year	Total harvested area (ha)	Total Harvested Area Within Tactical Plan Harvest Polygons (ha)	Total Harvested Area Outside of Tactical Plan Harvest Polygon (ha)	% of Actual Harvest Area occurring outside of Tactical Plan harvest polygon
2018				
2019				
2020				
2021				
2022				
2018-2022*				
2023				
2024				
2025				
2026				
2027				
2023-2027**				

*report in 2023

**report in 2028

Current Status of Indicator

This indicator has not been used or tracked previously in the TSL.

Indicator 14. Harvested volume/ha relative to volume/ha predicted by yield curves during HVS determination

Criterion	2.0 Ecosystem Condition and Productivity
Element	2.1 The stability, resilience and rates of biological production in the forest ecosystem
Value	2.1.1 Natural Ecosystem Processes
Objective	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems

Targets:

Harvested volumes are within 15% of the volume estimates predicted by FMP yield curves for hardwood and softwood sawlogs.

The target will evaluate the accuracy of predicted stand volumes and over the long term provide data to evaluate HVS levels.

Target Acceptable Level of Variance:

Actual harvest volumes are +/-15% of the predicted volumes.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

None.

Source of Management Data:

Mapped areas of harvest and retention.

Forest inventory strata and associated yield curves.

Scaled volume linked to specific harvest blocks where harvesting is complete.

Monitoring and Reporting:

Monitoring is to be undertaken every 5 years. It is necessary to have a reasonable sample of blocks for the assessment to be meaningful.

HVS predicted volumes as provided by approved yield curves will be linked to harvest block areas using forest inventory strata. Once complete the total volume (hardwood, softwood, pulp) for all harvest blocks will be determined. Mapped retention areas are to be excluded from the contributing area. The average predicted harvest volume/ha will be calculated as total volume/total area and then compared to actual delivered volumes from harvested areas/total area.

An example summary table, as would be provided in an annual report, is provided below.

Monitoring Year:	20__		
Harvesting year	Actual harvest volume (m3)	Predicted harvest volume (m3)	% variation – actual to predicted
2018-2019			
2019-2020			
2020-2021			
2021-2022			
2022-2023			
Total (2018-2023)			

Current Status of Indicator

No data currently exists. Block by block variance is expected to be significant; however, it is assumed that across the TSL, all harvesting combined, the target of maximum 15% variation, all species combined, will be achieved.

Indicator 15. Harvest blocks are in compliance with provincial standards related to soil disturbance

Criterion	3.0 Soil and Water
Element	3.1 Quality and Quantity of Soil and Water
Value	3.1.1 No loss of quality nor quantity of soil and water
Objective	3.1.1.1 Maintain and/or enhance the quantity and quality of soil and water

Targets:

100% of inspected harvest blocks comply with provincial standards related to soil disturbance.

Target Acceptable Level of Variance:

Where a non-compliance event occurs and is addressed within the timeline identified in a Ministry approved action plan or in a Tolko initiated action plan, it will not be counted against this target.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko and its contractors will operate within the approved standards related to soil disturbance and where non-compliances occur, prompt action is taken to complete any action plans.

Source of Management Data:

Ministry of Environment and Tolko internal inspection records assessing compliance with standards related to soil disturbance. Ministry / Tolko records of non-compliance action plans and timelines to resolve the issue.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will obtain from the Ministry of Environment their compliance inspection records for the previous year along with Tolko's internal inspection records. Inspection records will be grouped by harvest block. For those inspections that included an assessment of compliance with standards related to soil disturbance, Tolko will record whether the harvest block was in compliance or not.

An example reporting table is provided below.

Monitoring Year:	20__				
Inspection Year	# of harvest blocks inspected by the Ministry for soil disturbance	# of harvest blocks inspected by Tolko for soil disturbance in addition to Ministry inspections	Total number of blocks inspected for soil disturbance	# harvest blocks assessed as being in non-compliance for soil disturbance	# blocks with soil disturbance addressed within inspection year
2018-2019					
2019-2020					
...					

Current Status of Indicator

Tolko assesses blocks for soil disturbance during their regular harvesting inspections and work with their harvesting contractors to ensure soil disturbance is below maximum levels.

Indicator 16. Harvest blocks are in compliance with provincial standards related to road reclamation.

Criterion	3.0 Soil and Water
Element	3.1 Quality and Quantity of Soil and Water
Value	3.1.1 No loss of quality nor quantity of soil and water
Objective	3.1.1.1 Maintain and/or enhance the quantity and quality of soil and water

Targets:

100% of inspected harvest blocks comply with provincial standard related to road reclamation.

Target Acceptable Level of Variance:

Where a non-compliance event occurs and is addressed within the timeline identified in a Ministry approved action plan or in a Tolko initiated action plan, it will not be counted against this target.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko and its contractors will operate within the approved standards related to road reclamation and where non-compliances occur, prompt action is taken to complete any action plans.

Source of Management Data:

Ministry of Environment and Tolko internal inspection records assessing compliance with standards related to road reclamation.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will obtain from the Ministry of Environment their compliance inspection records for the previous year along with Tolko's internal inspection records.

Inspection records will be grouped by harvest block.

An example reporting table is provided below.

Monitoring Year:	20__				
Inspection Year	# of harvest blocks inspected by the Ministry for road reclamation	# of harvest blocks inspected by Tolko for road reclamation in addition to Ministry inspections	Tolko blocks inspected for road reclamation	# harvest blocks assessed as being in non-compliance with road reclamation	# blocks in non-compliance with road reclamation addressed during inspection year
2018-2019					
2019-2020					
...					

Current Status of Indicator

Tolko generally considers road reclamation to be part of harvesting as opposed to a separate phase of operations. This management approach generally means all required rehabilitation is kept well up-to-date.

Indicator 17. Harvest blocks are in compliance with the TSL standards related to riparian area management

Criterion	3.0 Soil and Water
Element	3.1 Quality and Quantity of Soil and Water
Value	3.1.1 No loss of quality nor quantity of soil and water
Objective	3.1.1.1 Maintain and/or enhance the quantity and quality of soil and water

Targets:

100 % of inspected harvest blocks are in compliance with the TSL standards related to riparian area management.

Target Acceptable Level of Variance:

Where a non-compliance event occurs and is addressed within the timeline identified in a Ministry approved action plan or in a Tolko initiated action plan, it will not be counted against this target.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko and its contractors will operate consistent with the TSL standards related to riparian area management and where non-compliances occur, prompt action will be taken to complete any action plans.

Source of Management Data:

Ministry of Environment and Tolko internal inspection records assessing compliance with standards related to riparian management.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will obtain from the Ministry of Environment their compliance inspection records for the previous year along with Tolko's internal inspection records.

An example reporting table is provided below.

Monitoring Year:	20__				
Inspection Year	# of riparian areas inspected by the Ministry	# of riparian areas inspected by Tolko in addition to Ministry inspections	Total number of riparian areas inspected	# riparian areas assessed as being in non-compliance	# non-compliances addressed during the inspection year
2018-2019					
2019-2020					
...					

Current Status of Indicator

Tolko generally pre-ribbon riparian reserve zones prior to harvesting. This due diligence effort greatly reduces risk of non-compliances occurring.

Indicator 18. Crossings are in compliance with provincial Aquatic Habitat Protection Permits.

Criterion	3.0 Soil and Water
Element	3.1 Quality and Quantity of Soil and Water
Value	3.1.1 No loss of quality nor quantity of soil and water
Objective	3.1.1.1 Maintain and/or enhance the quantity and quality of soil and water

Targets:

100 % of inspected crossings found in compliance with provincial Aquatic Habitat Protection Permits

Target Acceptable Level of Variance:

Where a non-compliance event occurs and is addressed within the timeline identified in a Ministry approved action plan or in a Tolko initiated action plan, it will not be counted against this target.

Timeframe to Achieve Target:

Immediate

Strategy to Achieve Target:

Tolko and its contractors will construct and maintain watercourse crossings consistent with applicable acts and regulations, and where non-compliances occur, prompt action will be taken to complete any action plans.

Source of Management Data:

Ministry of Environment and Tolko internal inspection records assessing compliance with standards related to crossings.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will obtain from the Ministry of Environment their compliance inspection records for the previous year along with Tolko's internal inspection records.

An example reporting table is provided below.

Monitoring Year: 20__					
Inspection Year	# of crossings inspected by the Ministry	# of crossings inspected by Tolko in addition to Ministry inspections	Total number of crossings inspected	# crossings assessed as being in non-compliance	# non-compliances addressed during the inspection year
2018-2019					
2019-2020					
...					

Current Status of Indicator

Historically, any requirements to maintain crossings in order to prevent further erosion or damage have been met and Tolko will continue to maintain and repair crossings as required.

Indicator 19. Event Duration

Criterion	4.0 Role in Global Ecological Cycles
Element	4.1 Carbon Cycle
Value	4.1.1 Productive Land Base
Objective	4.1.1.1 Mitigate the impact of the forest and forest activities on the productive land base

Targets:

100% of harvest events approved in operating plans have duration of 10 years or less, unless otherwise approved by the Ministry.

Target Acceptable Level of Variance:

No variance allowed.

Timeframe to Achieve Target:

Indicator will be implemented immediately once the ministry determines how to incorporate multi-year events into operating plan approvals. The first conformance assessment will occur five years from this date.

Strategy to Achieve Target:

Tolko will coordinate activities, including harvesting, silviculture and road reclamation to ensure harvesting events are completed within 10 years unless otherwise approved.

Source of Management Data:

Tolko Operating Plan. Events will be designated within the Operating Plan.

Most current spatial records of harvested blocks (depletion). The most current TSL forest inventory, as annually updated for stand age (growth) natural disturbance and harvesting.

Block locations will be provided by post-harvest mapping with each block being provided its individual actual start and actual end dates.

Monitoring and Reporting:

Monitoring is to be undertaken each year and will record for each event in operating plans the start and end dates (if occurred). The start date for the event shall be the start date of the first block harvested within the event during the term of the FMP. The end date of the event shall be the date when all activities are complete including silviculture treatments and road reclamation.

An example reporting table is provided below.

Monitoring Year:		20__	
Annual reporting year	Total number of harvest events expired to date	# of harvest events where all activities were not completed within approved period	% of harvesting events where non-compliance with approved event duration occurred
2018/19	0		
2019/20	0		
2020/21	0		
2021/22	0		
2022/23	0		
2023/24	0		
2024/25	0		
2025/26	0		
2026/27	0		
2027/28	0		
2027/28	First year of event expiry if first event approved in 2018.		
....			

Current Status of Indicator

Tolko has completed all historical events within 10 years and they will continue to strive to meet this target.

Indicator 20. Utilization of approved HVS volumes (Actual harvest vs. HVS)

Criterion	5.0 Economic and Social Benefits
Element	5.1 Economic Benefits
Value	5.1.1 Sustainable Economic Benefits Over the Term of the FMP
Objective	5.1.1.1 Maximize the economic benefits derived from the forest without compromising the integrity of the forest ecosystem.

Targets:

1. An average of 197,000 m³/yr. of hardwood harvested per each 5 year period
2. An average of 91,000 m³/yr. of softwood sawlog harvested per each 5 year period, including the 15,000 m³/year Green Lake allocation.
3. An average of 12,000 m³/yr. of softwood pulpwood harvested per each 5 year period

Target Acceptable Level of Variance:

Harvest levels cannot exceed the approved HVS over a 5 year average. Harvest levels can underachieve the HVS level by any amount.

(**Note:** The variation in harvest from year-to-year is unrestricted, the target is the 5 year average.)

Timeframe to Achieve Target:

Immediate. First assessment will occur in five years (2023).

Strategy to Achieve Target:

Tolko will endeavor to maximize harvest volumes to the levels permitted within the TSL, markets and other economic factors permitting.

Source of Management Data:

Provincial scaling records indicating harvest levels on the Tolko TSL.

Monitoring and Reporting:

Monitoring is to be undertaken each year where Tolko records the total softwood sawlog, pulp, and hardwood volumes logged in the TSL (shareholders and Third parties).

An example reporting table is provided below.

Monitoring Year:		20__		
Year	Product volumes originating from the Tolko TSL			
	Hardwood Harvest (Target 197,000 m ³)	Softwood Sawlog Harvest (Target 91,000 m ³)	Softwood pulpwood (Target 12,000 m ³)	
2018				
2019				
2020				
2021				
2022				
Average 2018-2022*				
....				

*report in 2023

Current status of indicator.

The following table shows harvest performance on the TSL from 1999-2000 to 2015-2016. Latest cut control period started in 2014-2015.

MLOSB TSL Total									
Year	Total MLOSB TSL Harvest			Total MLOSB TSL AAC			() % of AAC Utilized	() % of Softwood AAC Utilized	() % of Hardwood AAC Utilized
	Softwood Harvest	Hardwood Harvest	Actual Harvest	Softwood AAC	Hardwood AAC	Annual Allowable Cut			
1999/00	49,966	152,562	202,528	91,000	160,310	251,310	81%	55%	95%
2000/01	12,332	25,601	37,933	91,000	160,310	251,310	15%	14%	16%
2001/02	8,899	327	9,226	91,000	160,310	251,310	4%	10%	0%
2002/03	0	67	67	91,000	160,310	251,310	0%	0%	0%
2003/04	13,235	59,000	72,235	91,000	160,310	251,310	29%	15%	37%
2004/05	7,951	33,102	41,053	91,000	160,310	251,310	16%	9%	21%
2005/06	3,883	63,209	67,092	91,000	160,310	251,310	27%	4%	39%
2006/07	312	88,862	89,174	91,000	160,310	251,310	35%	0%	55%
2007/08	506	80,528	81,034	91,000	160,310	251,310	32%	1%	50%
2008/09	225	5	230	91,000	160,310	251,310	0%	0%	0%
2009/10	167	107,604	107,772	91,000	160,310	251,310	43%	0%	67%
2010/11	5,002	65,688	70,690	91,000	160,310	251,310	28%	5%	41%
2011/12	978	17,711	18,688	91,000	160,310	251,310	7%	1%	11%
2012/13	0	0	0	91,000	160,310	251,310	0%	0%	0%
2013/14	14,940	10,691	25,632	91,000	160,310	251,310	10%	16%	7%
2014/15	9,116	14,717	23,833	91,000	160,310	251,310	9%	10%	9%
2015/16	81,717	117,633	199,350	91,000	160,310	251,310	79%	90%	73%

Indicator 21. Harvest plans designed to lower wildfire risks to communities.

Criterion	5.0 Economic and Social Benefits
Element	5.2 Social Benefits
Value	5.2.1 Human Life and property are protected from wildfire
Objective	5.2.1.1 Minimize injury, loss and damage caused by wildfire

Targets:

Conduct treatments (e.g., harvesting) to reduce wildfire risk for communities that request assistance to implement FireSmart programs.

Target Acceptable Level of Variance:

Through harvest activities, Tolko will lower wildfire risks to communities that request assistance to achieve their required target.

Timeframe to Achieve Target:

Tolko will strive to meet requirements as requested by local communities.

Strategy to Achieve Target:

Tolko will work with those communities requesting assistance to implement FireSmart programs. At this time it is understood that neither Green Lake, St Walburg nor Loon Lake have approved FireSmart programs.

Source of Management Data:

Tolko operational plans and GIS system.

Monitoring and Reporting:

Tolko will report what portion (% & hectares) of their annual harvest was associated with FireSmart programs.

Indicator 22. Stakeholders/public engagement at various levels of forest management planning using established public advisory groups (PAG) or other forums.

Criterion	5.0 Economic and Social Benefits
Element	5.2 Distribution of Benefits
Value	5.2.1 Fair Distribution of Benefits
Objective	5.2.1.1 To ensure other forest uses are addressed

Targets:

1. Minimum two (2) PAG meeting/year
2. Minimum of one open house meeting held each year in the communities of Green Lake, Loon Lake, and St Walburg.

Target Acceptable Level of Variance:

Variance = -1. A scheduled PAG meeting can be dropped at the discretion of the PAG or if insufficient attendees for quorum confirm they will attend. Open houses must occur unless communities decline them or no forest management activities are planned to take place within two years within the community's area of interest.

Timeframe to Achieve Target:

Immediate.

Strategy to Achieve Target:

Tolko to maintain an active PAG, conducting at least two meetings per year.

Tolko to plan and undertake at least one open house in each community of Green Lake, Loon Lake, St Walburg.

Source of Management Data:

Tolko records of PAG meeting.

Tolko Operating Plan open house records.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will review records of PAG meeting and open houses to verify conformance with target. If an open house is found not to have occurred, Tolko is to confirm that either the open house was declined or that no forest management activities will take place within the community's area of interest within the next two years.

An example reporting table is provided below.

Monitoring Year:	20__
# of PAG meetings held	
An open houses conducted in each of the communities of Green Lake, Loon Lake, St Walburg (Y/N)	

Current Status of Indicator

Tolko has an established PAG group and conducts open houses regularly as part of Operating Plan development.

Tolko conducts open houses in each of the communities of Green Lake, Loon Lake, and St Walburg on an annual basis.

Indicator 23. An up-to-date thematic map/dataset of non-timber resources and non-timber forest use activities

Criterion	5.0 Economic and Social Benefits
Element	5.2 Distribution of Benefits
Value	5.2.1 Fair Distribution of Benefits
Objective	5.2.1.1 To ensure other forest uses are addressed

Targets:

Maintain a map/dataset of known information on legal cabins, visually sensitive areas, ski trails, trapper areas/trails, known sensitive wildlife site, etc.

Target Acceptable Level of Variance:

No variance.

Timeframe to Achieve Target:

Immediate.

Strategy to Achieve Target:

Tolko will maintain a spatial dataset within a GIS containing records of known legal cabins, visually sensitive areas, ski trails, trapper areas/trails, regulated snowmobile trails, sensitive wildlife sites, community areas of interest, known sites of cultural significance to aboriginal peoples, and other information necessary for the appropriate management of non-timber resources and non-timber forest use activities in the TSL.

Tolko will maintain a procedure, written or understood, whereby this dataset is edited as information becomes known.

Source of Management Data:

Existing Tolko GIS records and any data/information made known to Tolko during the term of the plan.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will verify that the known information contained within its GIS is retrievable and that updating has taken place as new information has become known. 'Known' is defined as information provided directly to Tolko.

Production of a map(s) displaying known information will serve as verification that target has been achieved.

Current Status of Indicator

Tolko GIS system contains data on known non-timber values and forest based activities.

Indicator 24. Spatial Distribution of harvest.

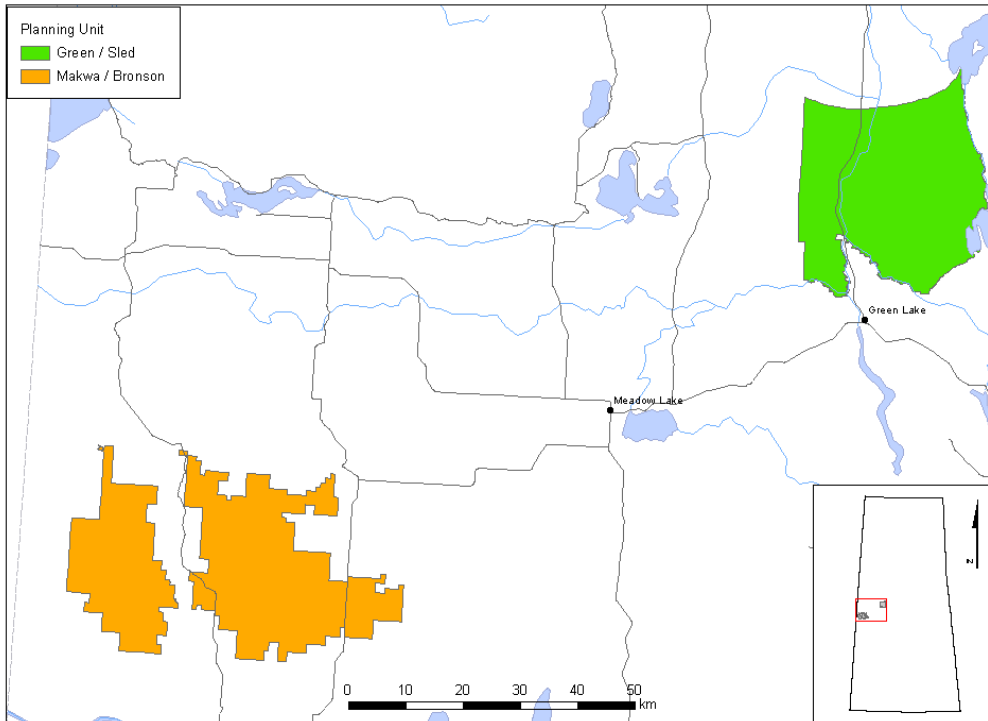
Criterion	5.0 Economic and Social Benefits
Element	5.3 Sustainability of benefits
Value	5.3.1 No Loss of Benefits
Objective	5.3.1.1 Maintain or enhance benefits

Targets:

For each Planning Unit, harvest will be sourced **proportionally** across species cover groups.

Species groupings are H + HS, SH, BS or JP, and WS + Other softwood.

Planning Units are the Green/Sled and Makwa/Bronson as shown in the map below.



Target Acceptable Level of Variance:

No variance allowed unless approved by the Management Implementation Team.

The intent of this indicator and its target is to direct harvesting to be distributed appropriately across the TSL and among stand types within a 5 year period. To support this objective, variances from target areas are likely to be acceptable to the MIT.

Timeframe to Achieve Target:

Management consistent with target will commence immediately but assessment of conformance will first occur in 2023. A second conformance assessment will occur in 2028.

Conformance will be assessed for the periods: April 1, 2018 to March 31, 2023, and April 1, 2023 to March 31, 2028.

Strategy to Achieve Target:

Tolko will plan harvests and road development focusing upon good event design (ex. don't isolate wood, get in/get out, close roads) while seeking also to distribute harvests as per the target(s). Distribution of harvests as per the target(s) shall be considered a secondary priority to good event design.

Annual cutover summaries will provide ongoing feedback during each 5 year period. Tolko will apply this feedback to selecting harvest blocks that can achieve the targets to the maximum extent possible.

Source of Management Data:

Annual cutover summaries by CSG and leading species.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Using GIS, the previous year's harvest areas will be attributed with a Planning Unit and species information necessary to assign areas to one of the four species categories. The number of hectares in each of the target categories will be calculated and reported upon.

Annually, and for each 5 year assessment (2023 and 2028), any deviation from progress towards the target is to be rationalized and the rationalization presented in the annual report.

An example reporting table is provided below.

Planning Unit	Stand type	Target (ha)	Year					Five Year Total (ha)
			2018-19	2019-20	2020-21	2021-22	2022-23	
Green/Sled	H + HS	290						
	SH	135						
	BS or JP	120						
	WS + Others	30						
Makwa/Bronson	H + HS	1405						
	SH	70						
	BS or JP	50						
	WS + Others	100						

Current Status of Indicator

Concept of a distribution of harvest target to this level of detail is new to the TSL. No current status is available as target is just beginning to inform harvest planning.

Indicator 25. Adherence to approved utilization standard

Criterion	5.0 Economic and Social Benefits
Element	5.1 Economic Benefits
Value	5.1.1 Sustainable Economic Benefits over the term of the FMP
Objective	5.1.1.1 Maximize the economic benefits derived from the forest without compromising the integrity of the forest ecosystem.

Targets:

Operating plans adhere to approved utilization standards (or exceed them), and 95% of blocks inspected for utilization are found to be in compliance over a 5 year period (assessed 2023, 2028).

Utilization standards are described below.

	Softwood Pulp/ Hardwood Utilization	Softwood SawLog Utilization
Stump Height	0.30 m	0.30 m
Top DIB	8.01 cm*	10.01 cm
Minimum DBH	10.00 cm	10.00 cm
Log Length	N/A	2.6 m

* Jack pine pulp top DIB = 10.01 cm, all others 8.01 cm

Target Acceptable Level of Variance:

1. A lower utilization standard can be applied for with the Forest Service.
2. Less than 5% of blocks assessed for utilization can be found to be in non-compliance over 5 year periods.

Timeframe to Achieve Target:

Immediate.

Strategy to Achieve Target:

Harvesting contractors will be instructed to meet the utilization standard.

Source of Management Data:

1. Operating Plan text commitments to utilization standards.
2. Ministry of Environment inspection records assessing utilization.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will obtain compliance inspection records for the previous year from the Ministry of Environment and consolidate any non-compliance related issues. Reporting will show the number of blocks inspected for utilization and the proportion that were found

to be in non-compliance annually and cumulatively over 5 year periods. The 5 year assessment will be used for compliance assessment purposes.

Operating plans commitments to utilization standards used in the FMP for HVS calculation will also be assessed and reported.

An example reporting table is provided below.

Monitoring Year:		20__		
Inspection Year	# of blocks inspected by the Ministry for utilization	# blocks assessed as being in non-compliance for utilization	% of blocks assessed as being in non-compliance for utilization	Compliance minimum of 95% achieved (Y/N)
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
Inspection period 2018-2027*	# years in compliance with utilization standards			

*report in 2028

Current Status of Indicator

Tolko generally meets utilization standards.

Indicator 26. Number of aboriginal communities involved in review of operational and strategic forest management plans and new developments in the TSL area, and sharing Traditional Ecological Knowledge (TEK)

Criterion	6.0 Society’s Responsibility
Element	6.1 Aboriginal and Treaty Rights
Value	6.1.1 To ensure Aboriginal and Treaty Rights are respected within the context of planning and implementing forest activities
Objective	6.1.1.1 To ensure Aboriginal and treaty rights are respected within the context of planning and implementing forest activities

Targets:

At least one (1) engagement opportunity provided to aboriginal communities whose area of interest overlaps the TSL area at which there will be a review of operational and strategic forest management plans, and to share TEK.

Target Acceptable Level of Variance:

No variance.

Timeframe to Achieve Target:

Immediate.

Strategy to Achieve Target:

Tolko will maintain a list of the aboriginal communities where the primary community is located within proximity to the TSL area and will annually invite each community to view and discuss planning and development occurring within the TSL area and to share TEK.

Tolko will maintain records of correspondence and other communication with each listed aboriginal community.

Source of Management Data:

Tolko maintained list of aboriginal communities located within the TSL area.

Forest Service / Government of Saskatchewan database supplements Tolko’s list of aboriginal communities.

Tolko records of correspondence and other communication with each listed aboriginal community.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will verify through a review of communication records that opportunities were given to engage in discussions about planning / development within the TSL area.

An example reporting table is provided below.

Monitoring Year:	20__
Aboriginal community	How many opportunities were provided to view and discuss Operating Plans, Forest Management Plans and any new developments within the TSL area and to share TEK?

Current Status of Indicator

Tolko regularly invites & provides opportunity to conduct review meetings with aboriginal communities however there is lack of response. The community of Green Lake is the most involved.

Formal collection of TEK with the intent to apply this knowledge in operational planning will begin in 2018. To date information has not been shared during the OP annual review process.

Indicator 27. Spatial identification and operational protection of known culturally significant Aboriginal sites

Criterion	6.0 Society's Responsibility
Element	6.2 Aboriginal traditional land use and forest based ecological knowledge
Value	6.2.1 Protection of aboriginal traditional land use and forest based ecological knowledge
Objective	6.2.1.1 To avoid impacting culturally important sites

Targets:

100% of known culturally significant Aboriginal sites are spatially identified and receive operational protection from forest management activities.

Target Acceptable Level of Variance:

No variance.

Timeframe to Achieve Target:

Immediate.

Strategy to Achieve Target:

Within its GIS records, Tolko will maintain a record of known culturally significant sites, their location and type. Sites may be identified by the province (e.g., outcome from HRR screening or HRIA), identified by Tolko, or made known by First Nations during annual review of Operating Plans and other discussions. Harvest planning by Tolko will utilize this information and exclude such sites from planned development.

Source of Management Data:

Tolko will use a spatial dataset of non-timber resources and non-timber forest use activities in the TSL. Tolko Operating Plan.

Tolko records of actual harvest areas.

If completed, a historical assessment could provide data as well.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will use GIS analysis to compare locations of known sites of cultural significance to aboriginal peoples to areas planned for development within the OP and actual harvest areas from the previous year to confirm whether known sites of cultural significance to aboriginal peoples have been protected from forest operations.

Current status of indicator

Known sites have been recorded in Tolko GIS system and Tolko is using this information to aid in their development planning.

Tolko is unaware of any known culturally significant Aboriginal sites that have been impacted.

Indicator 28. Economic contribution from forest industry associated with the Tolko TSL.

Criterion	6.0 Society's Responsibility
Element	6.3 Forest Community Well-being and Resilience
Value	6.3.1 Sustainable Forest Communities
Objective	6.3.1.1 To contribute to the resiliency of communities

Targets:

Harvest approved HVS volumes within TSL.

197,000 m³/yr HWD

91,000 m³/yr SWD

Intent is to confirm harvesting performance and to estimate the economic benefit of sustainable forest operations.

Target Acceptable Level of Variance:

+25% of annual HVS values, but not to exceed the HVS average per each 5 year period.

Timeframe to Achieve Target:

Expect 150,000 HWD for first 3 years, then 197,000 or higher for remainder of the term (5 yr avg of 197,000).

Strategy to Achieve Target:

Complete reporting each year.

Source of Management Data:

Volume harvest (m³) from provincial scaling system.

Economic multiplier provided by Ministry of the Economy.

Indicators	Value	Type 1 Multiplier ¹	Type 2 Multiplier ²
Weighted average of GDP (\$) generated by harvesting one m ³ of volume (2013 - 2015)	147	1.84	2.17
Weighted Average number (#) of job in woodland as well as mill for a million m ³ harvest (2013 - 2015)	750	1.78	2.04
Weighted average labour income (\$million) (2013-2015)	65	1.71	1.92

¹ Simple multiplier (direct + indirect) / direct effects: simple multipliers capture the sum of direct and indirect effects. They are based on the assumption that households are exogenous and that there is no feedback between wages and production.

²Total multiplier (direct + indirect + induced) / direct effect: total multipliers capture the sum of direct, indirect and induced effects. Households are treated as endogenous and the payments for labour services, i.e. wages, are redirected in the economy through consumer expenditures.

<i>Economic impact based on 1000 m³ of forest product:</i>			
	Direct Impact	Direct & indirect impact	Direct, indirect and induced impact
GDP (\$million)	0.147	0.271	0.319
Job (#FTE)	0.750	1.335	1.530
Labor income (\$million)	0.065	0.110	0.124

Monitoring and Reporting:

Monitoring is to be undertaken each year. The volume harvested in the previous year will be multiplied by an economic multiplier describing the direct, indirect, and induced economic activity associated with a cubic meter of wood moving through the economy.

Current status of indicator

This indicator reported for the first time for the 2018-2019 operating year.

Indicator 29. Engage stakeholders on the implementation of the Forest Management Plan.

Criterion	6.0 Society's Responsibility
Element	6.4 Fair and Effective Decision-making
Value	6.4.1 Involvement of Stakeholders in FMP Development and Implementation
Objective	6.4.1.1 Improve the engagement of stakeholders in FMP development and implementation

Targets:

Using the PAG as the venue, invitations are extended to a cross section of identified stakeholders, First Nations & Métis, and open to the general public to attend an annual meeting for all participants to understand and discuss the implementation of the Forest Management Plan.

Target Acceptable Level of Variance:

No variance. Where PAG members are unable to make a meeting, an explanation can be provided.

Timeframe to Achieve Target:

Within one year of Forest Management Plan approval.

Strategy to Achieve Target:

Tolko to maintain an active PAG and continued engagement with stakeholders.

Source of Management Data:

Tolko records of attendance at meeting.

Monitoring and Reporting:

Monitoring is to be undertaken each year. Tolko will review PAG meeting records to verify conformance with target.

Current Status of Indicator

Tolko's PAG is currently active with members from stakeholders representing a variety of interests, and general public.