FOREST MANAGEMENT PLAN

For the

Temagami Management Unit

April 1st, 2019 to March 31st, 2029

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FOREST MANAGEMENT PLAN
for the
TEMAGAMI MANAGEMENT UNIT

MNRF North Bay District, Northeast Region
First Resource Management Group, agent for the Temagami Management Unit.
For the 10-year period of April 1, 2019 to March 31, 2029

I hereby certify that I have prepared these planned operations, including the silvicultural ground rules, to the best of my professional skill and judgement with the assistance of an interdisciplinary planning team in accordance with the requirements of the Forest Management Planning Manual and Forest Information Manual.

[R.P.F. Seal]

Etienne Green, R.P.F. — 22/01/19
Plan Author, Date
First Resource Management Group

Submitted by:

Yves Vivier, R.P.F. — 22/01/19
Director of Forestry Date
First Resource Management Group

I recommend that this forest management plan be approved for implementation and certify that it has been prepared in accordance with the requirements of the Forest Management Planning Manual, the Forest Information Manual, and relevant policies and obligations (including any relevant MNRF agreements with Indigenous peoples). I also certify that the forest management plan has been prepared using the applicable forest management guides. In this forest management plan, prescriptions and conditions that differ from specific direction or recommendations in the applicable forest management guides are identified in the attached List of Exceptions.

Certified and Recommended for Approval by:

_____ _____
MNRF District Manager Date

_____ _____
MNRF Regional Resources Manager Date

Approved by:

_____ _____
MNRF Regional Director Date

Forest Information Portal Submission Identifier: _____

Title, Certification and Approval Page
For Sections Not Prepared by the Plan Author
for the
TEMAGAMI MANAGEMENT UNIT

MNRF North Bay Northeast Region
First Resource Management Group agent for the Temagami Management Unit.

I hereby certify that I have prepared the sections of the forest management plan as indicated, to the best of my professional skill and judgement, in accordance with the requirements of the *Forest Management Planning Manual.*

Norm Dokis	Resource Liaison Specialist	6.1(d)
Name	Job Title	Sections prepared
[signature]	JAN 14/2019	
Signature	Date	

Michael Liukko, R.P.F.	Regional Planning Forester	2.2, 6.1(e)
Name	Job Title	Sections prepared
[signature]	Jan 14/2019	

Shelley Straughan, R.P.F.	District Forester	6.1(k), 6.1(L)
Name	Job Title	Sections prepared
Shelley Straughan	Dec. 18, 2018	
Signature	Date	

Jennifer Nielsen	Regional Biologist	6.3(h)
Name	Job Title	Sections prepared
Jennifer Nielsen	Jan. 14, 2019	
Signature	Date	

Kimberley Tremblay	Management Biologist	2.1.4.1-2.2.4.3
Name	Job Title	Sections prepared
Kimberley Tremblay	Dec 18 2018	
Signature	Date	

PLANNING TEAM MEMBERS

Table 1 Planning Team Members

Planning Team Member	**Affiliation**	**Position/Broad Role on Planning Team**
Michael Liukko, R.P.F.	MNRF Northeast Region	Regional Planning Forester / Project Manager/Chair
Etienne Green, R.P.F.	FRMG	Planning Forester / Plan Author /Co-Chair
Shelley Straughan, R.P.F.	MNRF North Bay District	Management Forester / Member
Christa Rigney	MNRF Northeast Region	Regional Planning Biologist / Member
Kim Tremblay	MNRF North Bay District	Management Biologist / Member
Norm Dokis	MNRF North Bay District	Resource Liaison Specialist / Member
Rotational member	Temagami LCC	LCC Rotational Representative/ Member
Kyle Aird	Temagami Forest Resource Licensee Representative	Forest Industry Representative / Member
Robin Koistinen	Temagami First Nation	Representative / Member
Michael Paul	Teme-Augama Anishnaba	Representative / Member
OPEN	Timiskaming First Nation	Representative Alternate / Member
Cathy Yandeau	Matachewan First Nation	Representative / Member
OPEN	Metis	Representative / Member
John Kenrick	Municipalities	Representative / Member

PLANNING TEAM ADVISORS

Table 2 Planning Team Advisers

FRMG	
Wayne Pawson	Silviculture Specialist
Claude Thibeault	Operations Specialist
Yves Vivier, R.P.F.	Director of Forestry
District MNRF	
Christine Leblanc	A/Resources Management Supervisor
Robert Baker, R.P.F.	Management Forester
Tanya Ingwersen	Fish and Wildlife Technical Specialist
Remi Labreche	Aggregates Technical Specialist
Trish Moussa	Lands Technical Specialist
Robin Hill	Forestry Technical Specialist
Jim Aldridge	IRM Technical Specialist
Graham Mewett	IRM Technical Specialist
James Zacher	Fire Management Supervisor
Julie Robinson	District Planner
Randy Brousseau	District GIS Data Technician
Bonnie Kennedy	A/District GIS Data Technician
MNRF Regional/Provincial	
Mark Austin, R.P.F.	Forest Management Planning Specialist/ Coordinator
Sam Nsiah	Regional RPF Analyst
Heather Farrer, R.P.F.	Forest Industry Liaison Officer

Todd Copeland	Regional Species at Risk Specialist
Robert Fournier	Regional GIS Officer
Renee Bellini	Cultural Heritage Specialist
Gary Higgins	Regional Aboriginal Advisor
Gordon Kayahara, R.P.F.	Forest Science Specialist
Megan Kilgour	Regional Lands Specialist
Derek Seim	Regional Aggregates Specialist
Paul Glassford	Senior Advisor, Forest Environmental Assessment, Forest Management Planning Section
Andre Joyal	EFR Fire Science Specialist
Krish Homagain, PhD, R.P.F.	Regional Analyst
Parks Advisors	
Ed Morris	Ontario Parks Planner/Zone Ecologist
Kevin Pinkerton	Parks Superintendent(s)
Ministry of Northern Development and Mines	
Catherine Daniels	North East Regional Land Use Geologist
Ministry of Tourism, Culture and Sport	
James Antler	Policy Advisor, Tourism Policy & Development

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LOCAL CITIZEN'S COMMITTEE MEMBERS

Table 3 Temagami LCC Membership

LCC Member & Alternate	**Affiliation**
Lorne Hillcoat (Chair) & Bill Ramsay	Crown Land Rec - Motorized
John Kenrick (Vice Chair)	Municipal / Local Governments
Bob Olajos & John Kilbridge	Crown Land Rec – Non-Motorized
Kyle Aird & Jake Mazzetti	Forest Industry
Curtis Welch & Alex Welch	Independent Loggers, Contractors
Jim Hasler	Environmental / Naturalists
Wayne Adair	Mineral Industry (prospecting, mining)
Joe Katt	Temagami First Nation
Peter Sword	Anglers and Hunters
Dave Zimerman	Owners / Cottagers
Gerry Stroud	Other Interest Groups
Justin Richter	Trappers / Other Resource Users
Mackie Van Zyl	Tourism Industry
*Vacant	Local Business

PLAN REVIEWERS

Table 4 Planning Team Reviewers

Plan Reviewer Name and Position	**Roles and Responsibilities**
Mike Liukko R.P.F., Regional Planning Forester	Operational/Advisory Review, Preliminary Review
Robert Baker R.P.F, Management Forester	Operational Review, Preliminary Review
Christa Rigney, Regional Planning Biologist	Operational/Advisory Review, Preliminary Review
Melanie Alkins, Management Biologist	Operational Review, Preliminary Review
Tanya Ingwersen, Fish and Wildlife Technical Specialist	Operational Review
Remi Labreche, Aggregates Technical Specialist	Operational Review
Trish Moussa, Lands & Waters Technical Specialist	Operational Review
Julie Robertson, A/District Planner	Advisory Review
Jim Aldridge, Integrated Resource Management Technical Specialist	Operational Review
TBD, Resource Management Technician	Operational Review
Randy Brousseau, District GIS Data Technician	Operational Review
Robin Hill, District Forestry Technical Specialist	Operational Review

Plan Reviewer Name and Position	Roles and Responsibilities
Kevin Pinkerton, Park Superintendent	Operational Review
Anneleis Eckert, Regional Planner	Operational/Advisory Review
Norm Dokis, District Resource Liaison Specialist	Operational/Advisory Review
Ed Morris, Senior Regional Parks Planner	Operational/Advisory Review
Mark Austin,R.P.F., Forest Management Planning Specialist	Advisory Review
Gary Higgins, Regional Aboriginal Advisor	Advisory Review
Todd Copeland, Regional Species at Risk Specialist	Advisory Review
Todd Little, R.P.F., Regional Forest Analyst	Operational/Advisory Review, Preliminary Review
Alex Howard, Regional Lands Specialist	Advisory Review
Derek Seim, Regional Aggregates Specialist	Advisory Review
Heather Farrer, R.P.F., Forest Industry Liaison Officer	Advisory Review
Andre Joyal, EFR Fire Science Specialist	Advisory Review
Robert Fournier, Regional GIS Officer	Advisory Review

Plan Reviewer Name and Position	Roles and Responsibilities
Gregg Lloyd, Regional Forest Operations Specialist	Advisory Review
Gordon Kayahara, R.P.F., Regional Forest Science	Advisory Review
Krish Homagain, PhD, R.P.F.	Advisory Review

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Refer to 6.1(o) – MNRF Statement of Environmental Values

LIST OF SHORT FORMS AND ACRONYMS

General Forest Management Related Terms

AHA	-	Available Harvest Area
ANSI	-	Area of Natural and Scientific Interest
AOC	-	Area of Concern
AR	-	Annual Report
ATV	-	All Terrain Vehicles
AWS	-	Annual Work Schedule
B&S	-	Barren and Scattered
BA	-	Basal Area
BMA	-	Bear Management Areas
CCFM	-	Canadian Council of Forest Ministers
CFMP	-	Contingency Forest Management Plan
CFSA	-	Crown Forest Sustainability Act
Class EA	-	Environmental Assessment Board's Reason for Decision and Decision: Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario (EA-87-02)
CLUPA	-	Crown Land Use Policy Atlas
COFEC	-	Central Ontario Forest Ecosystem Classification
CP	-	Contingency Plan
CPC	-	Comprehensive Planning Council
CR	-	Conservation Reserve
DM	-	District Manager
DWDS	-	District Wood Disposition Strategy
EA	-	Environmental Assessment
EAA	-	Environmental Assessment Act
EBR	-	Environmental Bill of Rights
ESA	-	Endangered Species Act
ES	-	Ecosite
F&W	-	Fish and Wildlife
FA	-	The Fisheries Act
FEC	-	Forest Ecosystem Classification
FFTF	-	Forest Futures Trust Fund
FH	-	Fish Habitat
FIM	-	Forest Information Manual
FIPPA	-	Freedom of Information & Protection of Privacy Act
FOIP	-	Forest Operations Information Program
FOP	-	Forest Operations Prescription

1	FMP	-	Forest Management Plan
2	FMPM	-	Forest Management Planning Manual
3	FMU	-	Forest Management Unit (also MU)
4	FOSM	-	Forest Operations and Silviculture Manual
5	FRAP	-	Forest Resources Assessment Policy
6	FRI	-	Forest Resources Inventory
7	FRL	-	Forest Resources Licence
8	FRTF	-	Forest Renewal Trust Fund
9	FTA	-	Forestry/Tourism Agreements
10	FTG	-	Free-to-Grow
11	FU	-	Forest Unit
12	G&Y	-	Growth and Yield
13	GFP	-	Grant Forest Products
14	GIS	-	Geographical Information System
15	GLSL	-	Great Lakes - Saint Lawrence
16	Ha	-	hectare(s)
17	HSA	-	Habitat Supply Analysis
18	IFA	-	Independent Forest Audit
19	INRIS	-	Integrated Natural Resources Information System
20	IRM	-	Integrated Resource Management
21	LCC	-	Local Citizens Committee
22	LTMD	-	Long Term Management Direction
23	LUP	-	Land Use Permit
24	MAFA	-	Moose Aquatic Feeding Area
25	MNDM	-	Ministry of Northern Development and Mines
26	MNRF	-	Ministry of Natural Resources and Forestry (Ontario, also OMNRF)
27	MOE	-	Ministry of Environment
28	MOU	-	Memorandum of Understanding
29	MU	-	Management Unit (also FMU)
30	MX	-	Maple mix
31	NDPEG	-	Natural Disturbance Pattern Emulation Guide
32	NER	-	Northeast Region
33	NOTO	-	Northern Ontario Tourist Operators Association
34	OBM	-	Ontario Base Map
35	OFAH	-	Ontario Federation of Anglers and Hunters
36	OPFA	-	Ontario Professional Foresters' Association
37	OSB	-	Oriented Strand Board
38	PF	-	Protection Forest
39	PFR	-	ProductionForest Reserve
40	PSP	-	Permanent Sample Plot

RBT	-	Resource Based Tourism operator
ROFR	-	Right of First Refusal
RPF	-	Registered Professional Forester
RPFO	-	Report of Past Forest Operations
RSA	-	Resource Stewardship Agreements
SAR	-	Species-At-Risk
SD	-	Site District (e.g., 4E4)
SI	-	Silviculture Intensity
SEIM	-	Socio-Economic Impact Analysis Model
SEMMO	-	Silviculture Effectiveness Monitoring Manual for Ontario
SEV	-	Statement of Environmental Values
SFL	-	Sustainable Forestry Licence
SFMM	-	Strategic Forest Management Model
SPA	-	Special Purpose Account
SQL	-	Structured Query Language (syntax)
SR	-	Site Region (e.g., 4E)
STARS	-	Silvicultural Treatment and Assessment System
TAA	-	Teme Augama Anishnabai
T&C	-	Term and Condition (Environmental Assessment, also EA T&C)
TFN	-	Temagami First Nation
TFN	-	Timiskaming First Nation
TIP	-	Temagami Integrated Planning (2007)
TMU	-	Temagami Management Unit
TLUP	-	Temagami Land Use Plan (1997)
WMU	-	Wildlife Management Unit

Terms Related to the Long Term Management Direction

AU	-	Analysis Unit
IMM	-	Immature Landscape Class Indicator
INTOL	-	Intolerant Hardwood Landscape Class Indicator
LC	-	Landscape Class
OLT	-	Ontario Landscape Tool
MIXED	-	Mixedwood Landscape Class Indicator
PLANFU	-	Plan Forest Unit
PSST	-	Presapling Sapling & T-Stage Landscape Class Indicator
SRNV	-	Simulated Range of Natural Variation
PWMIX	-	White Pine Mixedwood Landscape Class Indicator
SFC	-	Spruce Fir Cedar Landscape Class Indicator
TOL	-	Tolerant Hardwood Landscape Class Indicator

1

2

LIST OF SUPPLEMENTARY DOCUMENTATION

6.1(a) – Summary of the Historic Forest Condition
6.1(b) – Analysis Package
6.1(c) – First Nation and Métis Background Information Report(s)
6.1(d) – Summary of First Nation and Métis Involvement
6.1(e) – Social and Economic Description and Demographic Profiles
6.1(f) – Monitoring Programs for Exceptions
6.1(g) – Monitoring Programs for Species at Risk
6.1(h) – Monitoring Program for Success of Silvicultural Activities
6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors
6.1(j) – Documentation of the Planning of Operational Prescriptions for AOC
6.1(k) – Summary of Public Consultation
6.1(l) – Local Citizens Committee Report
6.1(m) – List of required alterations to the FMP
6.1(n) – Terms of Reference for the 2019 TMU FMP
6.1(o) – MNRF Statement of Environmental Values
6.2(b) – Values Maps
6.2(c) – Summary Map of the FMP
6.2(a) – Northeast Region Utilization Strategy (2013)
6.2(d) – Land Set Aside
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6.3(a) – DFBM Summary Results
6.3(b) – Summary of Rationale for Desired Levels and Target
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6.3(d) – List of Required Modification to the LTMD
6.3(e) – Climate Change
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6.4(a) – Implementation Toolkit
6.4(b) – Areas Selected for Operations Map

1.0 INTRODUCTION

Forest management on Crown land in Ontario is the responsibility of the Ministry of Natural Resources and Forestry (MNRF). Ontario's Crown land is currently subdivided into 43 management units. The Temagami Management Unit (TMU) is a Crown managed forest management unit. The TMU is located within the administrative boundaries of the MNRF North Bay District in the Northeast Region (refer to Figure 1). The 2019-2029 Forest Management Plan (FMP) for TMU is prepared by First Resource Management Group (FRMG) under a service level agreement with MNRF. This is the second Ten-year FMP prepared for the TMU however, it is the first to be implemented in one 10-year implementation period.

The purpose of the forest management planning process is to establish the long -term strategic direction for forest management, with the goal of ensuring the sustainability and long-term health of forest ecosystems. This goal is tailored to benefit both local and global environments while providing long term sustainability of forest-based communities. To achieve long-term forest health,

Forest management in Ontario is regulated by the Policy Framework for Sustainable Forest (1993). The Crown Forest Sustainability Act (CFSA 1995) provides the legislative framework Ontario. The CFSA requires that each forest management plan provides for the long-term health of the Crown forest and have regard for plant life, animal life, water, soil, air and social and economic values, including recreational values and heritage values.

The intent of this FMP is to carry out approved activities on the TMU (road access, timber harvest, forest renewal and maintenance) for the period starting April 1st, 2019 and ending March 31st, 2029, and to evaluate the effectiveness of these management interventions in contributing towards the goal of forest sustainability.

Decisions, such as a general allocation of land or water resources to a particular use or combination of uses, are developed during a separate resource management planning process. The framework for land use and management intents is established in the Crown Land Use Policy Atlas (CLUPA).

The forest management planning requirements and the provisions of the environmental assessment approval are incorporated into the Forest Management Planning Manual for Ontario's Crown Forest (2017), which provides direction for the preparation of forest management plans. The Crown may delegate the responsibility for many aspects of forest

management to companies through the licensing of Sustainable Forest Licences (SFL). An SFL has yet to be signed for the TMU.

The 2019-2029 FMP for the TMU includes the lands set aside (LSA) for the Temagami First Nation/Teme-Augama Anishnabai (TFN/TAA) Land Claim. TFN and TAA posted a band council resolution allowing the Ministry to include the LSA area in the 2019-2029 FMP and identify these lands available for economic benefits. The LSA has been included in the 2019-2029 FMP. The community identified their desired forest and benefits from the LSA. Management objectives for the LSA were developed and contribute to the economic benefits of TFN/TAA.

This plan was prepared by a Registered Professional Forester in an open and consultative fashion with input from both the Local Citizens Committees (LCC) as well as the interdisciplinary planning team. The planning team Terms of Reference can be found in Supplementary Documentation 6.1(n) – Terms of Reference for the 2019 Temagami Management Unit Forest Management P

The MNRF Statement of Environmental Values (SEV) under the Environmental Bill of Rights (EBR) is a document which describes how the purposes of the EBR are to be considered whenever significant environmental decisions are made. In the development of this forest management plan, MNRF's SEV has been considered. The plan is intended to reflect the direction set out in the SEV, and to further the objective of managing Ontario's natural resources on a sustainable basis. An SEV briefing note has been prepared for the plan and is provided in Supplementary Documentation Section 6.1(o) – MNRF Statement of Environmental Values. There is an Index of Environmental Assessment components for this management plan that instructs the reader on where to locate the key components of the environmental assessment documents within the plan. This index is located following the Table of Contents.

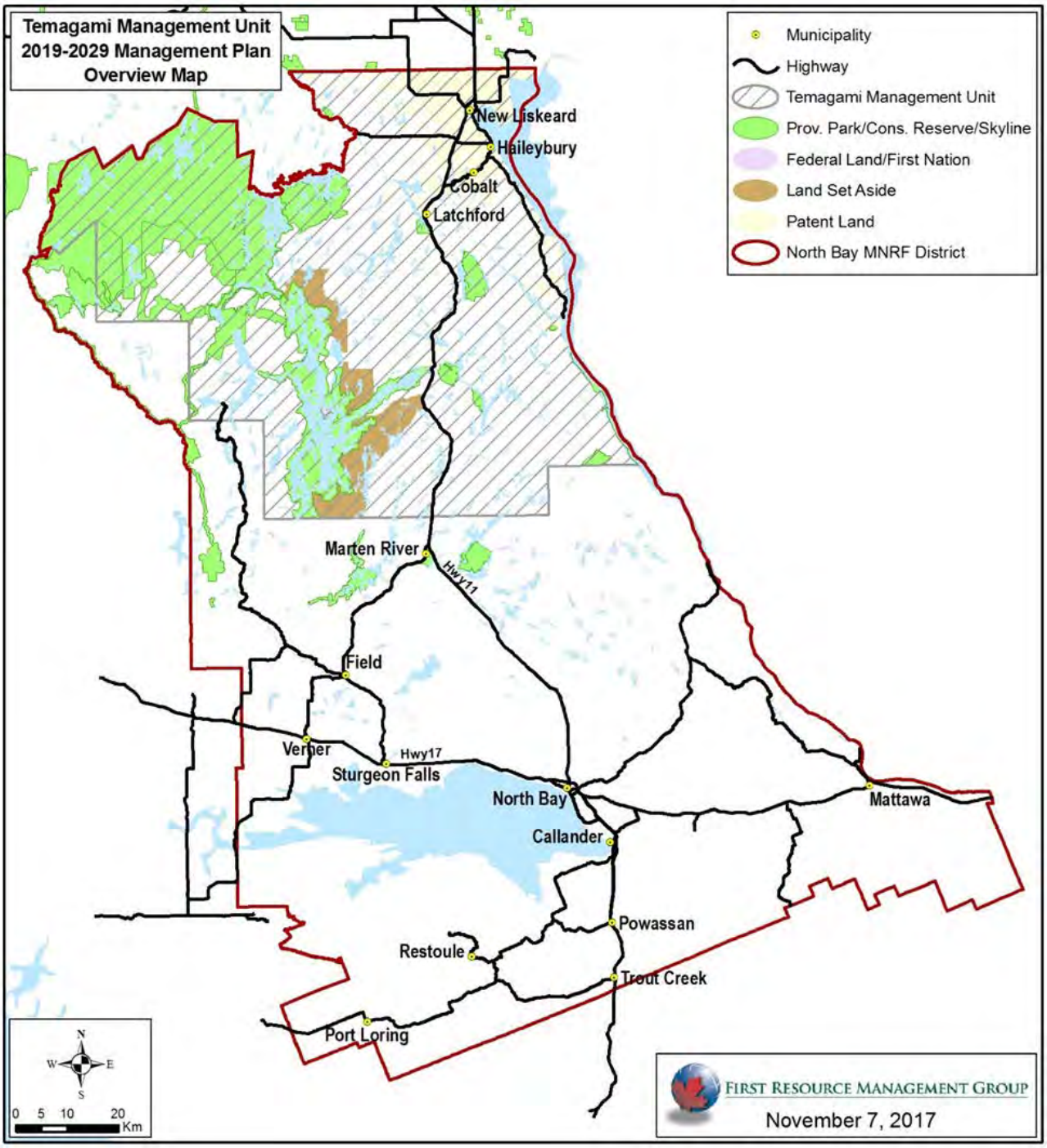


Figure 1 Location of the TMU and the LSA within the North Bay Administrative District

2.0 MANAGEMENT UNIT DESCRIPTION

2.1 Forest Description

The Temagami Management Unit (TMU) is situated at the boundary between the Boreal Forest Region and the Great Lakes-St. Lawrence (GLSL) Forest Region and therefore is a transitional forest that supports a variety of vegetation types associated with both Forest Regions. The TMU lies primarily within Hills' Site Region 4E and its forest is characterized by the effects of climate on soils and vegetation of this Site Region. The specific geology, soils and sites, historic forest condition, planning inventory, fish and wildlife resources, other forest resources and landscape pattern are described in Table FMP-1: Management Unit Crown Land Summary. This table details the Crown and Patent land on the TMU categorized by type (e.g. water, productive forest) as well as the land area associated with each category.

The village of Temagami, which is approximately 100 kilometres north of the city of North Bay lies at the approximate center of the forest. The Timiskaming Forest is situated on the northern border while the Sudbury and Nipissing Forests are located to the west and south respectively. Lake Temiskaming and the province of Quebec form the eastern border of the management unit. Municipalities located within the TMU include Temagami, Temiskaming Shores, Latchford, and Cobalt, as well as Harris, Hudson and Coleman Townships.

The TMU (MU #898) originated from the April 1, 1996 amalgamation of the former Latchford and Temagami Crown Management Units. In the 1990s, five consecutive contingency forest management plans were completed on the current TMU landbase area with the first 20-year forest management plan (FMP) approved for the amalgamated landbase on April 1, 1999. The last two contingency plans (1996-97 and 1997-99) were prepared for the current amalgamated unit. The three previous contingency plans (1994-96, 1992-94 and 1990-92) were prepared separately for the former Latchford and Temagami Crown Management Units. The 2004-2024 Temagami FMP marked the second 20-year strategic FMP. The 2009-2019 FMP was the first ten-year strategic FMP prepared under the 2004 version of the forest management planning manual (FMPM) and was comprised of two five-year implementation phases. The 2019-2029 FMP is the second ten-year FMP developed for the TMU, was prepared according to the phase-in provisions of the 2017 FMPM, and therefore will be implemented in one ten-year period.

The management unit is accessed primarily via Ontario Highway 11, which bisects the forest in a north-south direction. Highway 64 provides principal access to the southern section of the unit. The northeastern section of the unit is very well accessed by provincial highways 567, 558 and 65, and numerous municipal and forest access roads. Lake Temagami also provides excellent water access for recreational purposes.

The management unit extends over a total area of 634,118 hectares (including all Crown and private land) and is comprised of forest, water, islands, agriculture, rocks, wetlands (treed and open), grasslands and unclassified land types. The majority of the management unit (582,999 hectares), is designated Crown ownership. There are a total of 450,942 hectares of Crown productive forest on the TMU. Regulated provincial parks, conservation reserves or other 'no forestry' land use zones account for 130,625 hectares of this Crown productive forest. The remaining 320,317 hectares of the Crown productive forest is designated as Crown production forest that is available for forestry. Of this amount, 298,692 hectares are designated as available for forest management activities with the remaining portion of the available Crown production forest (21,625 hectares), found within the Lands Set Aside (LSA) area. The LSA area is also available for forest management activities, but solely for TFN/TAA economic benefit.

A number of mills receive wood fibre from the TMU, but none of them are entirely dependent on the unit for their timber supplies at this time. The disposition of Crown forest is achieved through five-year Forest Resource Licences (FRL). There are a number of FRLs issued on the unit, and some FRL holders also operate on other units to sustain a stable wood fibre supply to their facilities. On the contrary, some prospective FRL holders operate only within the unit and depend entirely on the available harvest area for their operations, which supply wood fiber to a multitude of facilities.

Commercial outfitter camps in the unit are generally located on the islands of Lake Temagami, and along the Highway 11 corridor. There are also remote cottages and commercial sites throughout the management unit and a considerable amount of leased and staked mining land.

Ontario Power Generation has acquired flooding rights on Lady Evelyn Lake, Fourbass Lake, Lake Timiskaming, Bay Lake and other portions of the Montreal River, but has not seriously affected forest management adjacent to these areas in the recent past. They also hold tenure rights to the land within their transmission corridors adjacent to these areas in the recent past. They also have certain rights to the land along their transmission lines.

2.1.1 Historic Forest Condition

Historically, the predominant tree species found on the TMU were black spruce, white birch, jack pine, poplar, balsam fir, white pine, red pine and cedar, with lesser amounts of white spruce, eastern larch, sugar maple and yellow birch[1]. On appropriate sites, some species grow in relatively pure stands, but most associate with others in a variety of compositions.

The past two centuries of human activities and presence on the landbase have led to changes in forest dynamics and the resulting forest composition. Logging activities peaked in 1947-48 with red and white pine still the focus species that was logged by 14 separate licensees. In most cases, prior to 1980, there was little attention paid to appropriate regeneration of cutovers. This had the dual effect of removing conifer, particularly pine from the landbase, and favouring mixedwood and hardwood dominated forest types returning to these sites. Mining, land settlement and agricultural development have also altered the forest cover on the TMU.

In the mid-20th century Ontario developed an effective forest fire control program based on the prevention, early detection and suppression of wildfire. The resulting longer fire cycles and significantly reduced numbers of mid-sized fires has translated into more forest area occupied by older stands and a change in the composition and distribution of forest types across the landscape when compared to a natural range in variation. Disease and insect outbreaks have also shaped the composition of the forest. For example, spruce budworm infestations have significantly reduced the amount of area dominated by balsam fir on the TMU.

A complete summary of historic forest condition for the TMU is found in Supplementary Documentation Section 6.1(a) – Summary of the Historic Forest Condition

2.1.2 Current Forest Condition

Table FMP-1: Management Unit Crown Land Summary shows the current management unit land summary. There are 451,511 hectares of productive forest area across the TMU, with 340,792 hectares of this being eligible for forest management. Protection forest, which includes all productive forest areas that are historically inoperable due to physical

[1] Pinto, F. & Romaniuk, S. 2004. *Changes in tree species composition from Pre-European settlement to present a case study of the Temagami Forest, Ontario*, in *Emulating Natural Forest Landscape Disturbances: concepts and applications*. Pages 176-188

limitations (i.e. islands) or due to increased risk of deleterious environmental effects (i.e. shallow soils over rocky area), encompasses 1,535 hectares of the forest.

The FMPM defines patent land as “land transferred from Her Majesty the Queen in the Right of Ontario to an individual, company or corporation in perpetuity”. On the TMU, there are 1,496 hectares of patent land. The “Other” Crown land definition includes any areas that are within provincial parks, conservation reserves or other recreational areas on the forest (586 hectares) . These areas are removed from forest management, although, depending on the area, different operational conditions may apply. Refer to FMP-11 for conditions on operations within or adjacent to areas classified as “Other”.

There is a total of 480,602 hectares of productive forest across the TMU (including patent land and other ownership types) however, here are only 450,942 hectares of Crown productive forest on the TMU. 320,317 hectares of which is Crown productive forest available for forest management activities such as harvest, renewal and road construction and the remaining 130,625 hectares of Crown production forest is unavailable for forestry. Both the available and unavailable Crown forest are included in the FMP. The unavailable Crown productive forest is comprised of provincial parks and conservations areas, protection forest, or areas designated by a land use policy where forestry is not permitted. Only areas that are classified as Crown Production Forest are considered within this FMP. All other areas are removed from operational management considerations. All Crown productive forest contributes to wildlife habitat and landscape level indicators.

There are some areas of private land found in the TMU. Private land is generally centered around the municipalities on the Unit, as well as being on and around popular cottaging lakes and hunting areas. Figure 2 and Figure 3 demonstrate this information graphically.

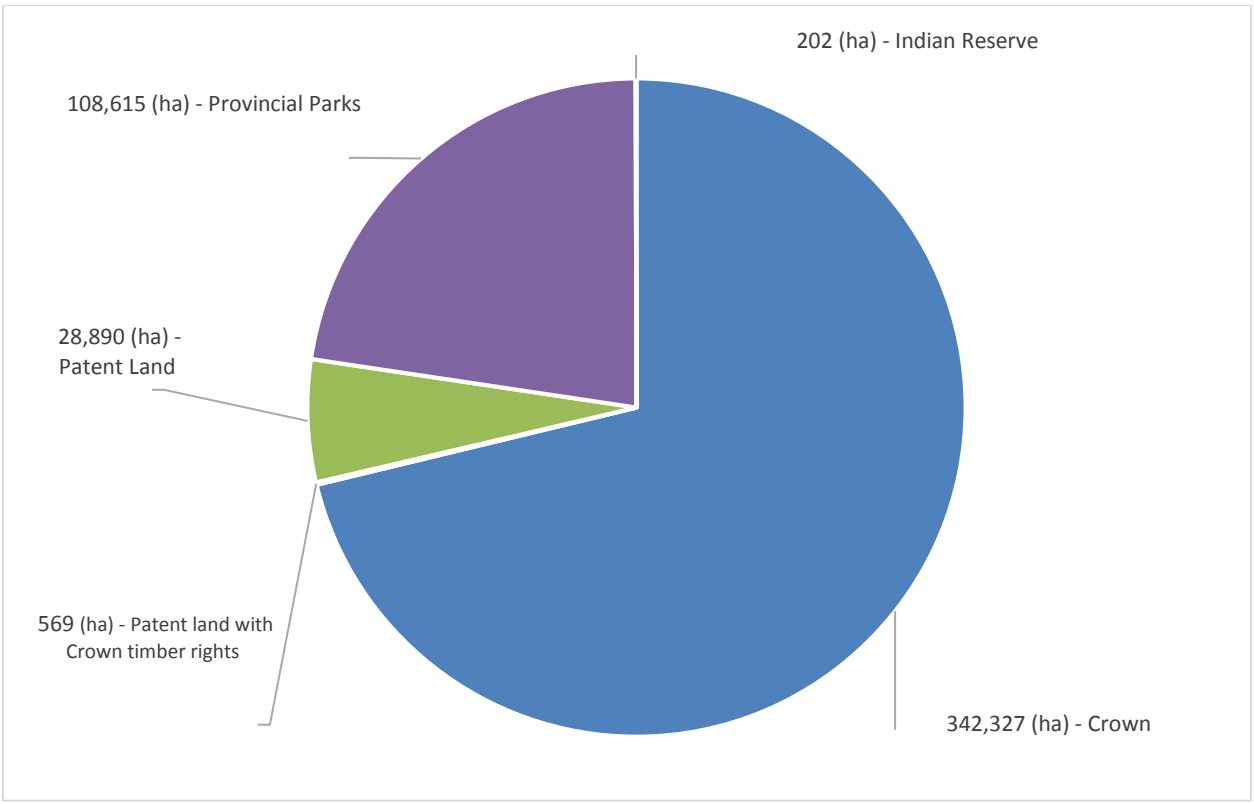


Figure 2 Management Unit Productive Forest Summary

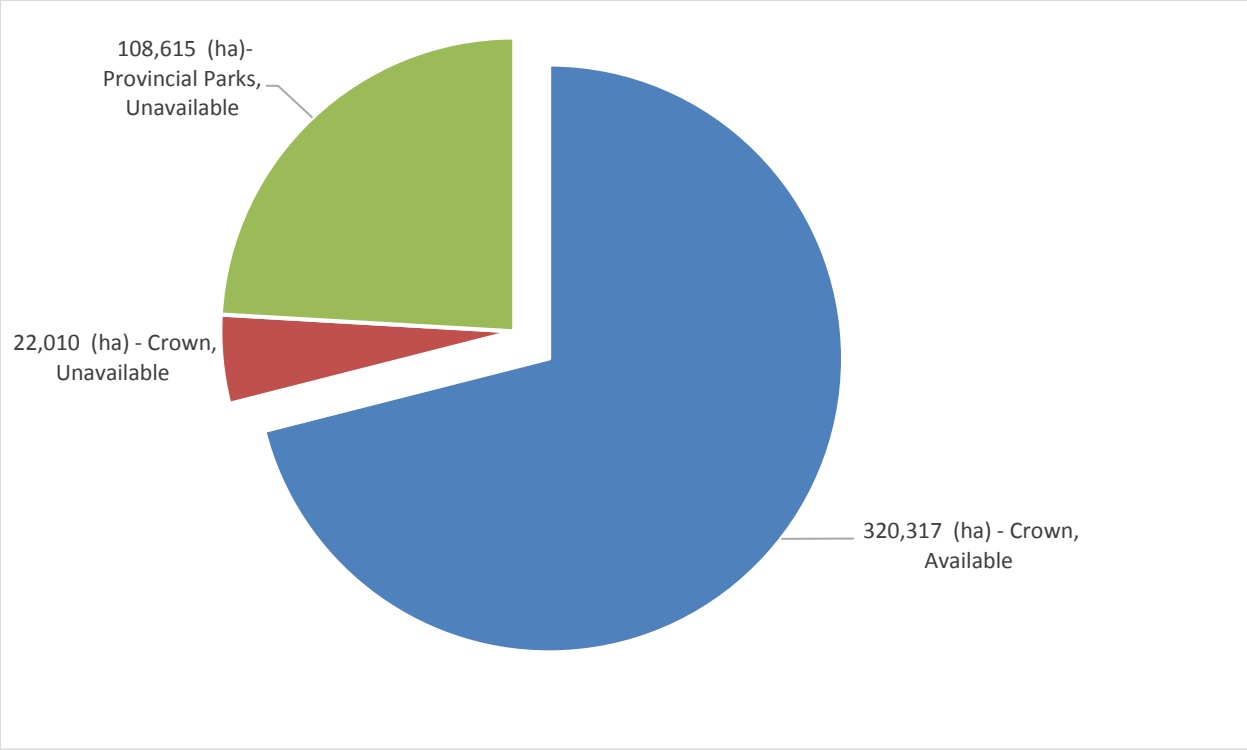


Figure 3 Management Unit Summary of Crown Productive Forest

The Analysis Package documents the development of the planning inventory products and the manner in which forest description information is updated, projected and forecasted. The Analysis Package can be found in Supplementary Documentation Section 6.1(b) – Analysis Package

2.1.2.1 Geology

The TMU is located on the Precambrian Shield in Northeastern Ontario. The Management Unit (MU) is underlain by rocks of three geological provinces contained within the Precambrian Shield; the Grenville Province, the Southern Province and the Superior Province. Most of the MU is underlain by rocks of the Superior and Southern Province. The Grenville Front is the geological boundary between the relatively young rocks of the Grenville Province to the south and the older rocks of the Southern and Superior provinces to the north. The Grenville Front strikes northeast across the MU from the south boundary of Vogt Township to the east boundary of South Lorrain Township.

Geological features within the MU represent five major eras in earth's history.

The oldest rocks within the MU are part of the Superior Province. These Archean rocks consist of small areas of metavolcanic and metasedimentary rock, collectively known as “greenstone” and large areas of intrusive granitic rock. These were all deposited and emplaced during continent building processes that occurred more than 2,500 million years ago. The Superior Province rocks underlay the Southern Province rocks and are exposed as windows through those younger rocks. The largest window is in the central part of the MU and exposes the Temagami greenstone belt. The Temagami greenstone belt is host to deposits of Iron, Copper-Nickel-Platinum Group Metals and Gold. Greenstone windows are also abundant in the Cobalt area.

The Southern Province rocks were deposited upon the Superior Province rocks between 2200 and 2450 million years ago following an early period of continental glaciations. The Southern province rocks consist of lithified glacial, fluvial and marine sediments with local volcanic activity. About 2219 million years ago, a major magmatic event emplaced the Nipissing diabase sills and dikes within the Southern and Superior Province rocks. The emplacement of the Nipissing Diabase into the Southern Province rocks in proximity to the Archean greenstone was integral to the deposition of polymetallic Silver-Cobalt veins in the Cobalt and Silver Center areas.

The Grenville Province consists of rocks from several different crustal plates that collided with the North American proto-continent between 2200 and 1050 million years ago. The main collisional zone between the older rocks of the Superior and Southern

Provinces and the younger Grenville rocks is the Grenville Front Tectonic Zone. The rocks within the tectonic zone are a complex mix of older and younger rocks that were intensely metamorphosed and deformed during the collision, a process that resulted in quartzo-feldspathic gneisses. Near the end the Grenville Era, granitic rocks intruded quartzo-feldspathic gneiss.

A large, continental scale structure known as the Temiskaming Rift System flanks the eastern part of the TMU. This structure is believed to continue north possibly to and including the Attawapiskat Kimberlite (diamonds) field. Mantle-tapping diabase, carbonatite, and kimberlite bodies intruded crustal rocks from time of the deposition of the Southern Province rocks until the Jurassic Period; the time of the dinosaurs. The grabben system is believed to have a controlling influence on the emplacement of the mantle-tapping rocks. Several kimberlite bodies, some of which are diamondiferous, were discovered within the boundaries of the MU over the past few decades. The most recent discovery was announced in the fall of 2006 and is located in the Latchford area.

Faulting within the Temiskaming Rift System resulted in a large “down dropped” block of Paleozoic rocks extending northwest from the north shore of Lake Timiskaming to Englehart. Paleozoic rocks are the substrate to the Claybelt.

The bedrock of the Superior, Southern and Grenville Provinces forms the solid foundation upon which the current landscape is set. The current surficial deposits are the result of erosional processes active since end of Grenville time. Over the last two million years, there were several glacial advances and retreats, which ended approximately 7,000 years ago. The glacial activity produced landforms by erosion and deposition of surface materials. The topography and landforms observed within the management unit are a result of the presence of both bedrock and surficial geological features and their interaction with surface processes.

The present-day surficial geology within the MU consists for the most part of bedrock-controlled terrain covered by a thin mantle of glacial till. Interspersed amongst the bedrock-controlled terrain are glacio-fluvial outwash deposits of sand and gravel, remnants of ice-contact and glacio-lacustrine deposits of sand and gravel. Locally, aeolian reworking of the sand deposits resulted in dune formation such as those found in and on the north shore of Lady Evelyn Lake. Significant areas of undifferentiated till-dominant terrain occur in the north east part of the MU; in the townships to the west of Haileybury and Latchford and in Banting and Best Townships. Glacio-lacustrine silt and clay deposits occur on top of the Paleozoic rocks to the north of and along side Lake Temiskaming and in low-lying areas along faults related to the Temiskaming Rift System.

2.1.2.2 Topography

Topography is strongly correlated to the bedrock type. Metavolcanics, mafic and ultramafic rocks underlie flat soil-covered plains. Hummocky terrain with erosion-resistant bedrock outcropping corresponds to areas of felsic intrusive. Metasediments feature erosion-resistant rock outcrops, interspersed with swamps and lakes in less erosion-resistant areas. The sedimentary rocks and the associated diabase appear as flat-topped ridges. Paleozoic limestone outcroppings occur mainly on the edges of escarpments caused by rift faulting. Faulting has occurred at various times; the most recent faulting took place in late Precambrian times and displays a southwesterly orientation. Faults of earlier origin tend to lie in a north-easterly direction. This has resulted in a blocky topographical pattern in some areas of the unit. Evidence of bedrock faulting can be found throughout the unit, and where soils are shallow, surface drainage and road access are

directly affected. The Montreal River follows a number of major faults and is a good example of how drainage is controlled by the surrounding topography.

The TMU is a moderately rolling, upland plateau with some flat to gently rolling areas as well as rugged, hilly regions. The proximity of the underlying bedrock produces much surficial variation.

Lake Timiskaming, at an elevation of about 180 metres above sea level (ASL), is the lowest point in the MU. Towards the west, there is a gradual incline, interrupted several times by severely broken and rugged hills, up to the Ishpatina Ridge in Corley and Ellis Townships (693m A.S.L.). This ridge is reported to be the highest point in Ontario. In Rorke Township, Maple Mountain rises about 640 metres ASL, and is known as the second highest point in Ontario. Lake Temagami is 294 metres above sea level, an average elevation for the unit. The contour lines run generally north south in the western half and northeast southwest in the eastern half. Slopes vary from gentle to steep (0°-90°) making access, harvesting and renewal and maintenance activities difficult in some areas.

That portion of the unit within the Haileybury Clay Forest Section (Rowe, 1972) is a plateau with gentle slopes tending south-eastwardly to the head of Lake Timiskaming. The area contains gently rolling topography and surface drainage is generally poor.

The TMU section is a large upland area, stretching east, north and west from Lake Temagami and generally sloping southward. Its topography is moderately rolling, but more rugged and broken in the extreme northwestern and southeastern corners of the unit.

The topography has been a major impediment to forest management. The access to aggregate for road construction create costly access and scarce markets have prevented the harvest of many mature stands and/or restricted cutting to the more valuable species.

2.1.2.3 Hydrography

The unit is situated within the Great Lakes-St. Lawrence primary watershed. It straddles a major watershed divide in the provincial topography. A large proportion (108,215 hectares or 17%) of the unit is composed of water. To the south of the height-of-land, the drainage flows south to Lake Nipissing via Anima Nipissing Lake, Lake Temagami, Cross Lake, Temagami River and Sturgeon River. This system flows into Lake Huron via the French River from Lake Nipissing. From the height-of-land in the north and northeast, water collects in Lake Timiskaming, and then drains southeast into the St. Lawrence River via the Ottawa River. These waters eventually meet at Montreal via Lakes Huron, Erie and Ontario, and the St. Lawrence River.

2.1.2.4 Soils

Most of the soil in the TMU consists of Pleistocene deposits of the "Wisconsin" glacier, originating from Hudson Bay and Labrador. During the "Wisconsin" age, several advances and recessions of glaciers took place. Lake Timiskaming is a remnant of glacial Lake Barlow. As a result, the majority of soils within the TMU are glacial tills of a ground moraine nature. They are widely distributed and form a continuous mantle over the bedrock. Generally, of medium to shallow depth, these sandy textured soils are mixed with numerous stones, boulders, gravel and the occasional deep site.

Scattered throughout the ground moraine are terminal moraines of sand, gravel and boulders. Infrequent glacio-fluvial deposits also occur and both are often accompanied by sand outwash or ponded deposits. Generally, none of these ground features have been re-worked, modified by subsequent lake action or overridden by ice since their formation.

Widely scattered patches of exposed bedrock are common with humo-ferric podzols and organic (peat) soils characterizing slopes and depressions respectively.

The remainder of the MU lies within the Haileybury Clay Forest Section where varved or massive clays and silt of lacustrine origin predominate. The Little Clay Belt, the fertile agriculture lands of this region, is the fine sediments of glacial Lake Barlow-Ojibway. Gray luvisols and humo-ferric podzols are typical of the well-drained sites, while humicgleysols

and organic (peat) soils are found on the poorly drained areas. Unconsolidated material has been removed by glacial lake wave action, exposing patches of bedrock.

Forest soils of the MU are predominantly glacially derived sands, gravely sands and boulder sands of average productivity. Soils are generally very shallow with weakly developed profiles. Rock outcrops are frequent. Pockets of deeper soils occur in the western and southern portions. Shallow soils and steep grades in many areas of the unit limit or restrict harvesting and effective forest management. Pine species are well suited to the drier sites, but where adequate moisture and finer soil textures occur, poplar and spruce do equally well.

2.1.3 Forest Classification

2.1.3.1 Forest Units and Analysis Units

A forest unit is defined as “a classification system that aggregates forest stands for management purposes that will normally have similar species composition, will develop in a similar manner (both naturally and in response to silvicultural treatments), and will be managed under the same silvicultural system (MNRF 2009). For each forest unit, the natural and silviculturaly treated development of the forest over time can be predicted and expressed graphically in the form of yield curves.

Forest unit classification applies to the entire productive forest area within a forest management unit, not just the areas that are managed for timber production. Forest units are also the unit of measure when setting management targets and reporting levels of achievement for harvesting and renewal. In addition, management unit specific forest units will allow future planning teams to compare actual achievement levels from one planning period to the next. The forest units for the TMU are summarized in Table FMP-2: Description of Forest Units.

There are a set of regionally developed standard forest units (SFU’s) that are the basis for the planning team to customize management unit specific forest units based on local forest conditions, professional knowledge and recent monitoring data. Analysis Units (AU) were used to further refine standard forest unit for use during strategic planning, modelling and analysis. Multiple analysis units can then be aggregated to form one forest unit provided the aggregation is consistent with the SFU regional definitions. Table 6 found in Section 3.1.2 found in Supplementary Documentation Section 6.1(b) – Analysis Package describes the makeup of the analysis units and corresponding forest units.

A summary of the managed Crown productive forest land area of the management unit by forest unit and age class is provided in Table FMP-3. The table also shows the forest unit area in hectares by age class, protection forest, unavailable forest and available forest. Unavailable forest on the TMU is due largely to site class 4 areas, and area that is not available for management due to a land use designation, management reserves or non-Crown land.

Figure 4 to Figure 19 illustrates FMP-3: Summary of Managed Crown Productive Forest by Forest Unit graphically. Due to the considerable amount of unmanaged Crown productive forest, Figure 21 to Figure 34 have been included for reference

Figure 4 shows the summary of the Red Pine (PR) area (1,738 hectares) detailed in table FMP-3. A total of 56 hectares (3%) of the forest unit is classified as unavailable for harvest and 1,683 hectares (97%) of the forest is classified as available for harvest on the TMU.

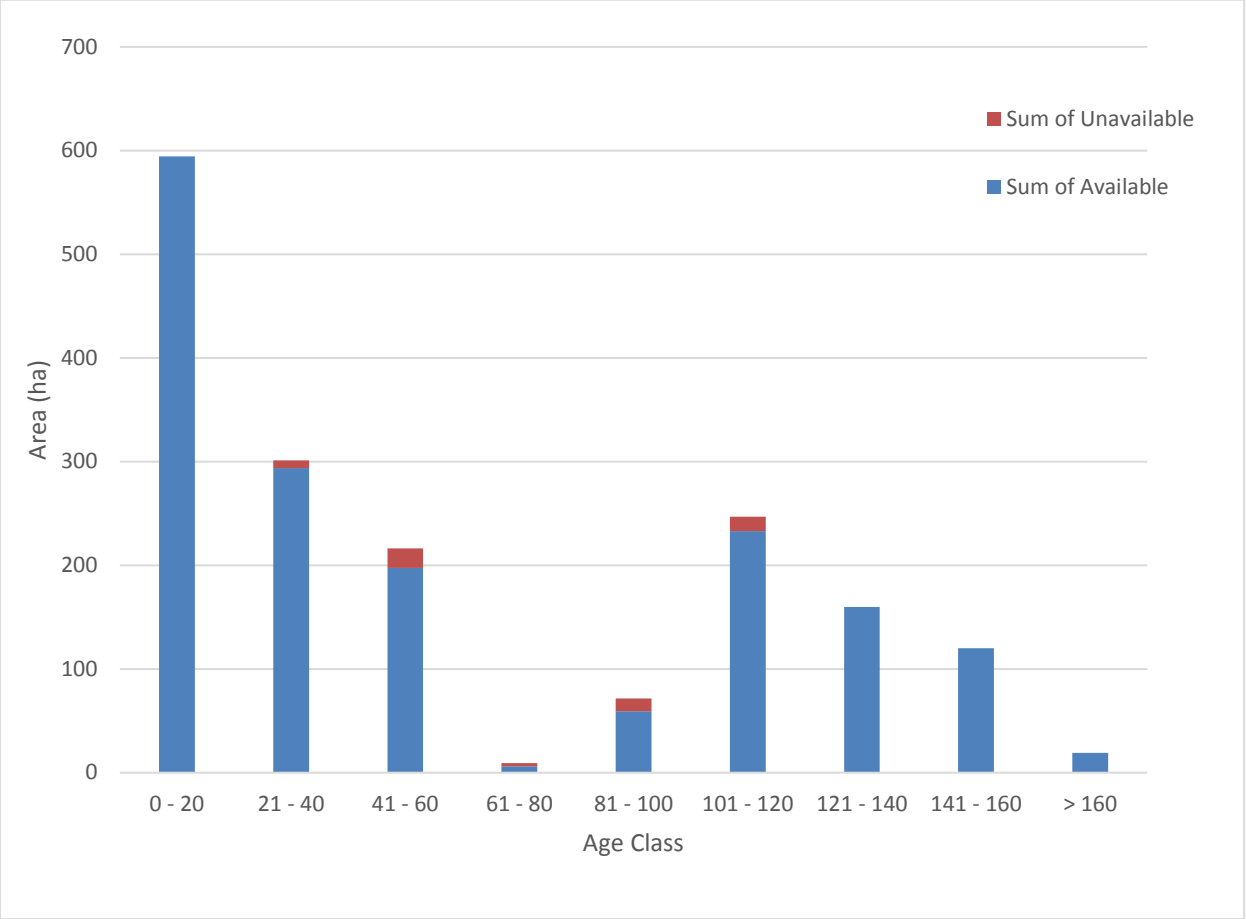


Figure 4 Summary of the Managed Crown Productive Forest for the PR Forest Unit (Area (ha) by Age Class)

Figure 5 shows the summary of the White Pine Shelterwood (PWUS) area (26,804 hectares) detailed in table FMP-3. A total of 3,496 hectares (13%) of the forest unit is classified as unavailable for harvest and 23,309 hectares (87%) of the forest is classified as available for harvest on the TMU.

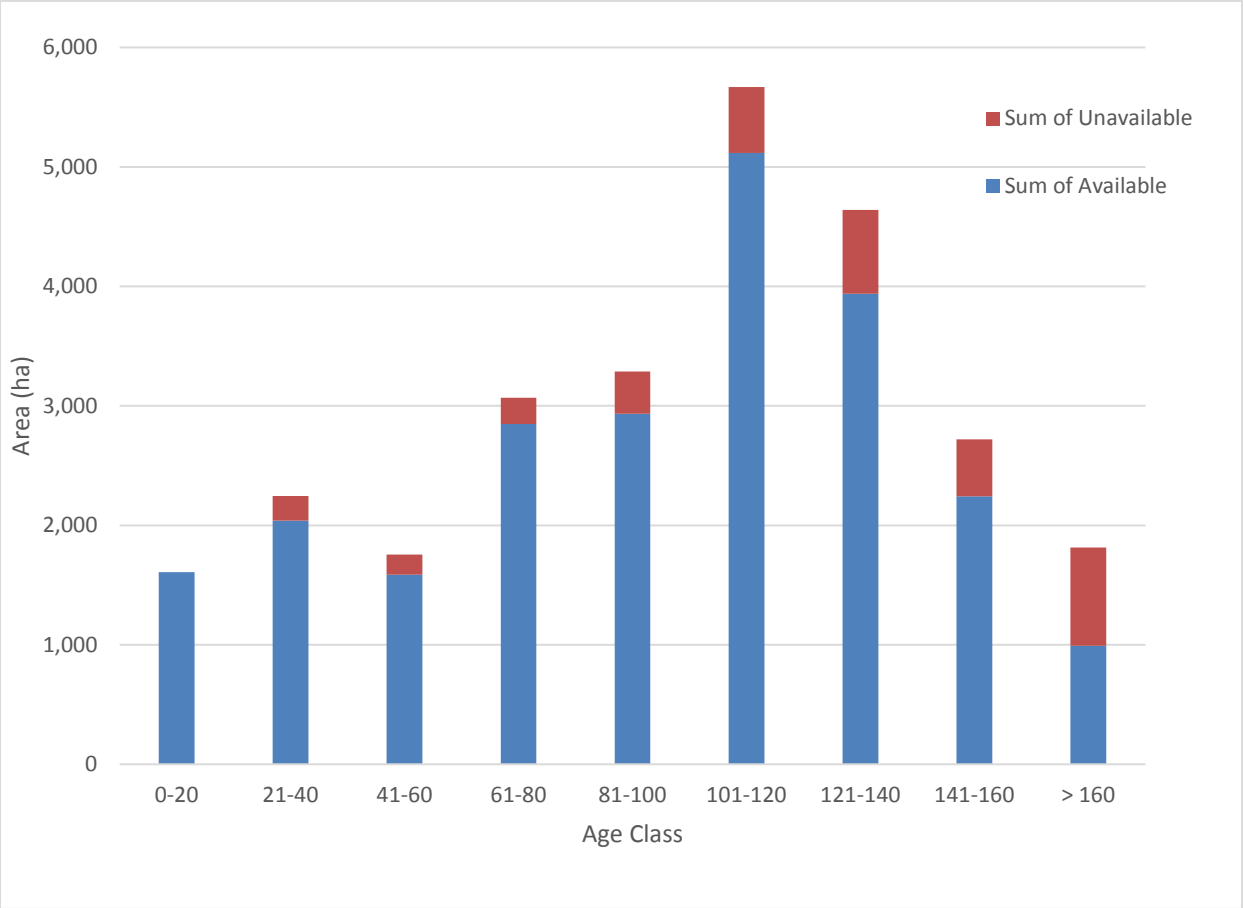


Figure 5 Summary of the Managed Crown Productive Forest for the PWUS Forest Unit (Area (ha) by Age Class)

Figure 6 shows the summary of the White Pine Seed tree (PWST) area (19,943 hectares) detailed in table FMP-3. A total of 1,504 hectares (8%) of the forest unit is classified as unavailable for harvest and 18,439 hectares (92%) of the forest is classified as available for harvest on the TMU.

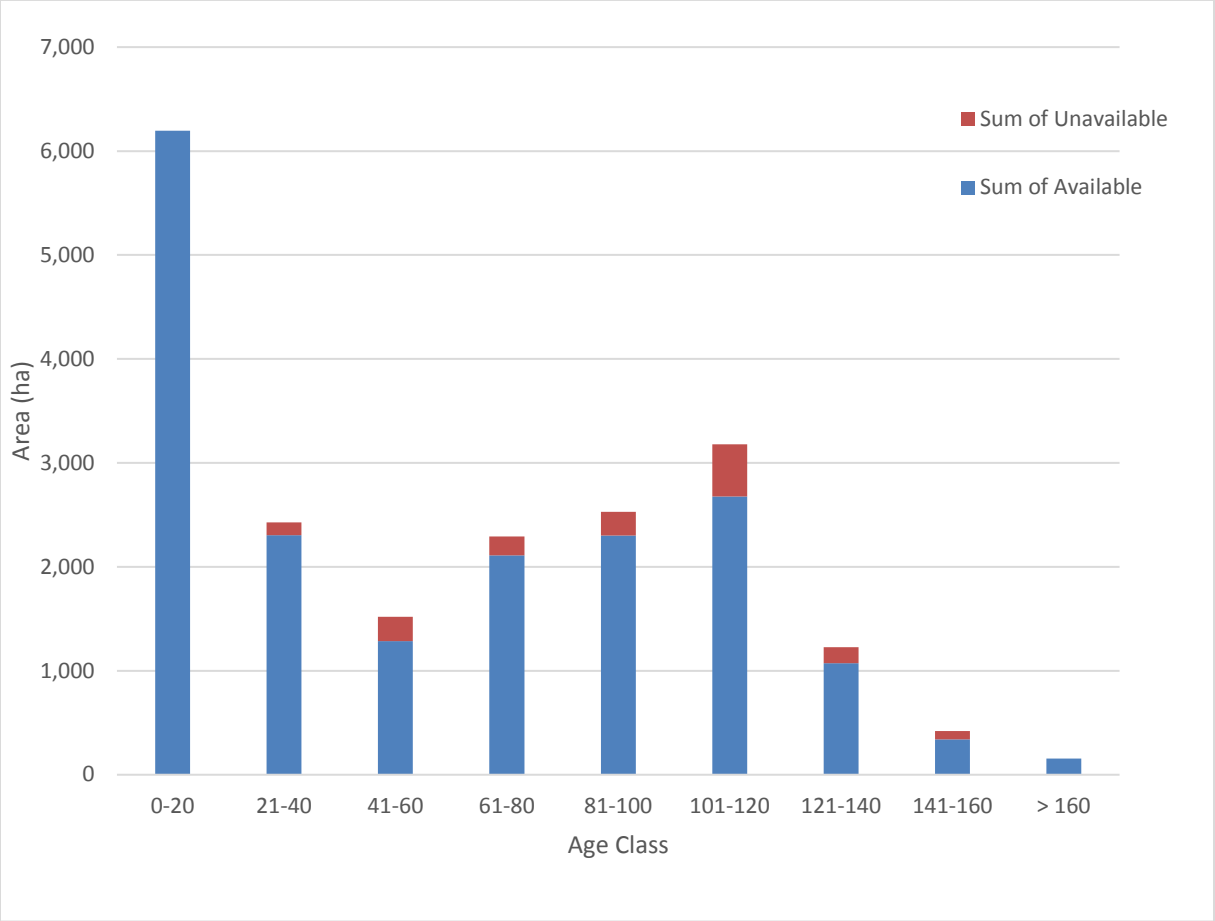


Figure 6 Summary of the Managed Crown Productive Forest for the PWST Forest Unit (Area (ha) by Age Class)

Figure 7 shows the summary of the White Pine-Conifer Shelterwood (PWUSC) area (25,100 hectares) detailed in table FMP-3. A total of 2,745 hectares (11%) of the forest unit is classified as unavailable for harvest and 22,355 hectares (89%) of the forest is classified as available for harvest on the TMU.

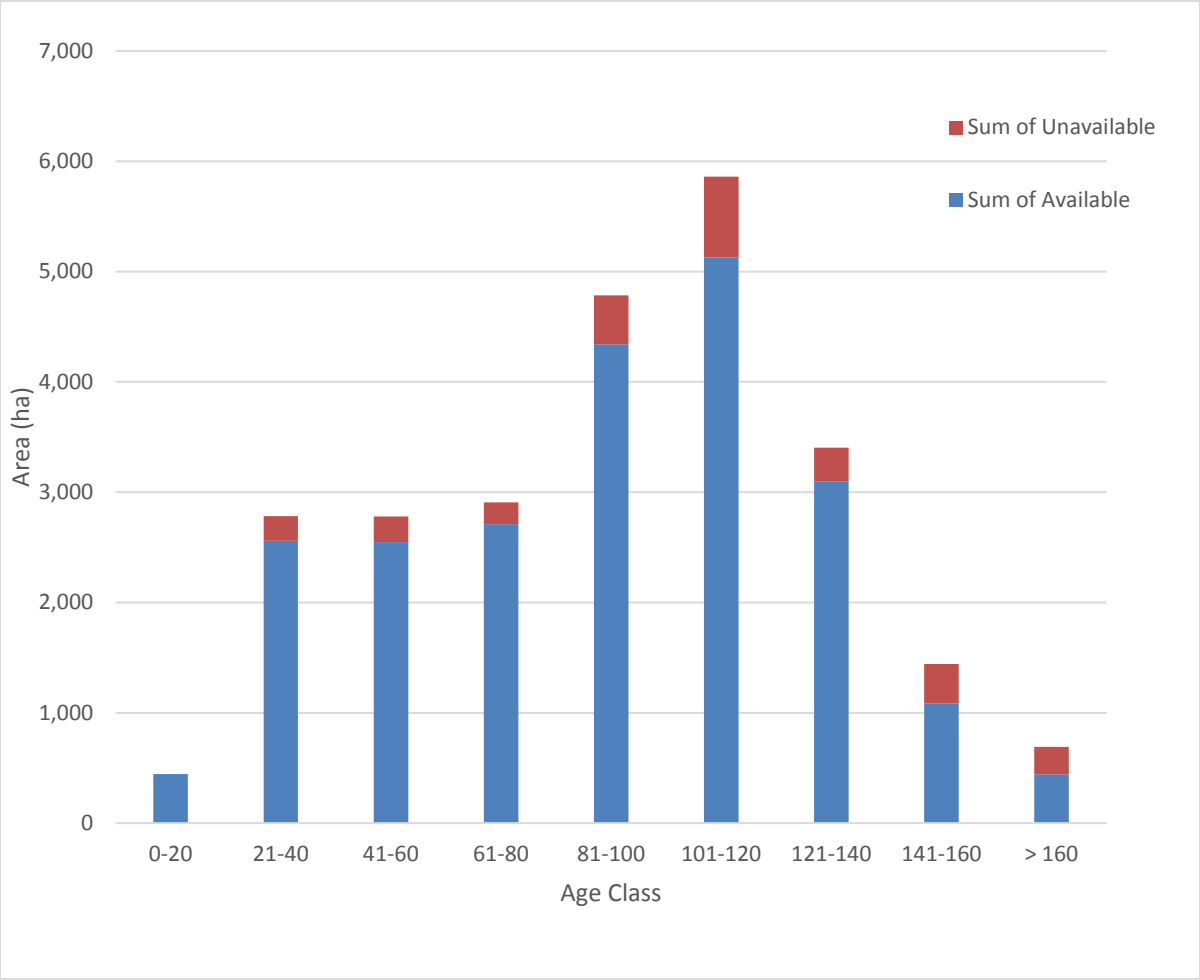


Figure 7 Summary of the Managed Crown Productive Forest for the PWSC Forest Unit (Area (ha) by Age Class)

Figure 8 shows the summary of the Jack Pine 1 (PJ1) area (11,471 hectares) detailed in table FMP-3. A total of 87 hectares (1%) of the forest unit is classified as unavailable for harvest and 11,384 hectares (99%) of the forest is classified as available for harvest on the TMU.

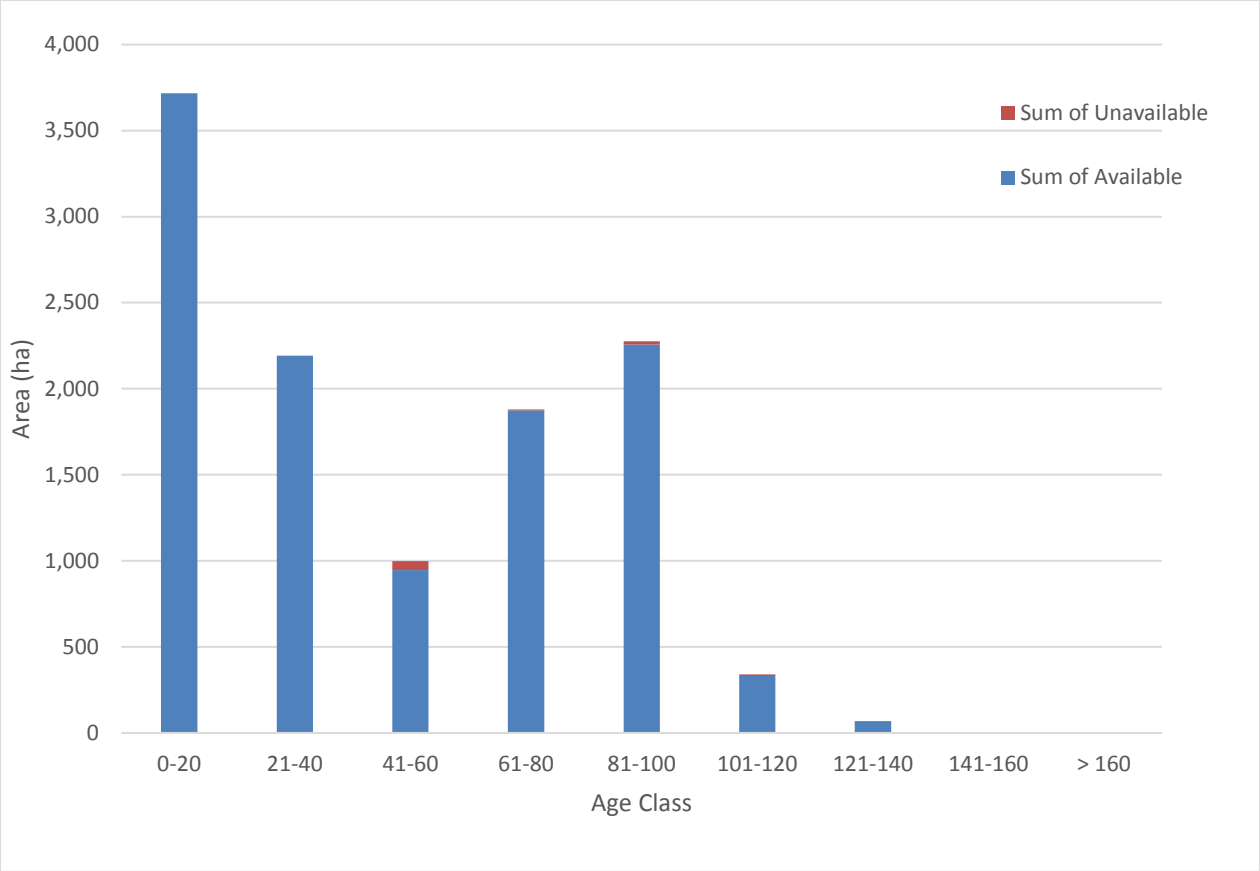


Figure 8 Summary of the Managed Crown Productive Forest for the PJ1 Forest Unit (Area (ha) by Age Class)

Figure 9 shows the summary of the Jack Pine 2 (PJ2) area (12,141 hectares) detailed in table FMP-3. A total of 328 hectares (3%) of the forest unit is classified as unavailable for harvest and 11,812 hectares (97%) of the forest is classified as available for harvest on the TMU.

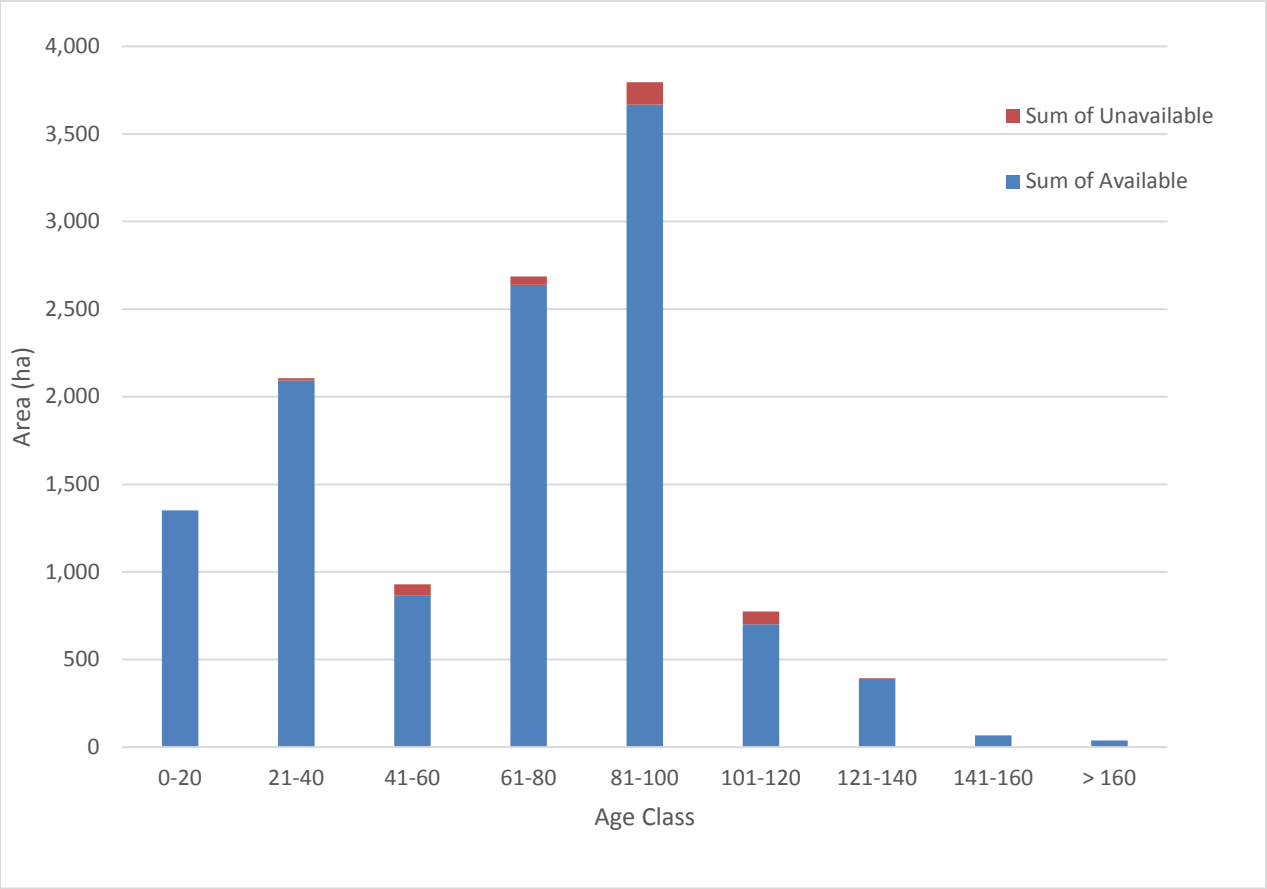


Figure 9 Summary of the Managed Crown Productive Forest for the PJ2 Forest Unit (Area (ha) by Age Class)

Figure 10 shows the summary of the Mixed Conifer Lowland (MCL) area (17,407 hectares) detailed in table FMP-3. A total of 596 hectares (3%) of the forest unit is classified as unavailable for harvest and 16,812 hectares (97%) of the forest is classified as available for harvest on the TMU.

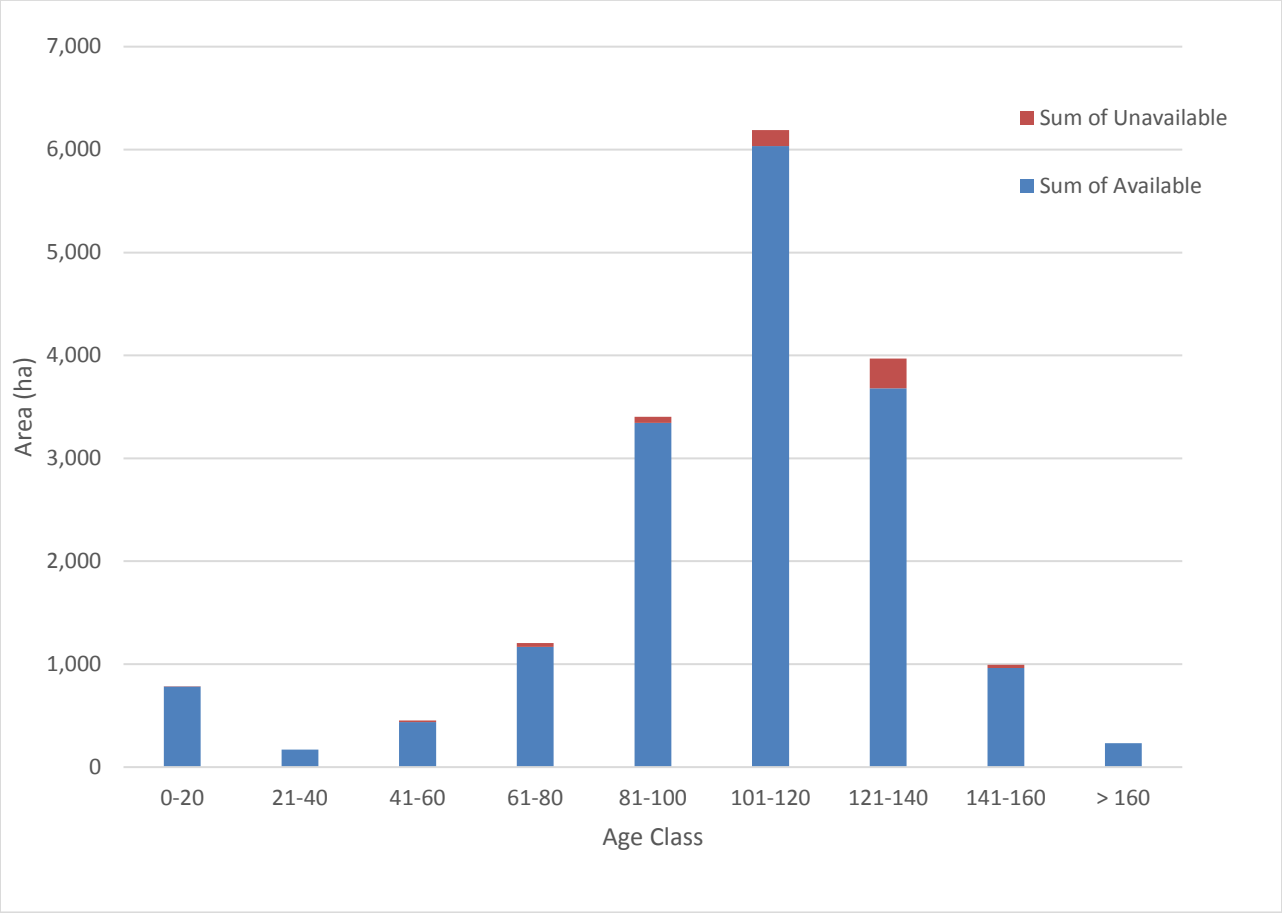


Figure 10 Summary of the Managed Crown Productive Forest for the MCL Forest Unit (Area (ha) by Age Class)

Figure 11 shows the summary of the Black Spruce (SB) area (2,856 hectares) detailed in table FMP-3. A total of 68 hectares (2%) of the forest unit is classified as unavailable for harvest and 2788 hectares (98%) of the forest is classified as available for harvest on the TMU.

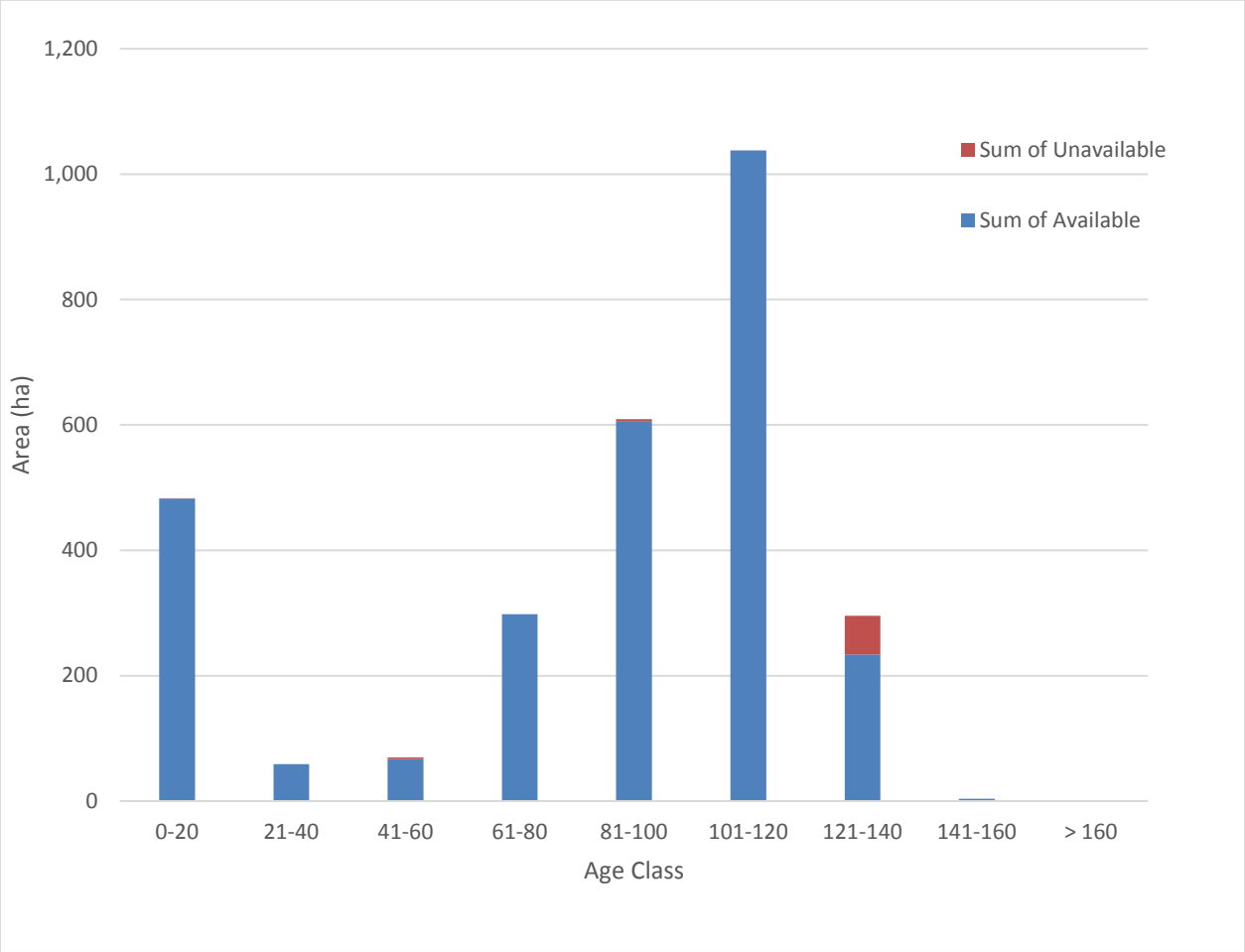


Figure 11 Summary of the Managed Crown Productive Forest for the SB Forest Unit (Area (ha) by Age Class)

Figure 12 shows the summary of the Spruce Pine (SP1) area (21,417 hectares) detailed in table FMP-3. A total of 867 hectares (4%) of the forest unit is classified as unavailable for harvest and 20,550 hectares (96%) of the forest is classified as available for harvest on the TMU.

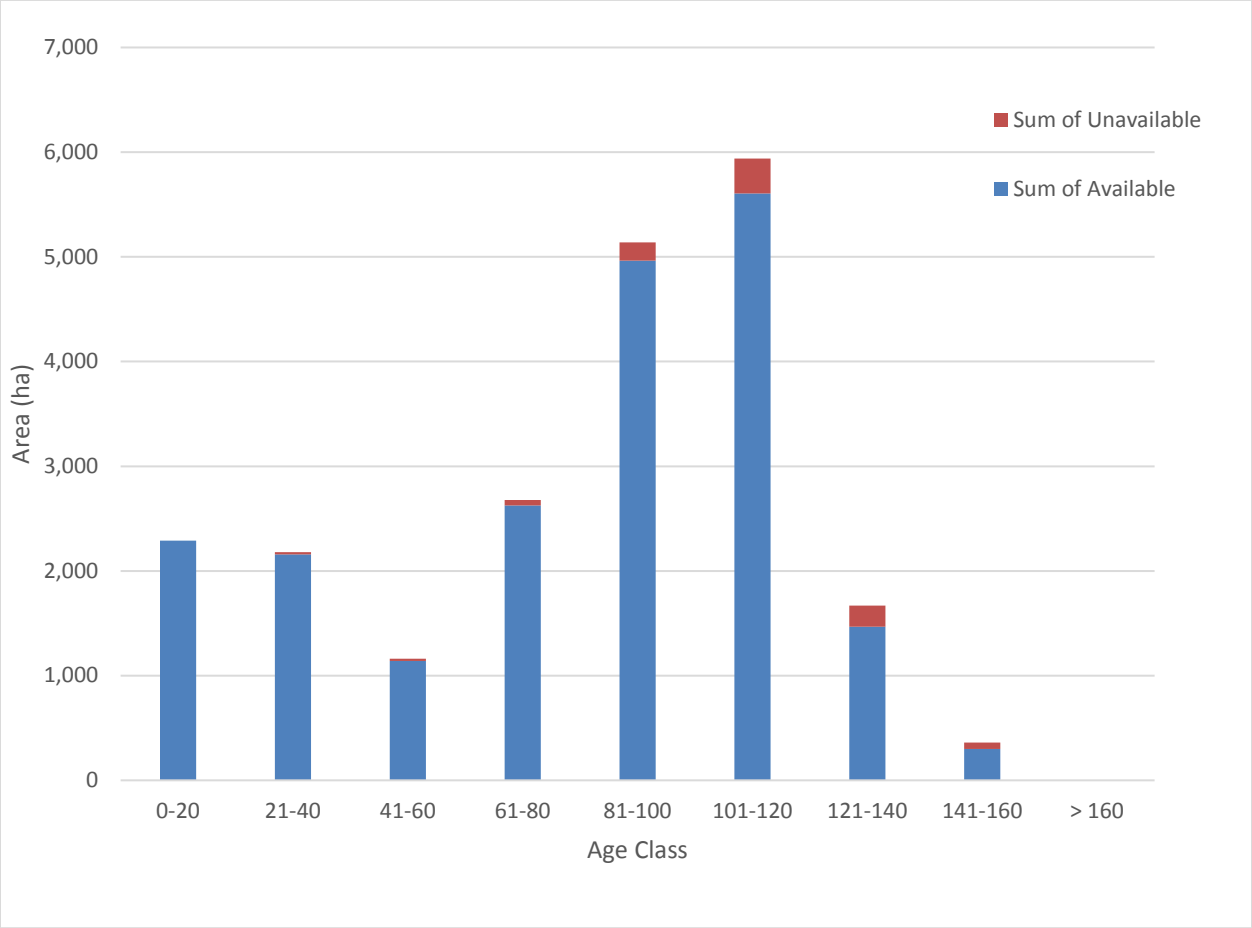


Figure 12 Summary of the Managed Crown Productive Forest for the SP1 Forest Unit (Area (ha) by Age Class)

Figure 8 shows the summary of the Spruce-fir (SF) area (46,463 hectares) detailed in table FMP-3. A total of 2,186 hectares (5%) of the forest unit is classified as unavailable for harvest and 44,277 hectares (95%) of the forest is classified as available for harvest on the TMU.

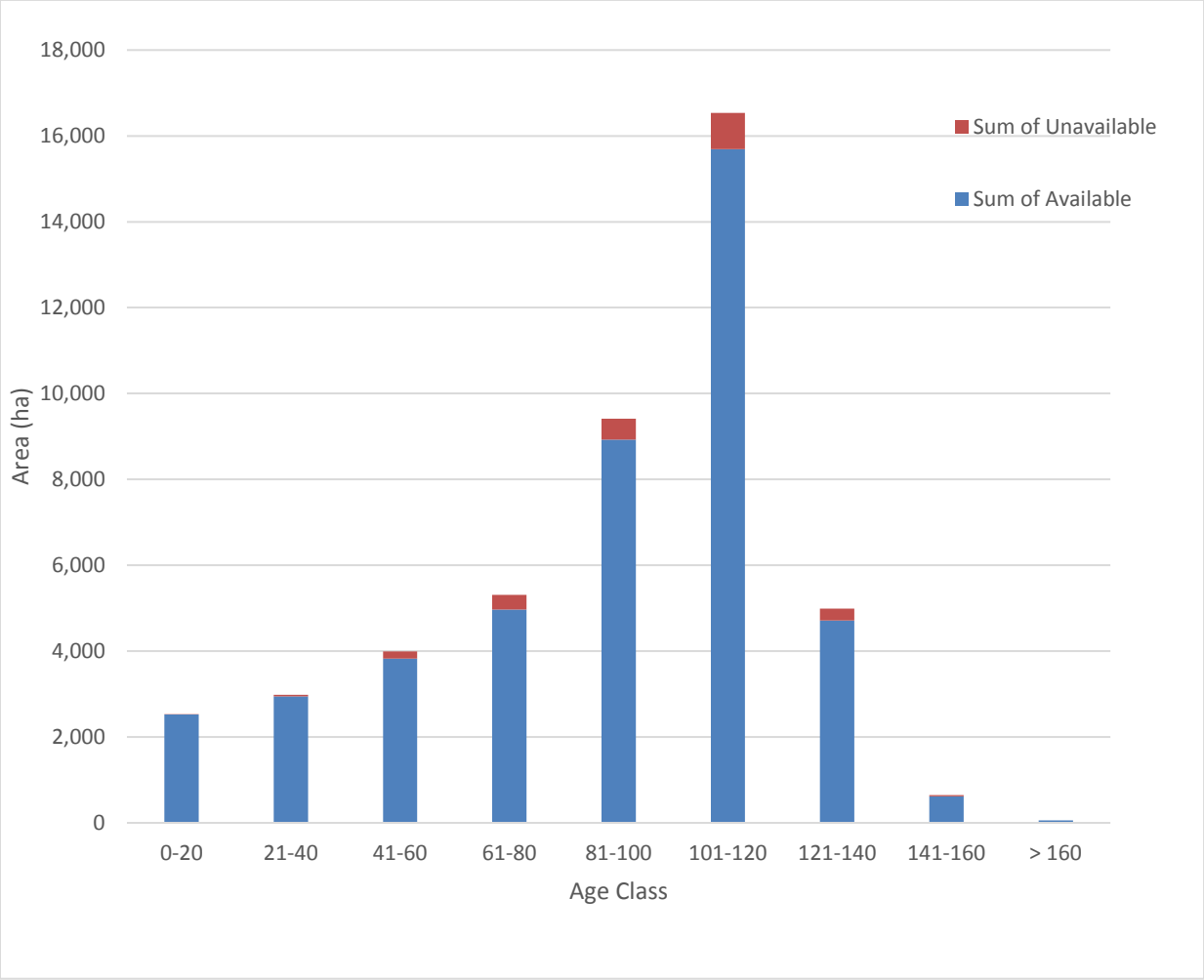


Figure 13 Summary of the Managed Crown Productive Forest for the SF Forest Unit (Area (ha) by Age Class)

Figure 14 shows the summary of the Hardwood Shelterwood (HDUS1) area (13,705 hectares) detailed in table FMP-3. A total of 616 hectares (4%) of the forest unit is classified as unavailable for harvest and 13,705 hectares (96%) of the forest is classified as available for harvest on the TMU.

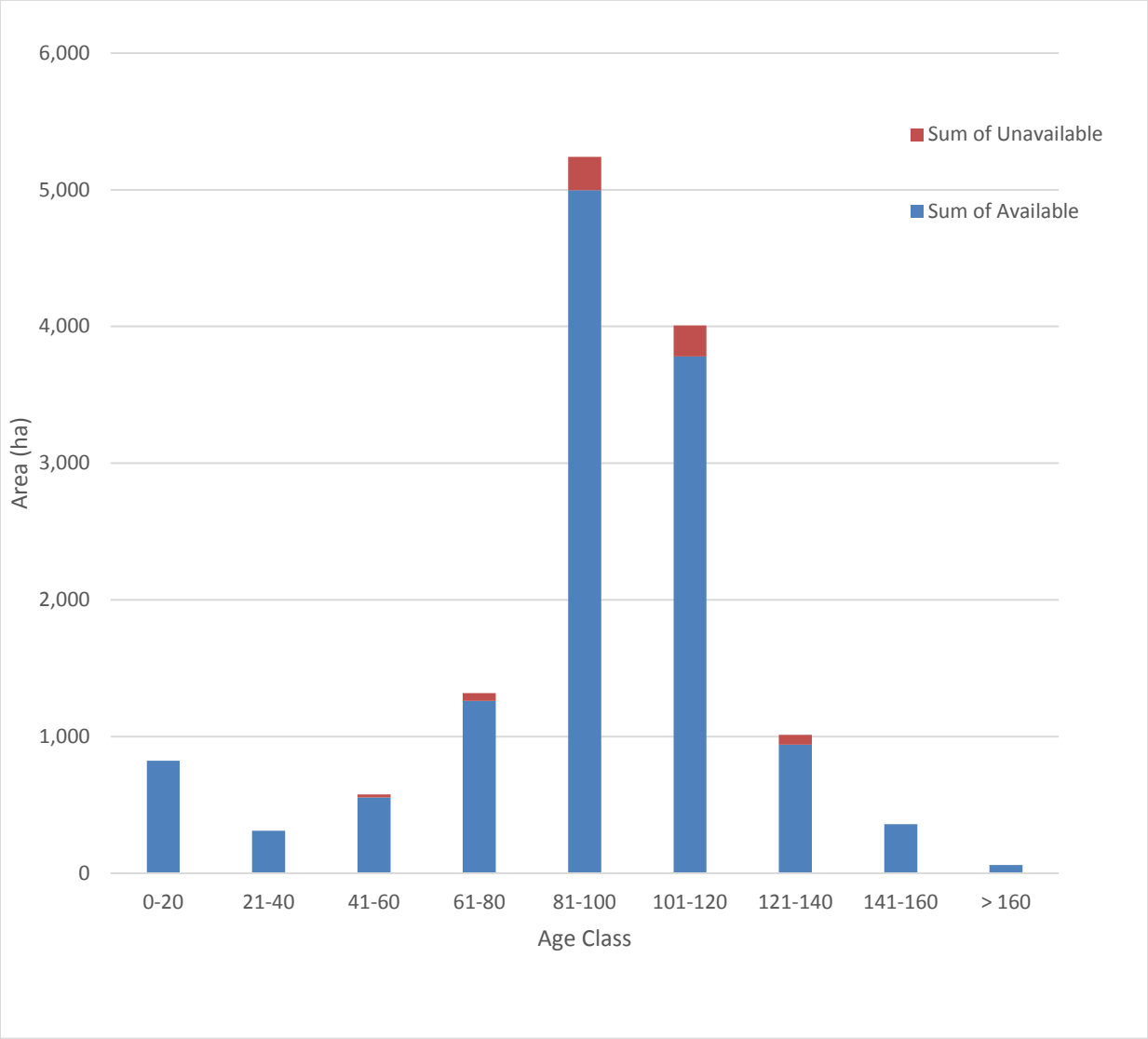


Figure 14 Summary of the Managed Crown Productive Forest for the HDUS1 Forest Unit (Area (ha) by Age Class)

Figure 15 shows the summary of the Mixedwood (MWCC) area (70,796 hectares) detailed in table FMP-3. A total of 3,663 hectares (5%) of the forest unit is classified as unavailable for harvest and 67,133 hectares (95%) of the forest is classified as available for harvest on the TMU.

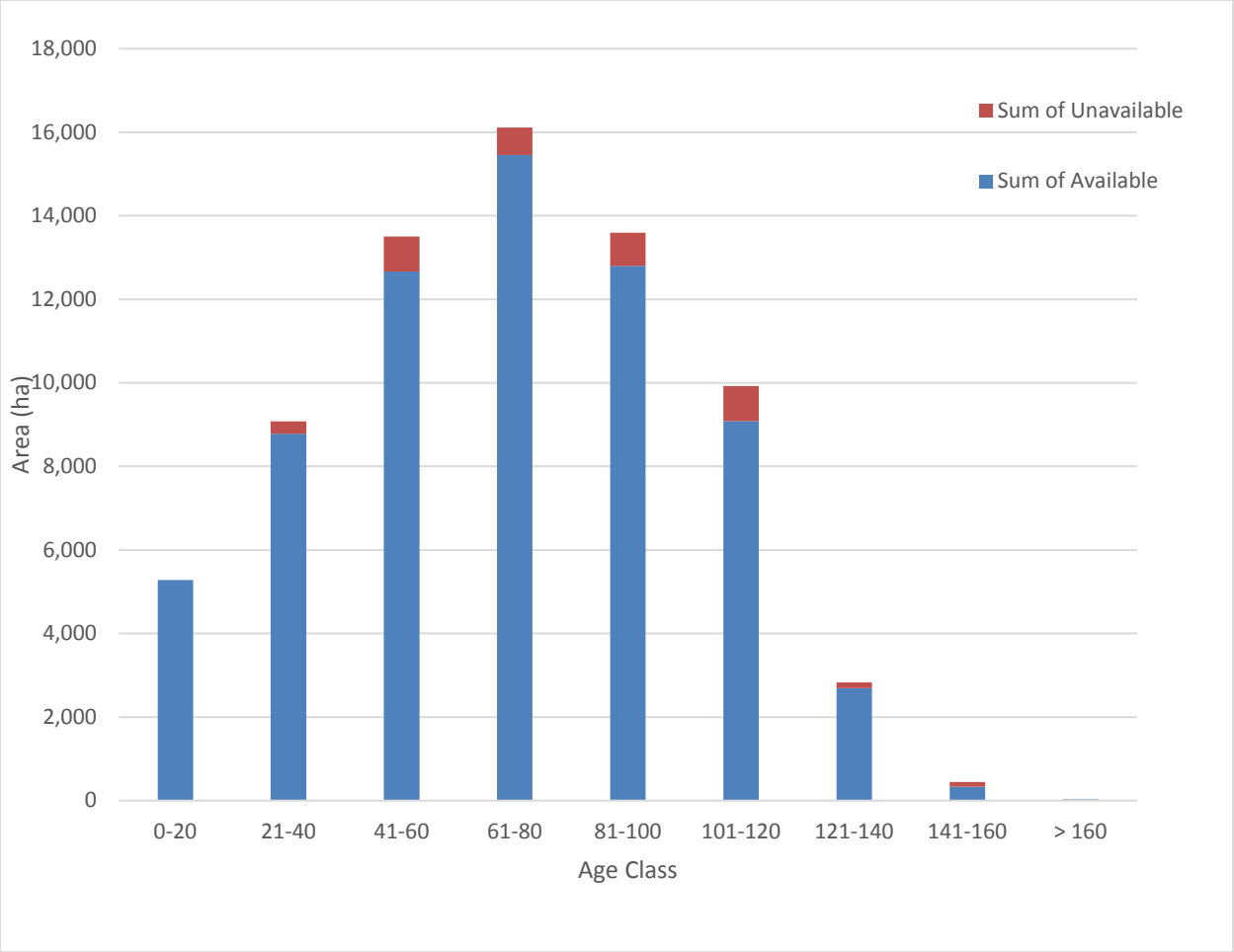


Figure 15 Summary of the Managed Crown Productive Forest for the MWCC Forest Unit (Area (ha) by Age Class)

Figure 16 shows the summary of the White Birch (BW) area (31,180 hectares) detailed in table FMP-3. A total of 1,981 hectares (6%) of the forest unit is classified as unavailable for harvest and 29,199 hectares (94%) of the forest is classified as available for harvest on the TMU.

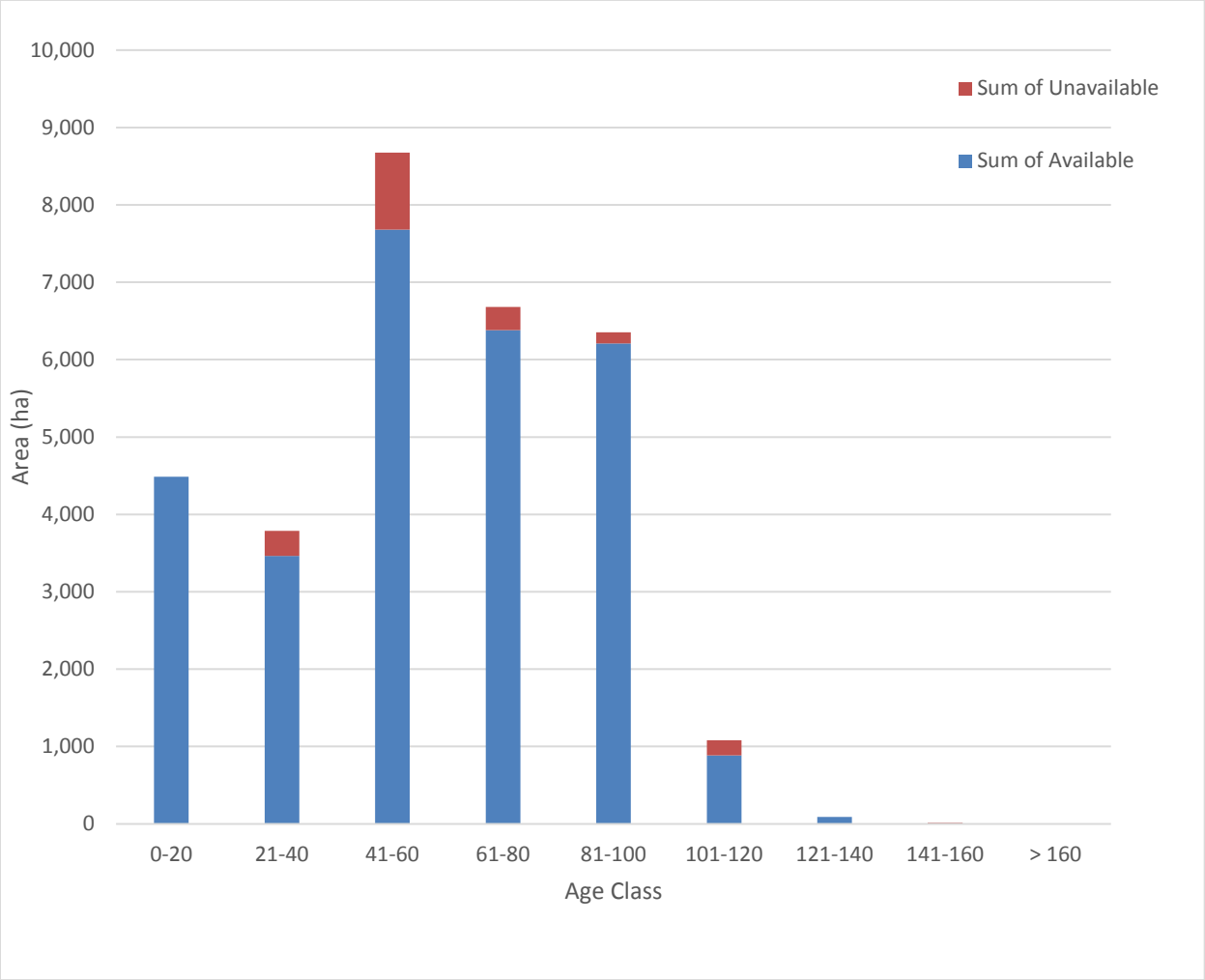


Figure 16 Summary of the Managed Crown Productive Forest for the BW Forest Unit (Area (ha) by Age Class)

Figure 17 shows the summary of the Poplar (PO) area (14,592 hectares) detailed in table FMP-3. A total of 385 hectares (3%) of the forest unit is classified as unavailable for harvest and 14,206 hectares (97%) of the forest is classified as available for harvest on the TMU.

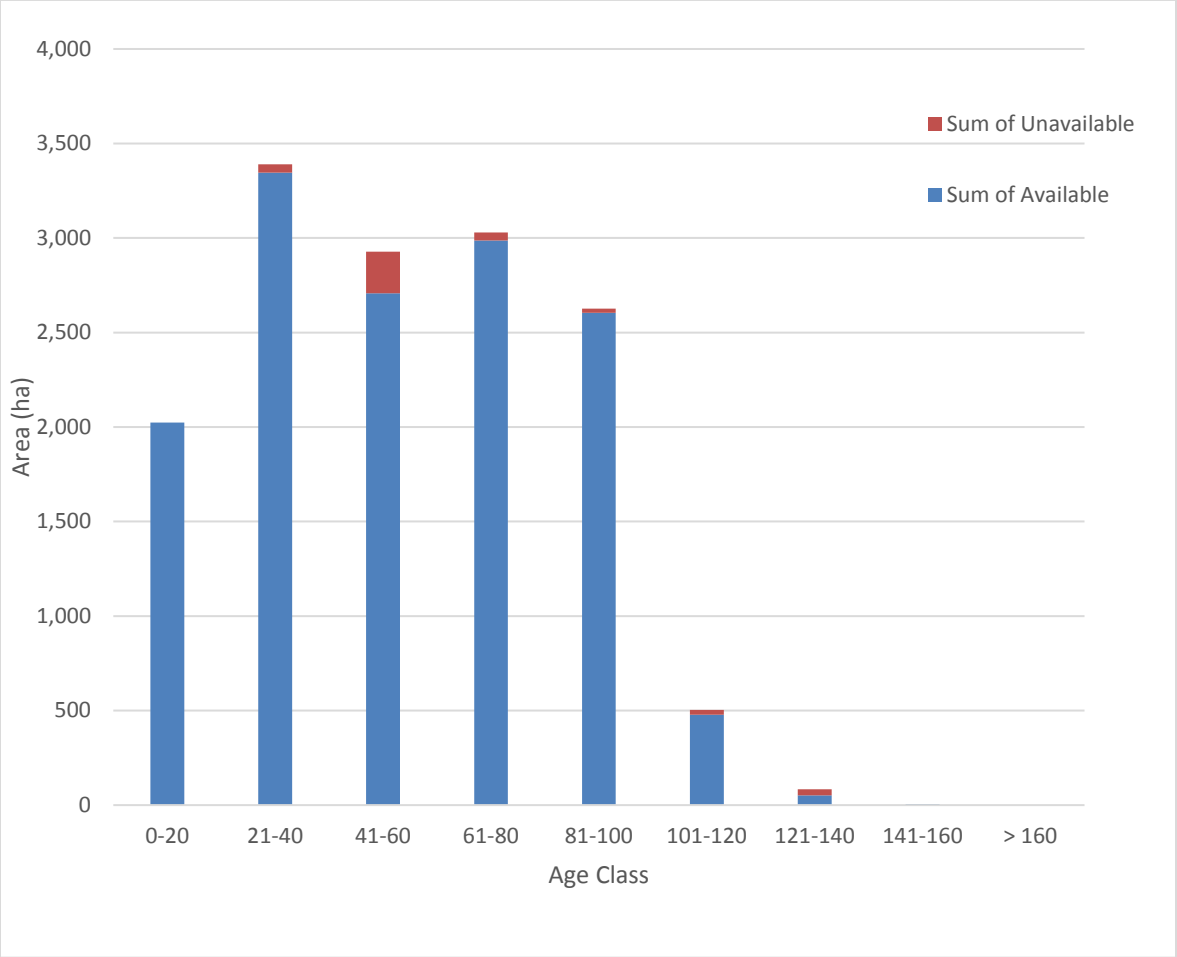


Figure 17 Summary of the Managed Crown Productive Forest for the PO Forest Unit (Area (ha) by Age Class)

Figure 18 shows the summary of the Mixedwood Shelterwood (MWUS) area (25,177 hectares) detailed in table FMP-3. A total of 1,898 hectares (8%) of the forest unit is classified as unavailable for harvest and 23,279 hectares (92%) of the forest is classified as available for harvest on the TMU.

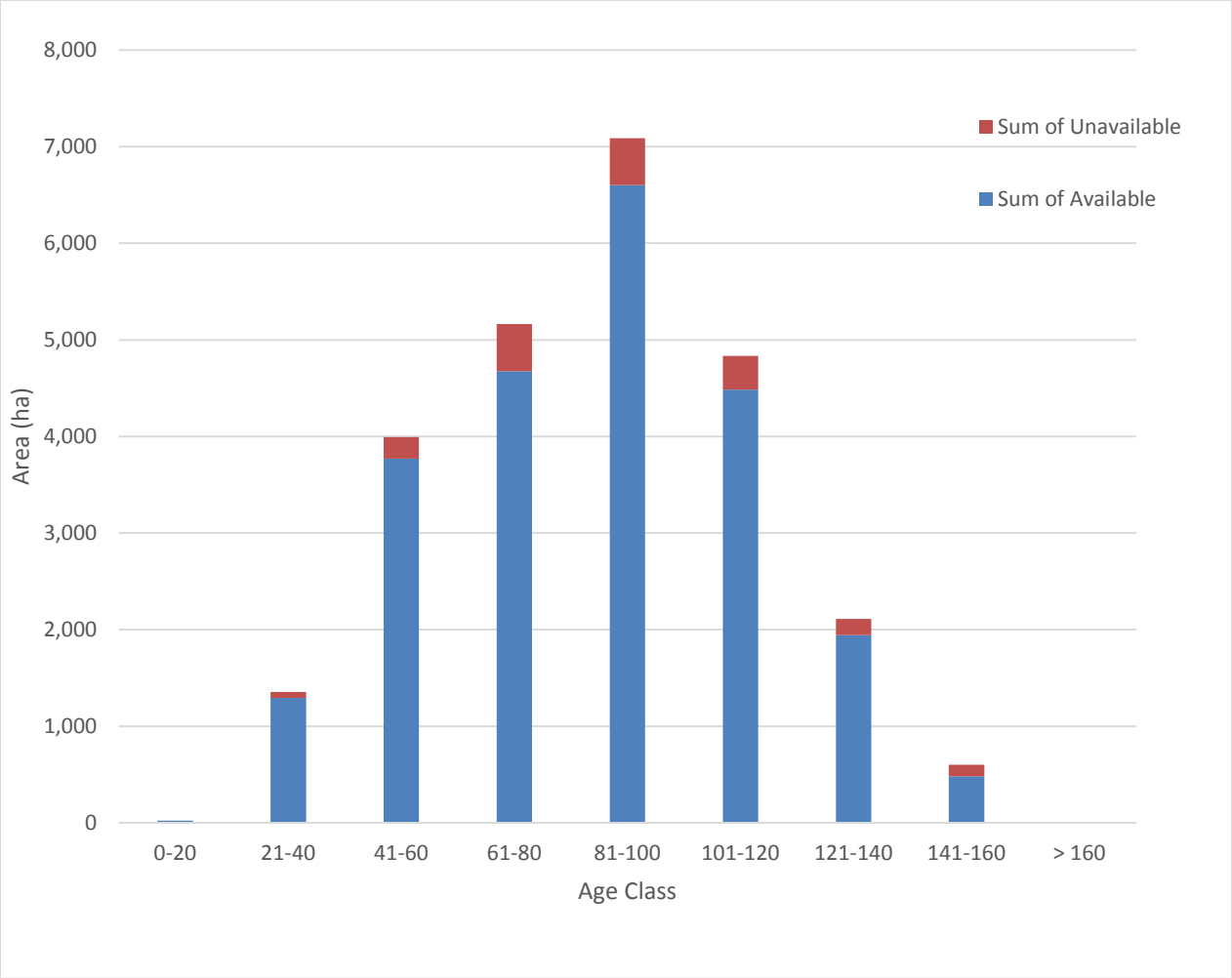


Figure 18 Summary of the Managed Crown Productive Forest for the MWUS Forest Unit (Area (ha) by Age Class)

Figure 19 shows the summary of the total Managed Crown Productive Forest (340,792 hectares) detailed in table FMP-3. A total of 20,476 hectares (6%) of the forest management unit is classified as unavailable for harvest and 320,317 hectares (94%) of the forest management unit is classified as available for forestry on the TMU.

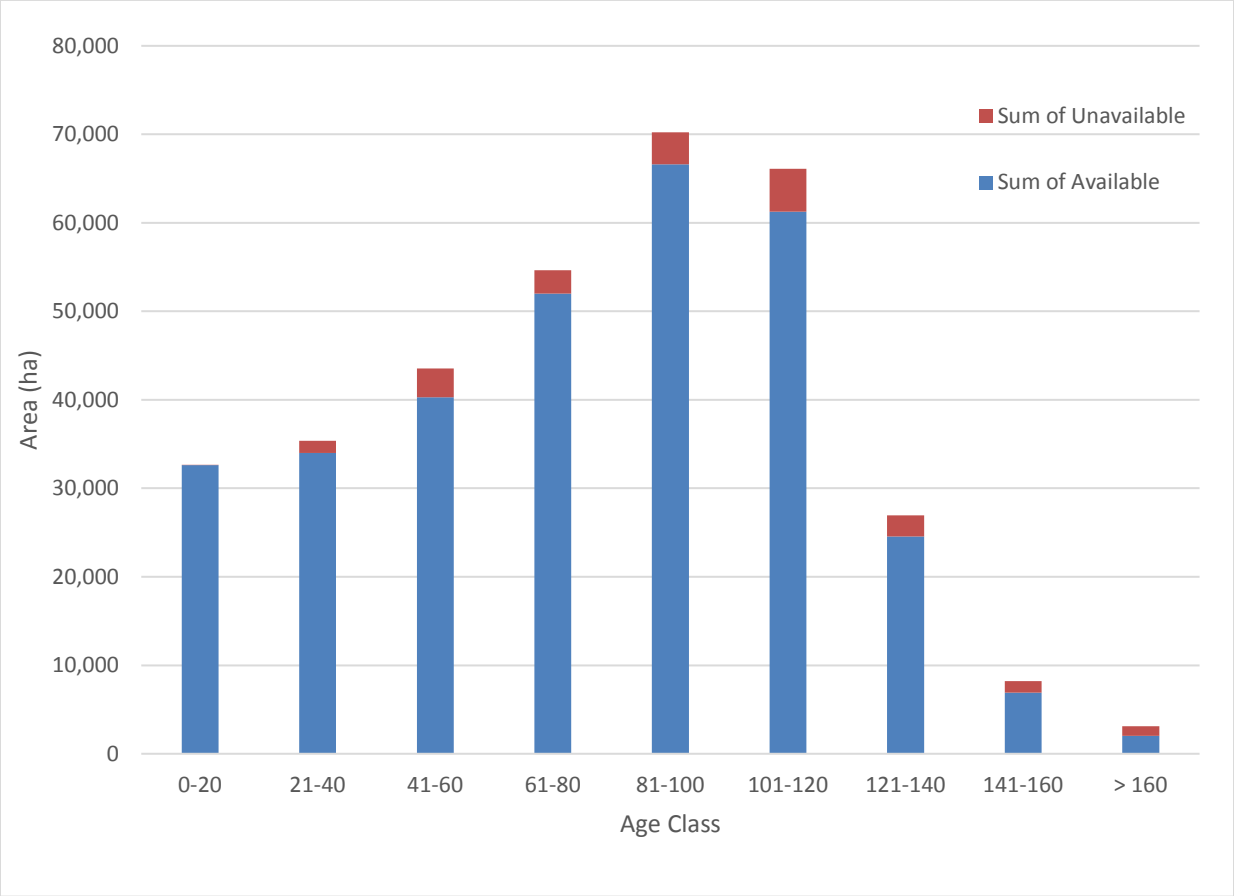


Figure 19 Summary of the Managed Crown Productive Forest for all Forest Units (Area (ha) by Age Class)

Figure 4 to Figure 19 provide the area summary of managed Crown productive forest per the FMPM. A summary of the unmanaged and managed Crown productive forest is provided in Figure 20.

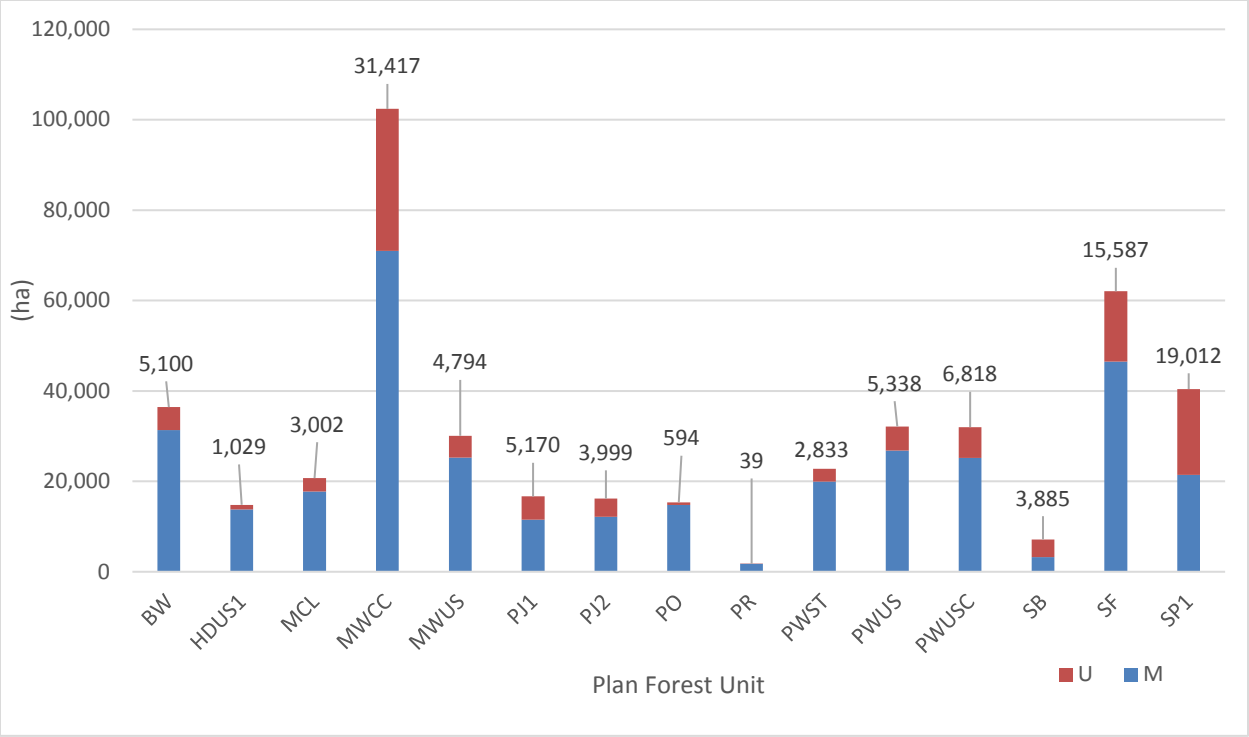


Figure 20 Summary of the Managed (M) and Unmanaged (U) Crown productive forest (Area (ha) by Forest Unit)

The unmanaged Crown productive forest on the management unit totals 108,616 hectares. Forest dynamics of the unmanaged Crown productive forest have considerable influence in this FMP. Refer to

Figure 21 to Figure 34 shows the forest unit age class structure of the unmanaged forest graphically.

Figure 21 shows the summary of unmanaged BW (5,100 hectares) Crown productive forest. This represents (4.7%) of the unmanaged and (1.1%) of the total Crown productive forest.

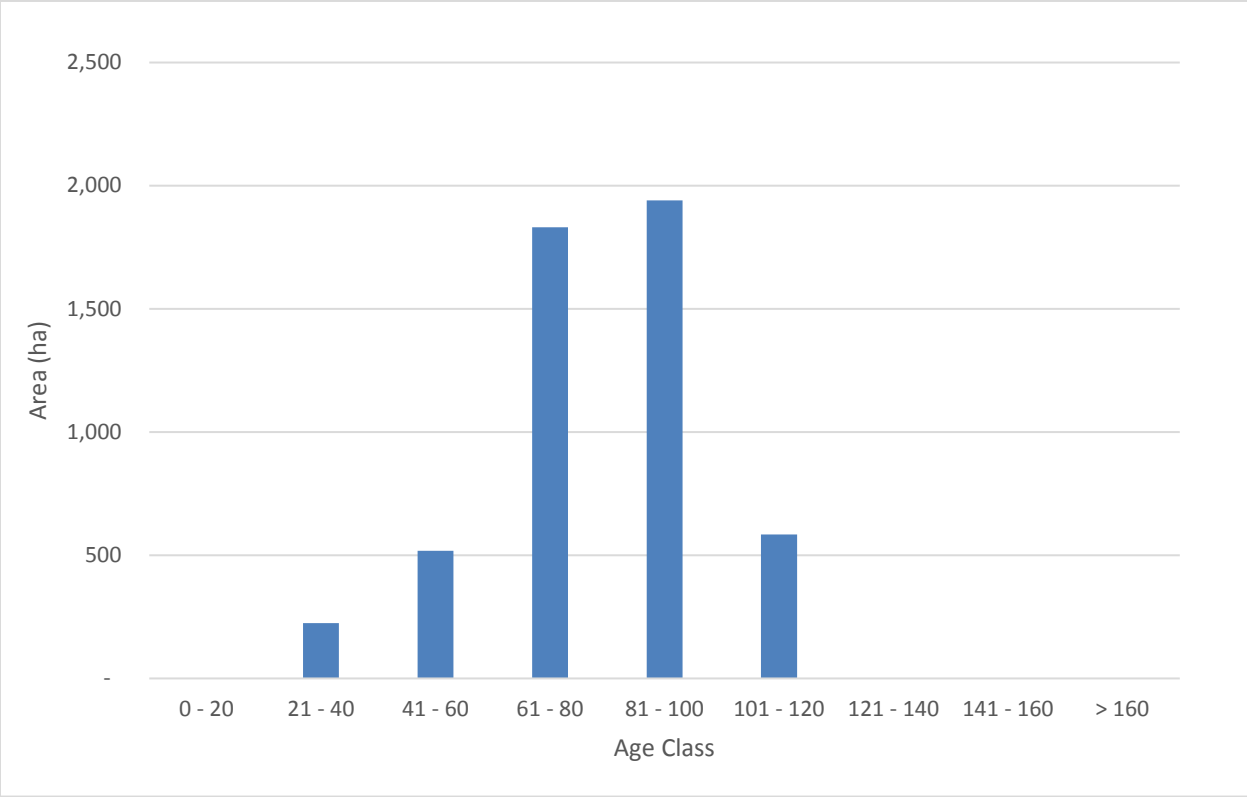


Figure 21 Summary of the Unmanaged Crown Productive Forest for the BW Forest Unit (Area (ha) by Age Class)

Figure 22 shows the summary of unmanaged HDUS1 (1,029 hectares) Crown productive forest. This represents (0.9 %) of the unmanaged and (0.2%) of the total Crown productive forest.

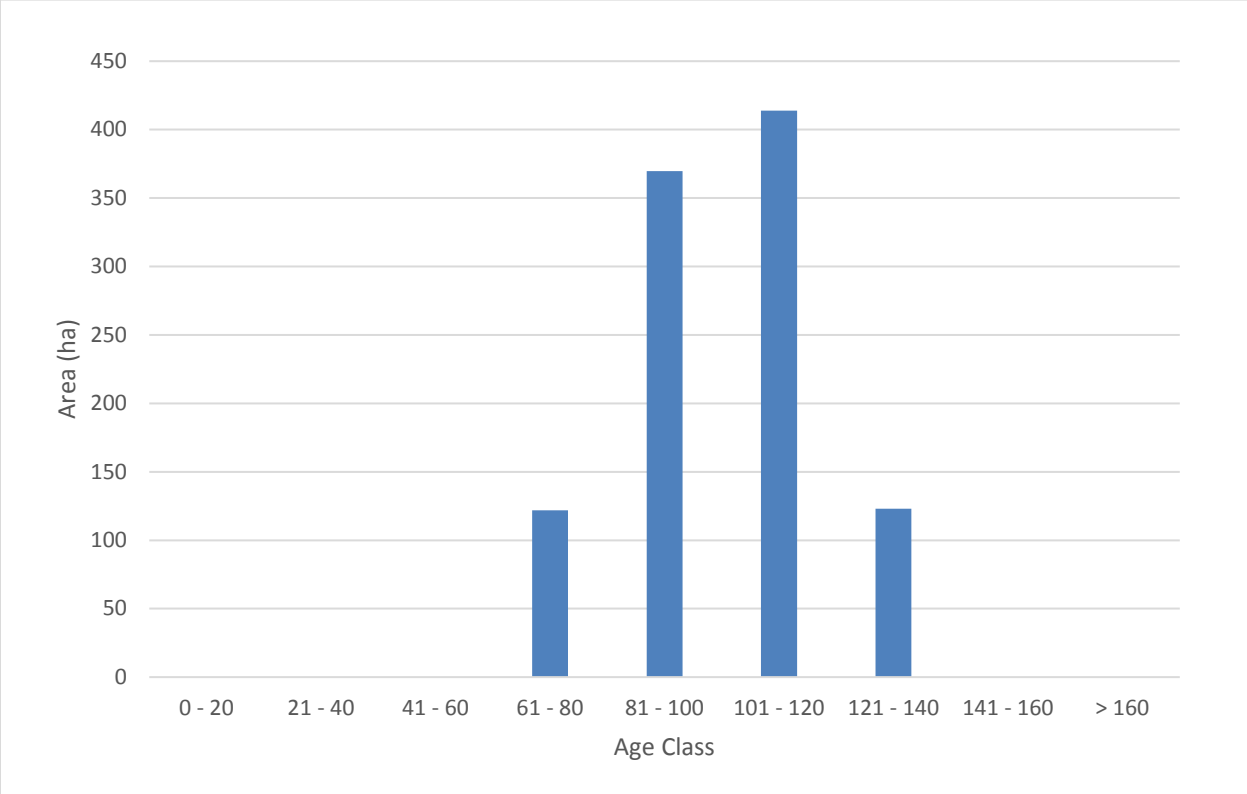


Figure 22 Summary of the Unmanaged Crown Productive Forest for the HDUS1 Forest Unit (Area (ha) by Age Class)

Figure 23 shows the summary of unmanaged MCL (3,002 hectares) Crown productive forest. This represents (2.8%) of the unmanaged and (0.7%) of the total Crown productive forest.

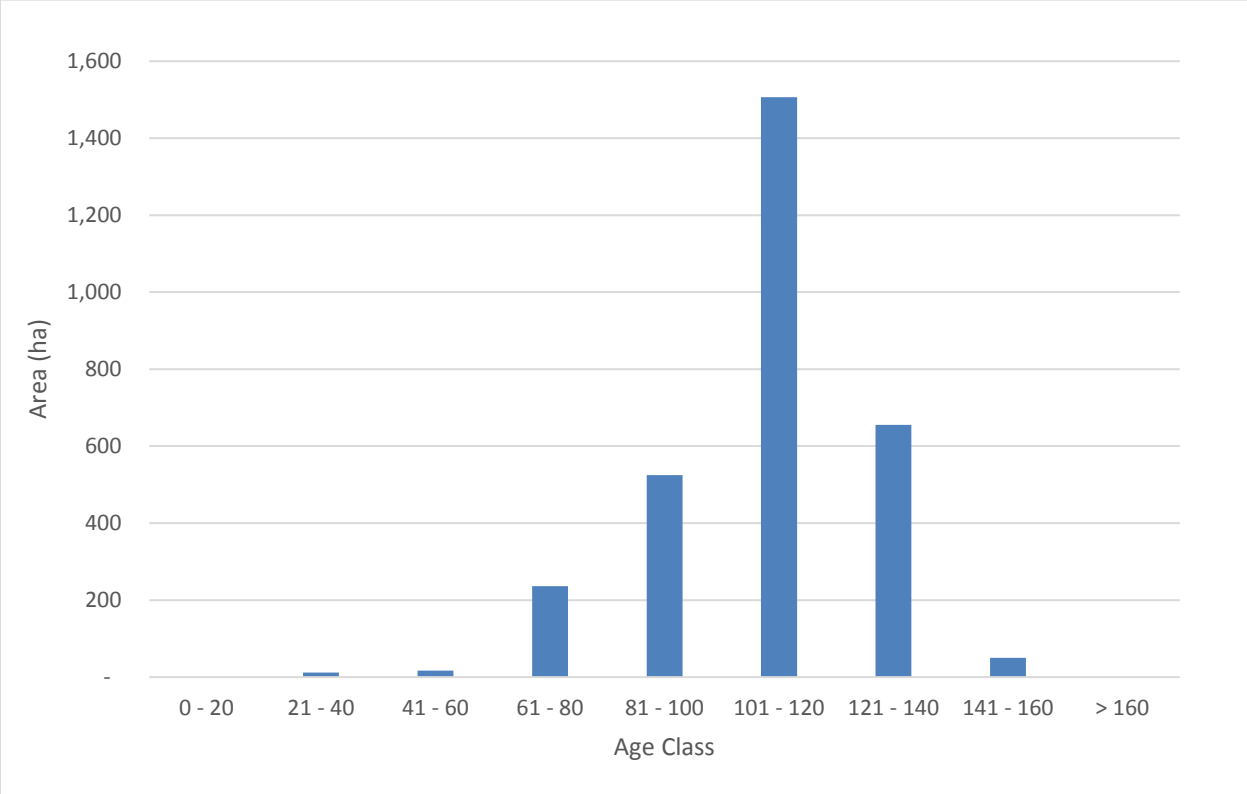


Figure 23 Summary of the Unmanaged Crown Productive Forest for the MCL Forest Unit (Area (ha) by Age Class)

Figure 24 shows the summary of unmanaged MWCC (31,417 hectares) Crown productive forest. This represents (28.9%) of the unmanaged and (7.0%) of the total Crown productive forest.

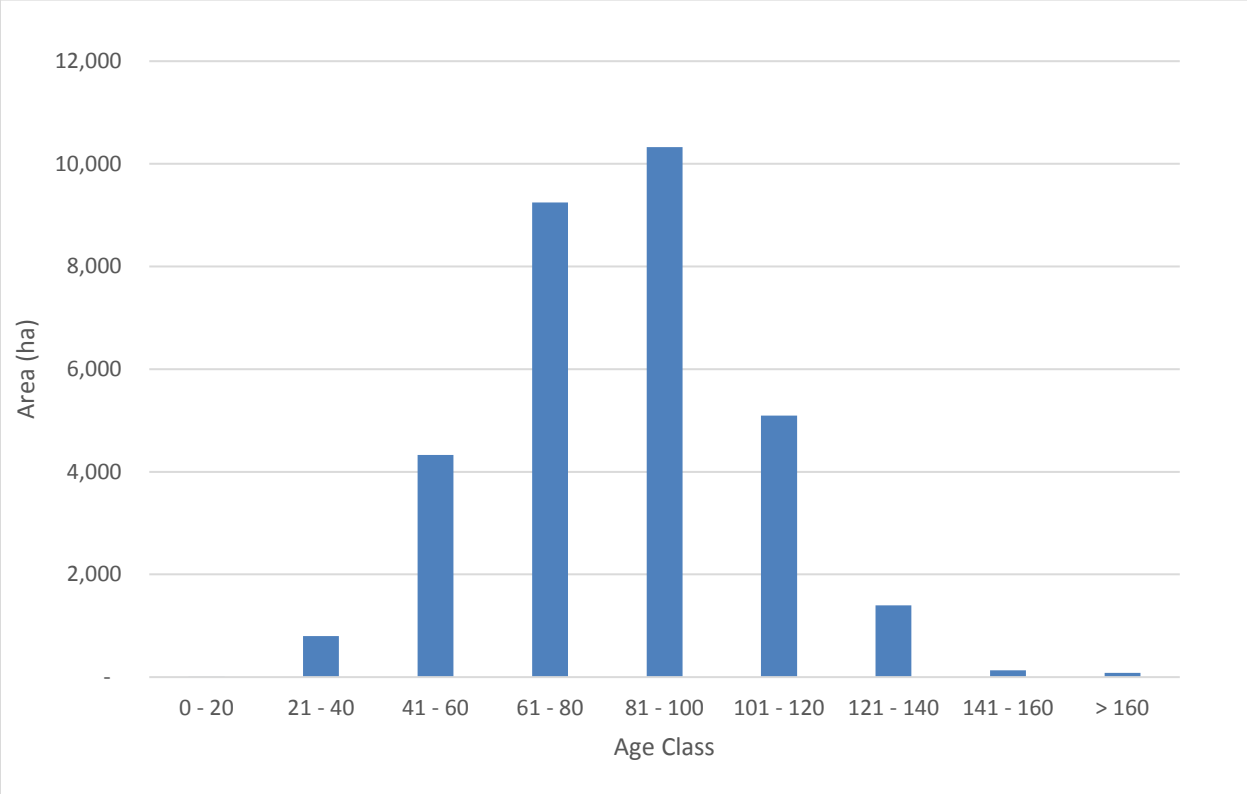


Figure 24 Summary of the Unmanaged Crown Productive Forest for the MWCC Forest Unit (Area (ha) by Age Class)

Figure 25 shows the summary of unmanaged PJ1 (5,170 hectares) Crown productive forest. This represents (4.8 %) of the unmanaged and (1.1 %) of the total Crown productive forest.

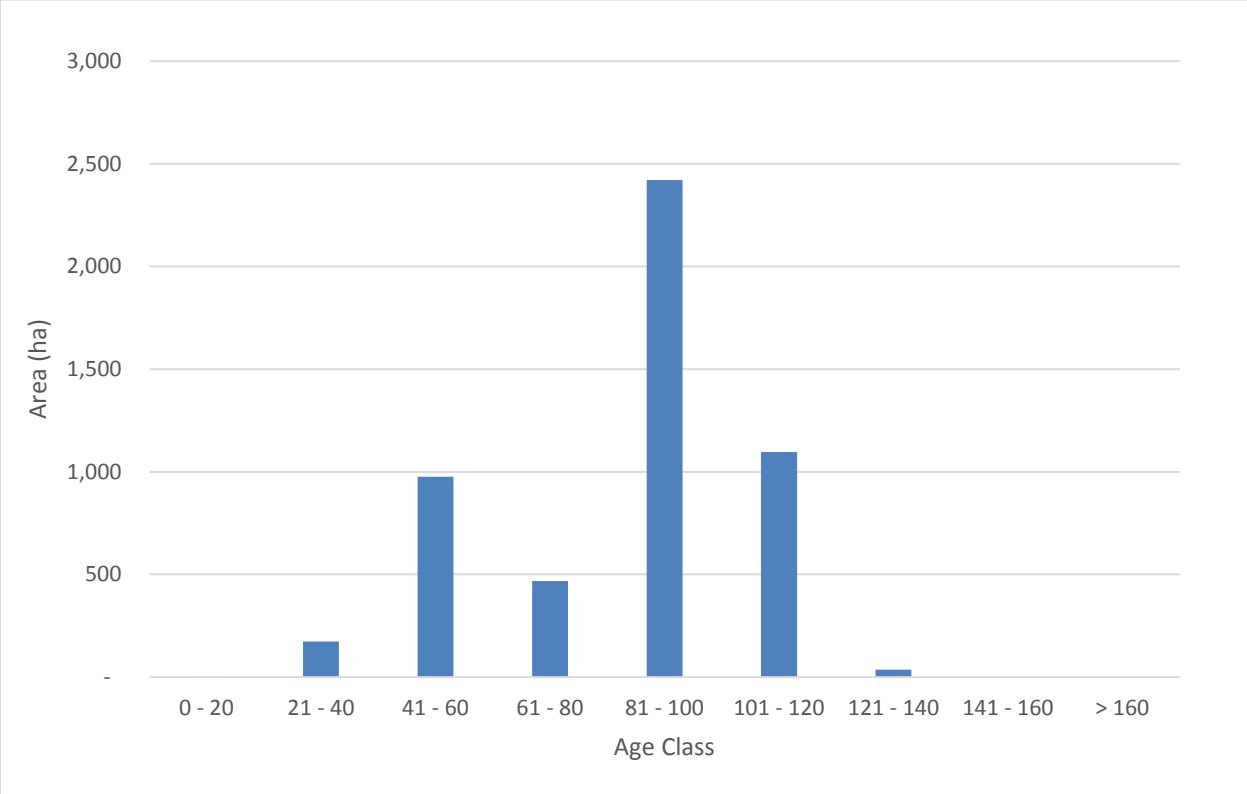


Figure 25 Summary of the Unmanaged Crown Productive Forest for the PJ1 Forest Unit (Area (ha) by Age Class)

Figure 26 shows the summary of unmanaged PJ2 (3,999 hectares) Crown productive forest. This represents (3.7%) of the unmanaged and (0.9 %) of the total Crown productive forest.

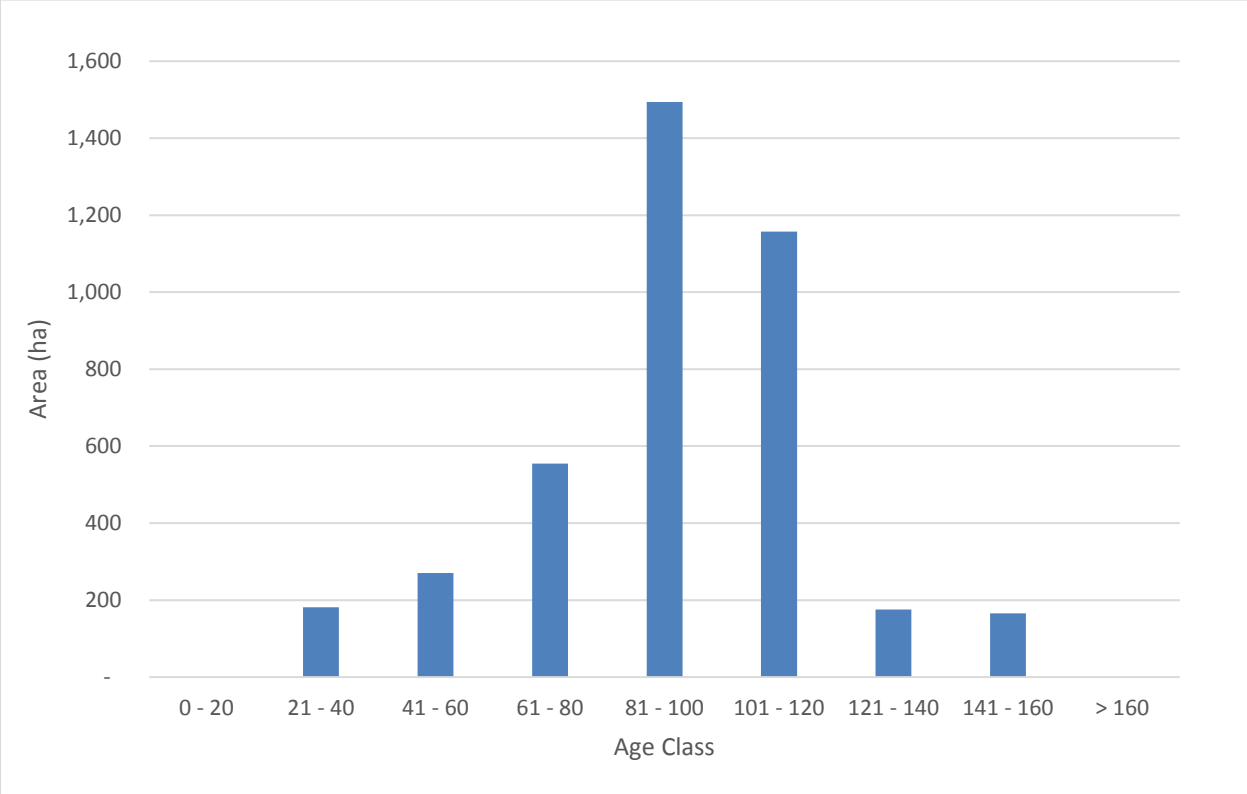


Figure 26 Summary of the Unmanaged Crown Productive Forest for the PJ2 Forest Unit (Area (ha) by Age Class)

Figure 27 shows the summary of unmanaged PO (594 hectares) Crown productive forest. This represents (0.5 %) of the unmanaged and (0.1%) of the total Crown productive forest.

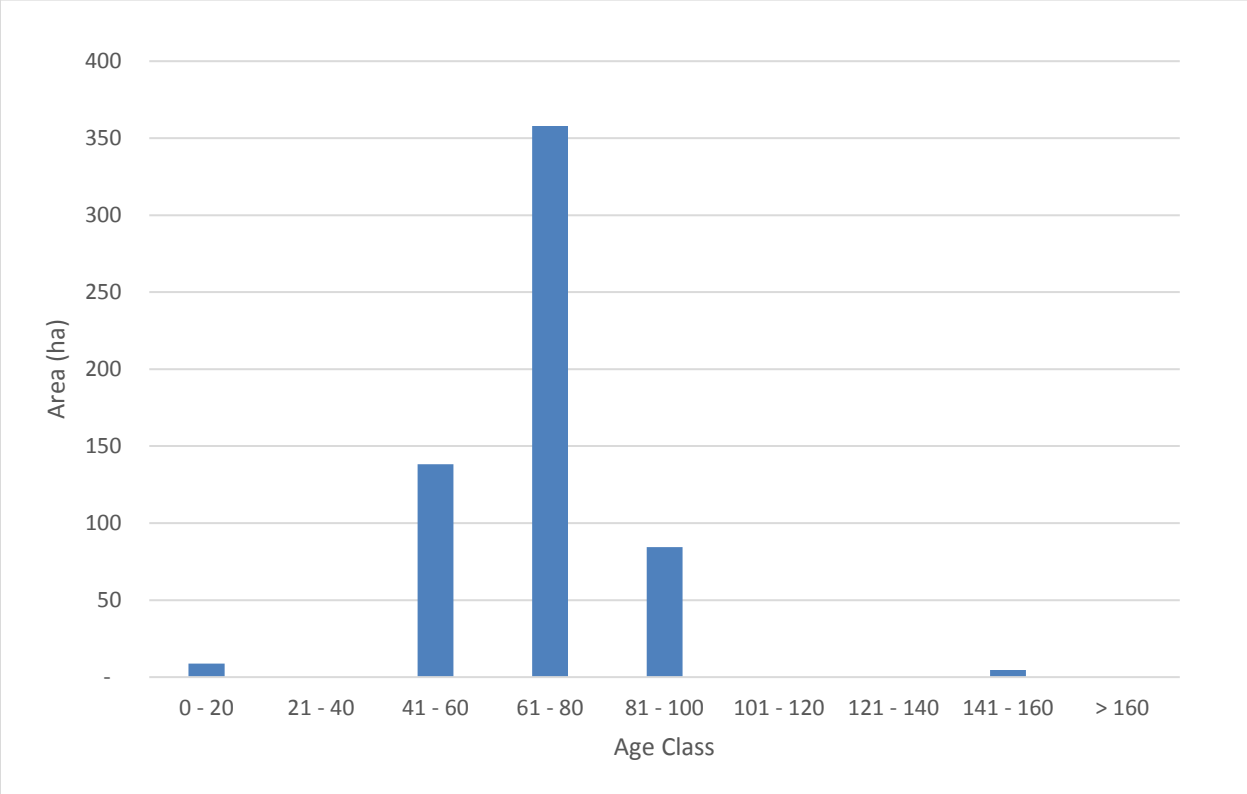


Figure 27 Summary of the Unmanaged Crown Productive Forest for the PO Forest Unit (Area (ha) by Age Class)

Figure 28 shows the summary of unmanaged PR (39 hectares) Crown productive forest. This represents (0.04 %) of the unmanaged and (0.01 %) of the total Crown productive forest.

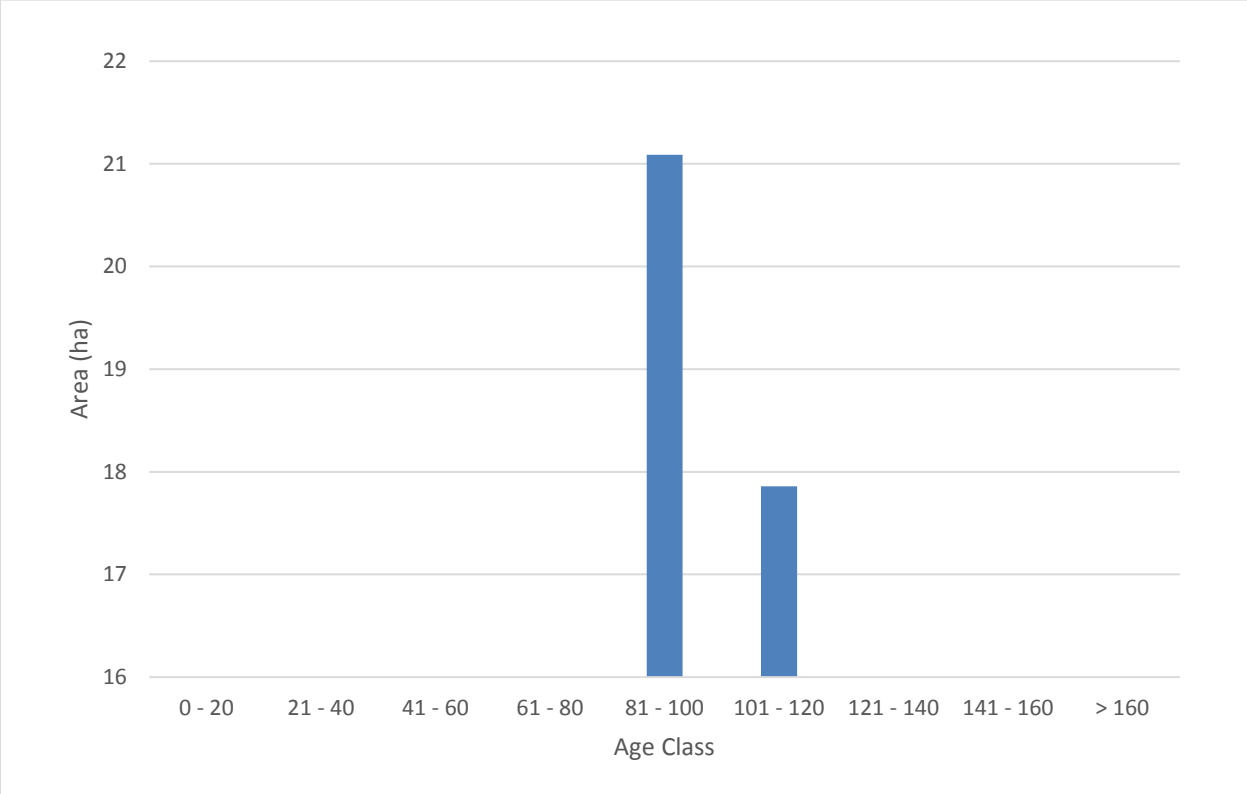


Figure 28 Summary of the Unmanaged Crown Productive Forest for the PR Forest Unit (Area (ha) by Age Class)

Figure 29 shows the summary of unmanaged PWST (2,833 hectares) Crown productive forest. This represents (2.6%) of the unmanaged and (0.6%) of the total Crown productive forest.

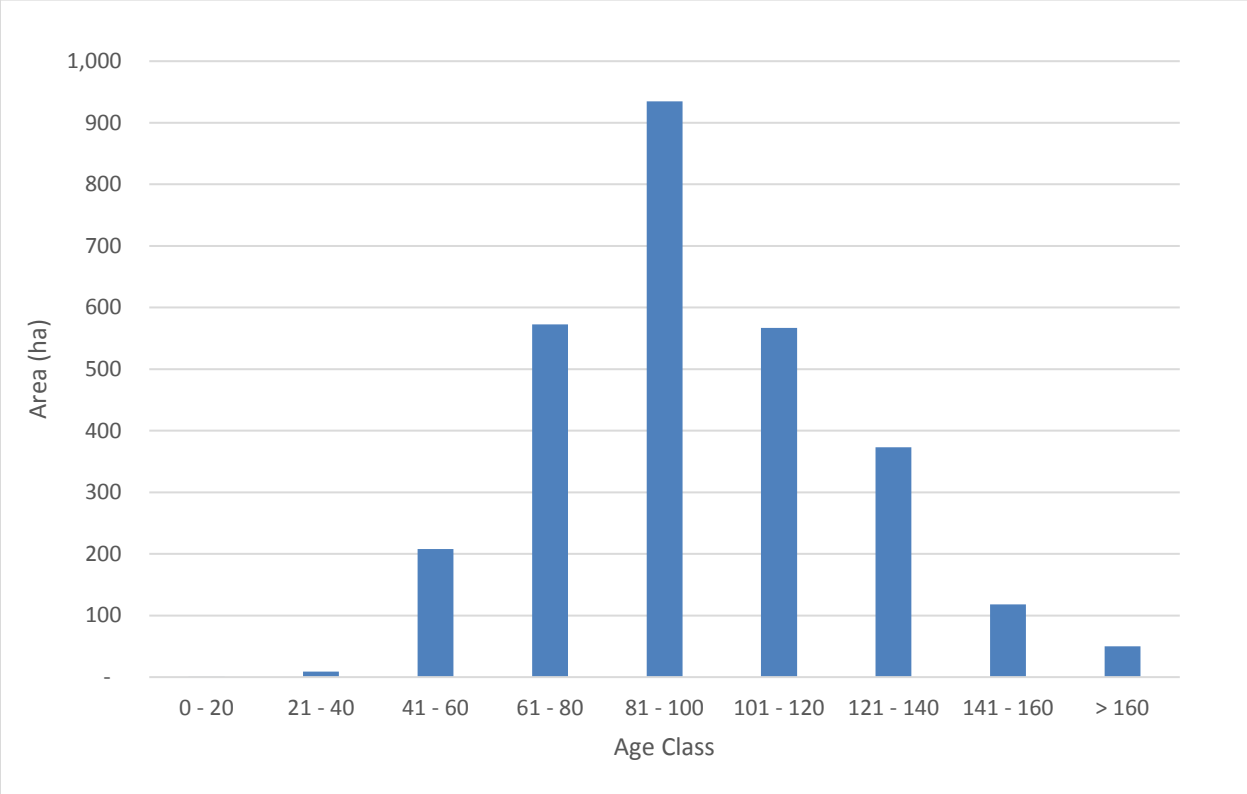


Figure 29 Summary of the Unmanaged Crown Productive Forest for the PWST Forest Unit (Area (ha) by Age Class)

Figure 30 shows the summary of unmanaged PWUS (5,338 hectares) Crown productive forest. This represents (6.3%) of the unmanaged and (1.5%) of the total Crown productive forest.

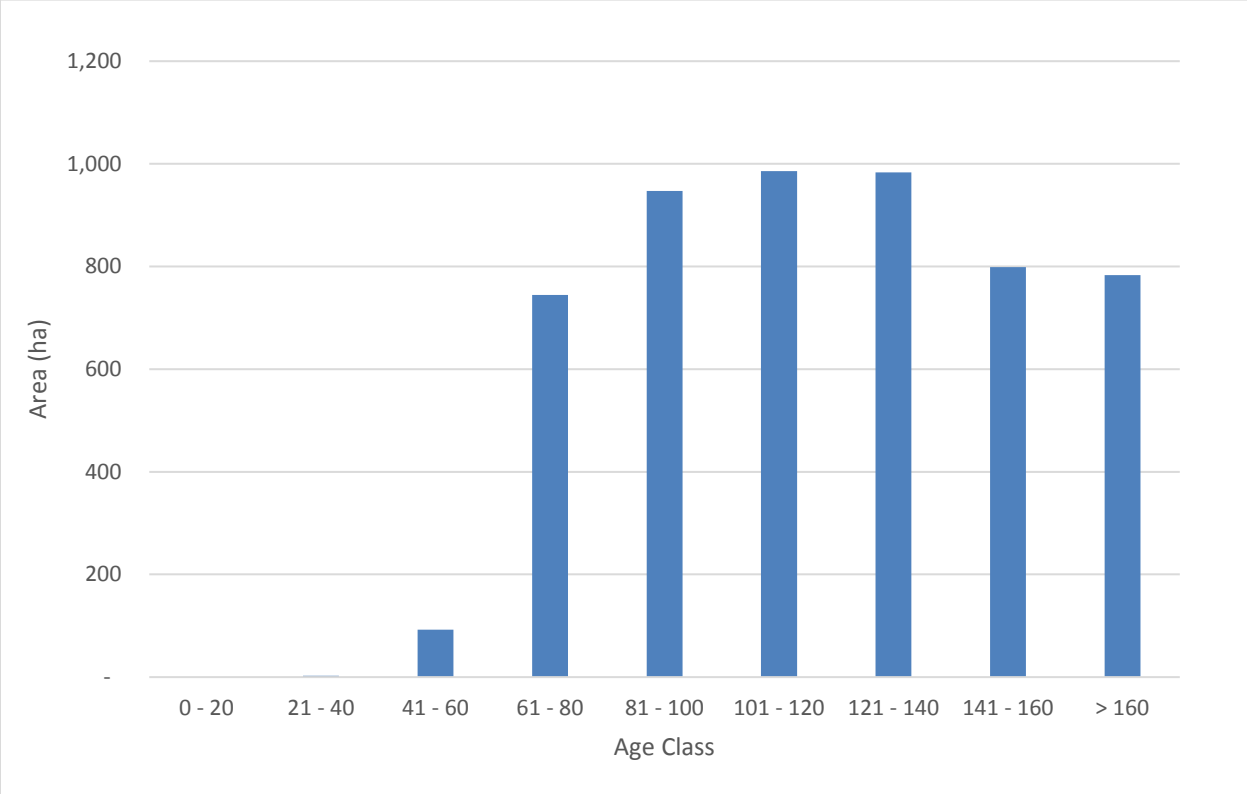


Figure 30 Summary of the Unmanaged Crown Productive Forest for the PWUS Forest Unit (Area (ha) by Age Class)

Figure 31 shows the summary of unmanaged (6,818 hectares) Crown productive forest. This represents (6.3%) of the unmanaged and (1.5 %) of the total Crown productive forest.

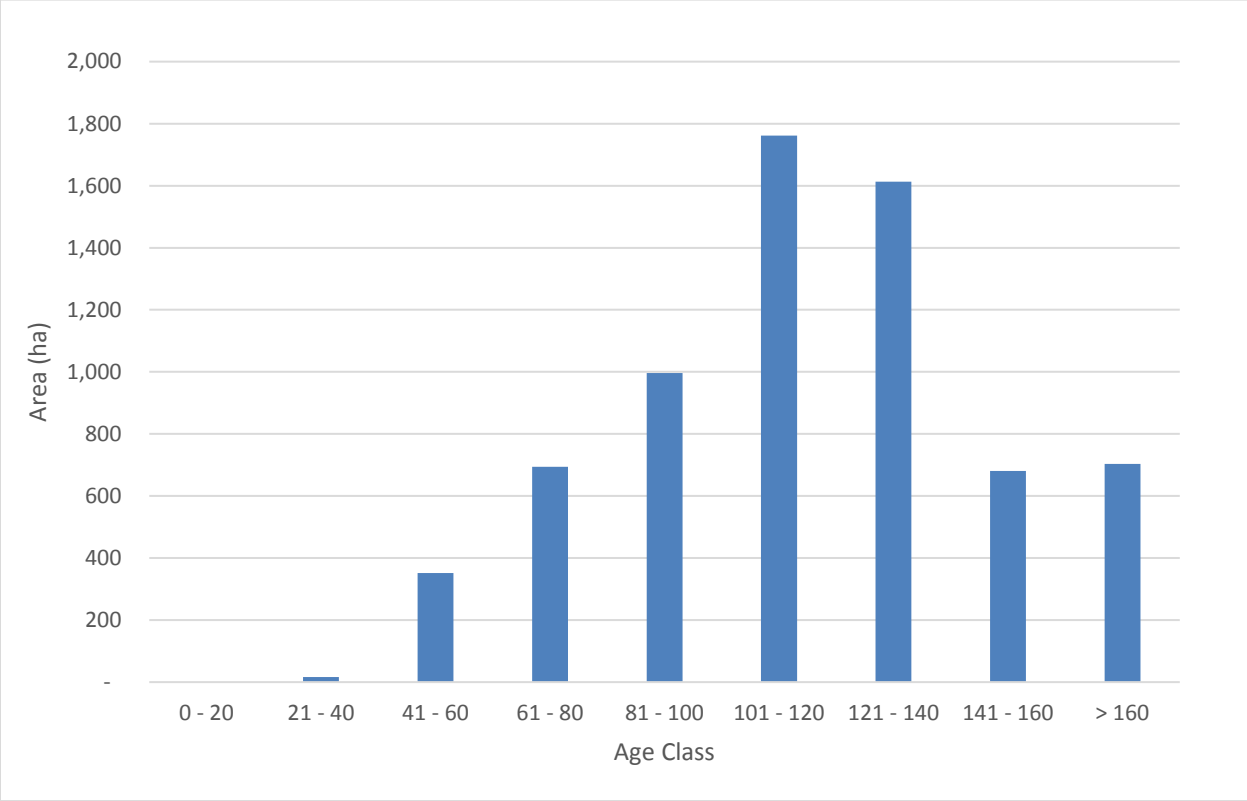


Figure 31 Summary of the Unmanaged Crown Productive Forest for the PWUSC Forest Unit (Area (ha) by Age Class)

Figure 32 shows the summary of unmanaged SB (3,885 hectares) Crown productive forest. This represents (3.6%) of the unmanaged and (0.9%) of the total Crown productive forest.

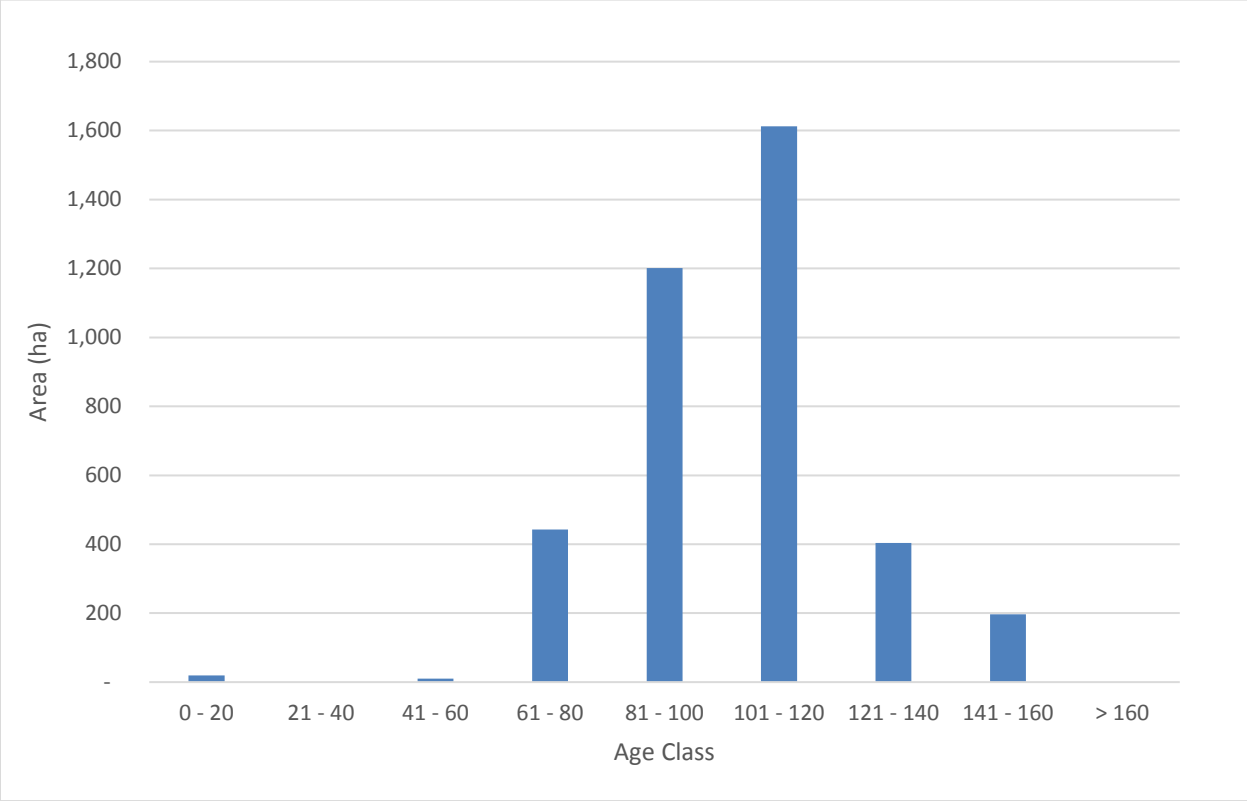


Figure 32 Summary of the Unmanaged Crown Productive Forest for the SB Forest Unit (Area (ha) by Age Class)

Figure 33 shows the summary of unmanaged SF (15,587 hectares) Crown productive forest. Crown productive forest. This represents (14.4%) of the unmanaged and (3.5%) of the total Crown productive forest.

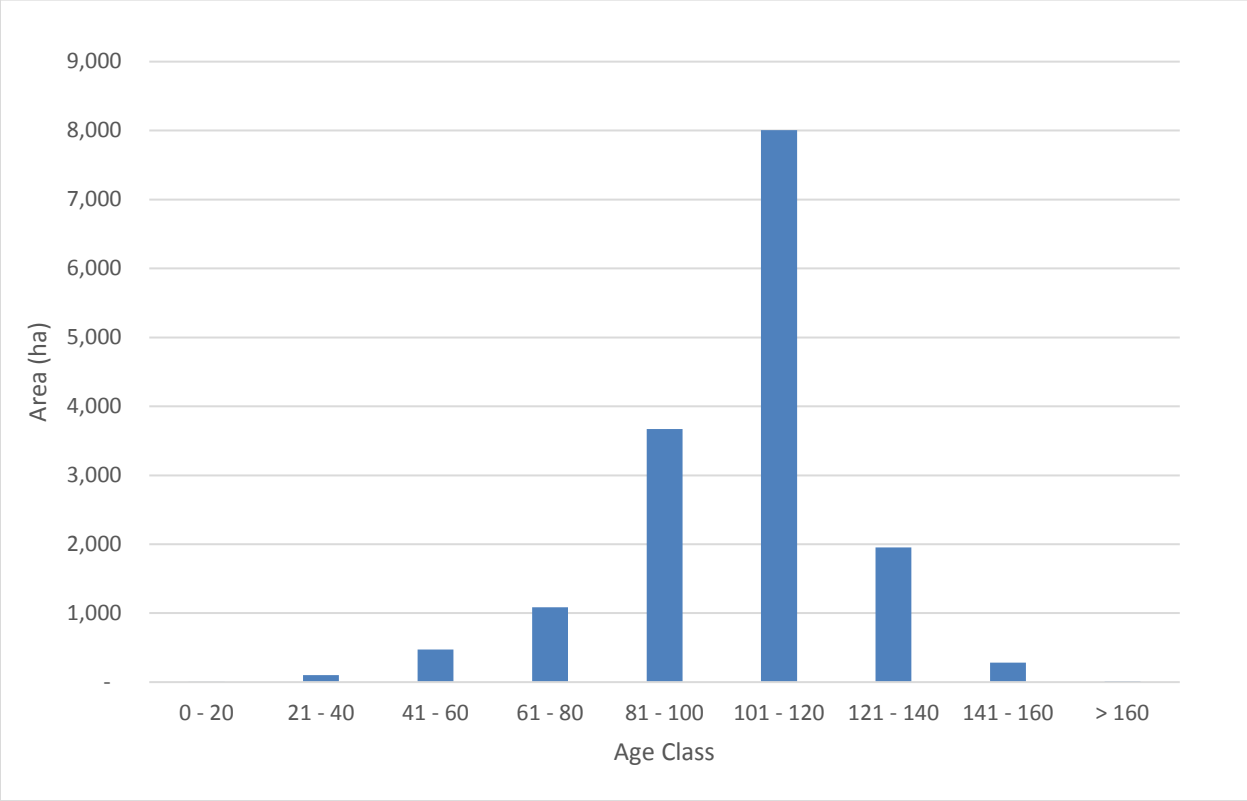


Figure 33 Summary of the Unmanaged Crown Productive Fores for the SF forest unit

Figure 34 shows the summary of unmanaged SP (19,012 hectares) Crown productive forest. Crown productive forest. This represents (17.5 %) of the unmanaged and (4.2%) of the total Crown productive forest.

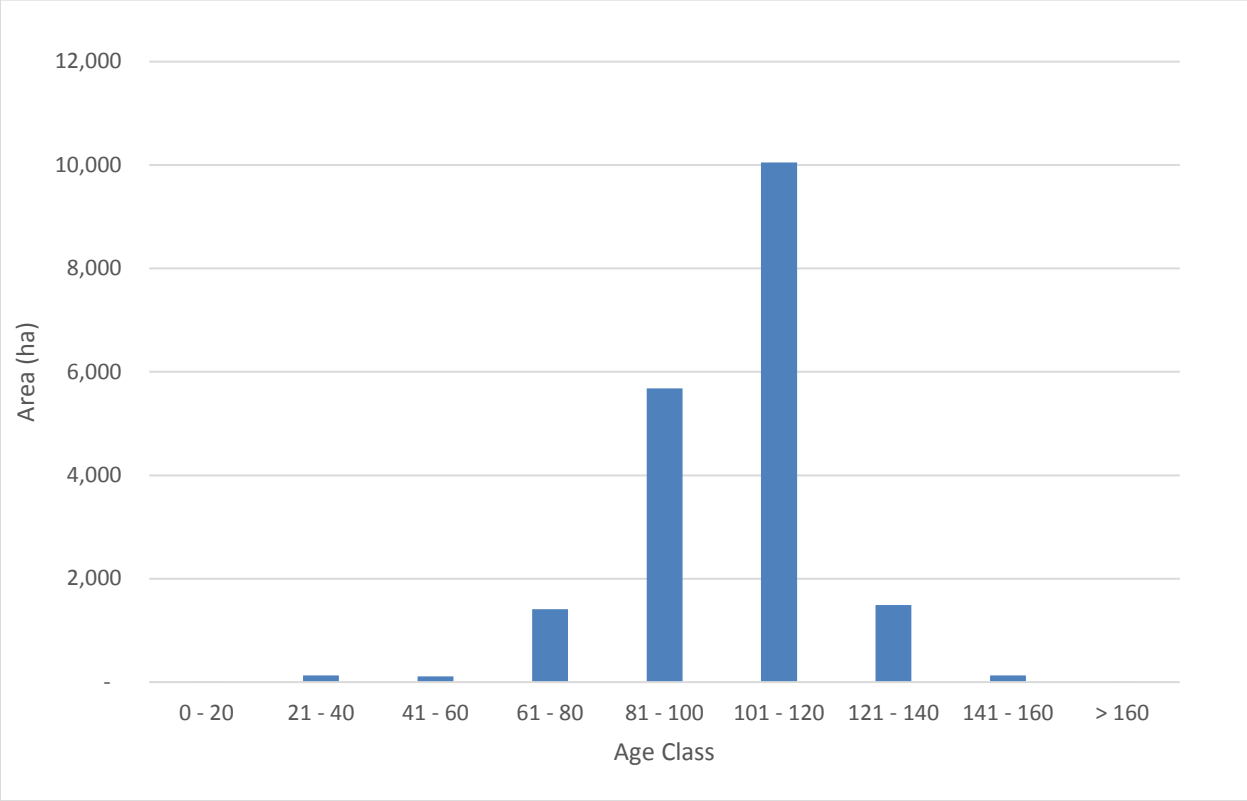


Figure 34 Summary of the Unmanaged Crown Productive Forest for the SP forest unit

2.1.3.2 Forest Landscape Classes, Composition, Structure and Pattern

This FMP is being prepared using the approved landscape guide for Great Lakes St. Lawrence Forest landscapes (Landscape Guide). The objective of the Landscape Guide s is to conserve biodiversity in an effective and efficient manner through landscape-level approaches, thereby contributing to the achievement of forest sustainability.

Landscape classes are developed according to how forests function as habitat. The Landscape classes are the fundamental coarse filter assessment units and express meaningful differences in wildlife use and are used to describe the current forest condition.

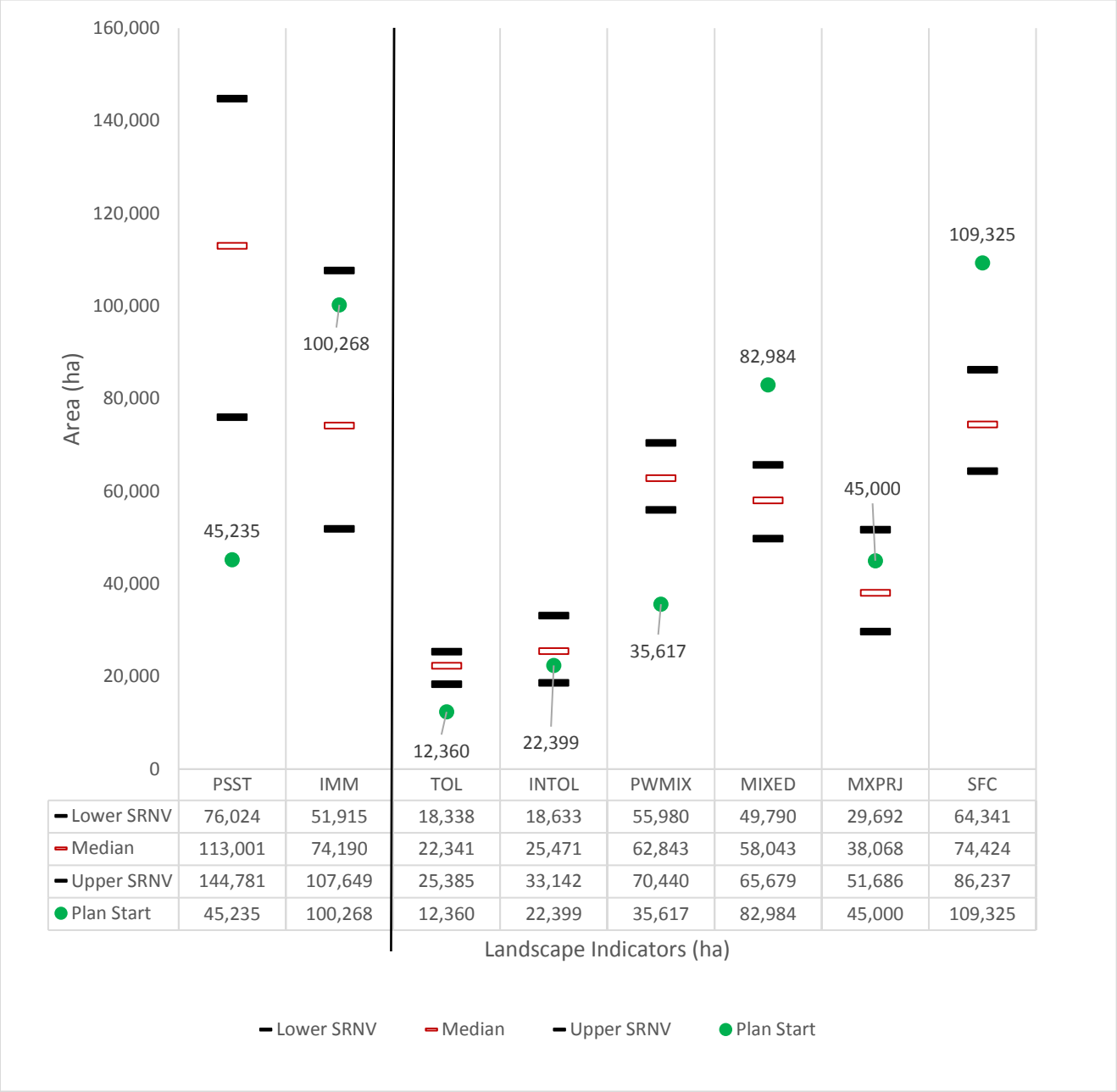
Based on this principle, the planning team incorporated recent science information sourced from the Landscape Guide into this FMP. The forest units and analysis units

are described above in Section 2.1.3.1 Forest Units are selected based on their compatibility with the landscape classes.

Table 15 in Section 3.3.1 of the Analysis Package found in Supplementary Documentation Section 6.1(b) – Analysis Package describes, in detail, the selected indicators from the matrix of the landscape guide for Great Lakes St. Lawrence Forest landscapes Pattern Classes used in the development of the FMP.

The objective of the Landscape Guide is to direct forest management activities to maintain or enhance natural landscape structure, composition and patterns that provide for the long-term health of forest ecosystems in an efficient and effective manner. The Ontario Landscape Tool (OLT) is a stand-alone application that provides a direct link to Landscape Guide indicators and contains routines which allow a comparison between existing or planned landscapes and textures. This is achieved through a comparison of the current levels of each indicator to the Simulated Range of Natural Variation (SRNV). The comparison of the forest current condition to the SRNV will set strategic direction which will direct forest management activities.

Figure 35 shows the summary of the landscape class area Indicators, plan start condition, and the Simulated Range of Natural Variation (SRNV). Currently the Spruce Fir-Cedar (SFC) and Mixedwood (MIXED) landscape classes are considerably above the SRNV.



	PSST	IMM	TOL	INTOL	PWMIX	MIXED	MXPRJ	SFC
Lower SRNV	76,024	51,915	18,338	18,633	55,980	49,790	29,692	64,341
Median	113,001	74,190	22,341	25,471	62,843	58,043	38,068	74,424
Upper SRNV	144,781	107,649	25,385	33,142	70,440	65,679	51,686	86,237
Plan Start	45,235	100,268	12,360	22,399	35,617	82,984	45,000	109,325

Figure 35 Summary of Crown Productive Forest by Landscape Class by hectares

Figure 36 shows the summary of Crown productive forest by landscape class by available and unavailable classification. 130,625 hectares (29%) of the Crown productive forest is unavailable. This noticeable amount of area classified as unavailable poses a unique challenge for the TMU. The most notable example is shown in Figure 35 which indicates that the combined Spruce-Fir-Cedar (SFC) and Mixedwood (MIXED) area is approximately 40,000 hectares above their upper SRNVs. Reducing these landscape classes down to the SRNV will be difficult to accomplish since (40%) of the SFC is not available and (36%) of the Mixedwood is also not available. This will have profound impacts to the ability to influence forest cover and will affect the makeup of all the current forest units described in Figure 4 to Figure 34.

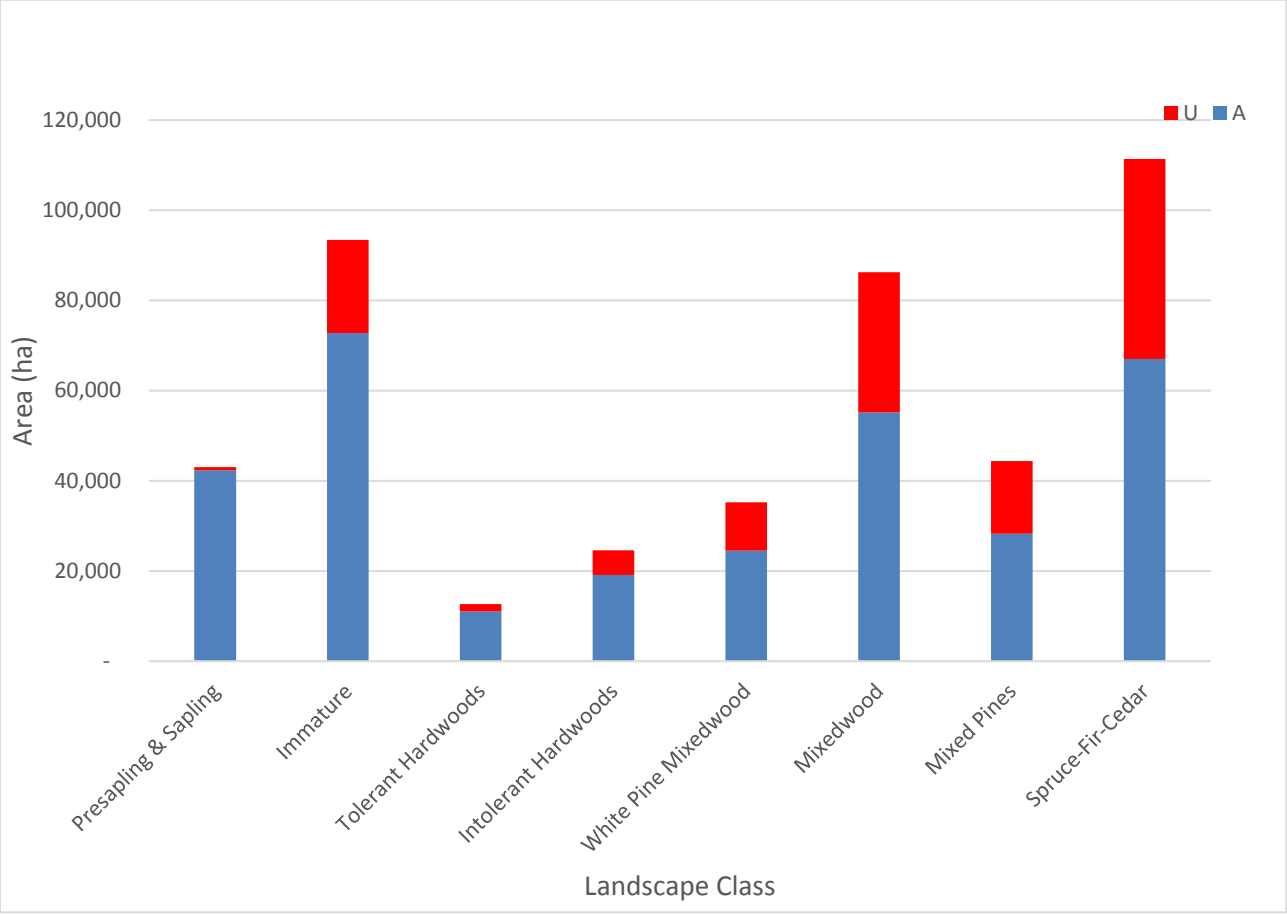
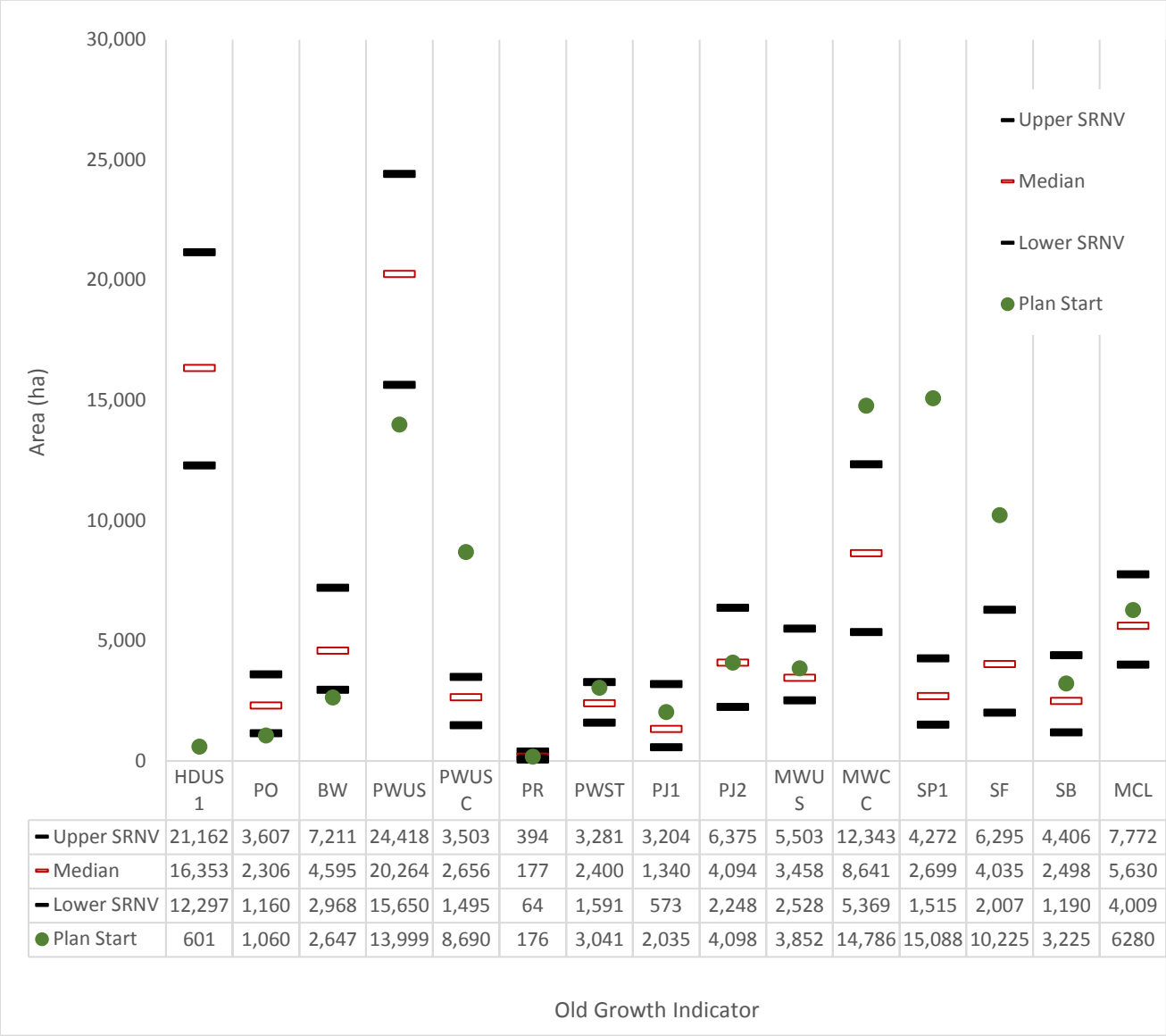


Figure 36 Summary of Available (A) and Unavailable (U) Crown productive forest by landscape class

Old growth area for all Plan Forest units are summarized in Figure 37. The Summary of the Old Growth indicator, plan start condition, and the Simulated Range of Natural Variation is also shown. Tolerant hardwoods (HDUS1) and Intolerant hardwoods BW and PO are below the desired level for old growth. Some variation exists for the white pine dominated forest unit. For instance, the PWUSC forest unit is more than double the desired level, and the PWUS forest unit is below the desired level. Natural forest succession in unmanaged areas of the forest, where natural disturbances are not common contributes to this imbalance. This theme is consistent for the MWCC, SF and SP1 forest unit which are all considerably above the desired old growth level.



	HDUS1	PO	BW	PWUS	PWUSC	PR	PWST	PJ1	PJ2	MWUS	MWCC	SP1	SF	SB	MCL
Upper SRNV	21,162	3,607	7,211	24,418	3,503	394	3,281	3,204	6,375	5,503	12,343	4,272	6,295	4,406	7,772
Median	16,353	2,306	4,595	20,264	2,656	177	2,400	1,340	4,094	3,458	8,641	2,699	4,035	2,498	5,630
Lower SRNV	12,297	1,160	2,968	15,650	1,495	64	1,591	573	2,248	2,528	5,369	1,515	2,007	1,190	4,009
Plan Start	601	1,060	2,647	13,999	8,690	176	3,041	2,035	4,098	3,852	14,786	15,088	10,225	3,225	6280

Figure 37 Summary of Crown Productive Forest by Old Growth Area Indicators

Figure 38 shows the summary of Red and White Pine Area indicator plan start condition and the Simulated Range of Natural Variation and the 1995 level of red and white pine. A total of 88,710 hectares are currently present on the TMU.

Figure 38 Summary of Red and White Pine Area Indicator

Figure 39 shows the summary of the Presapling-Sapling for the young forest area indicator plan start condition and the Simulated Range of Natural Variation. Figure 37 is also related to the young forest area indicator. When the old growth forest areas is above the desired level for much of the forest it occupies the available growing space for young forest indicator. This explains why both the presapling and sapling indicators are considerably below the desired level.

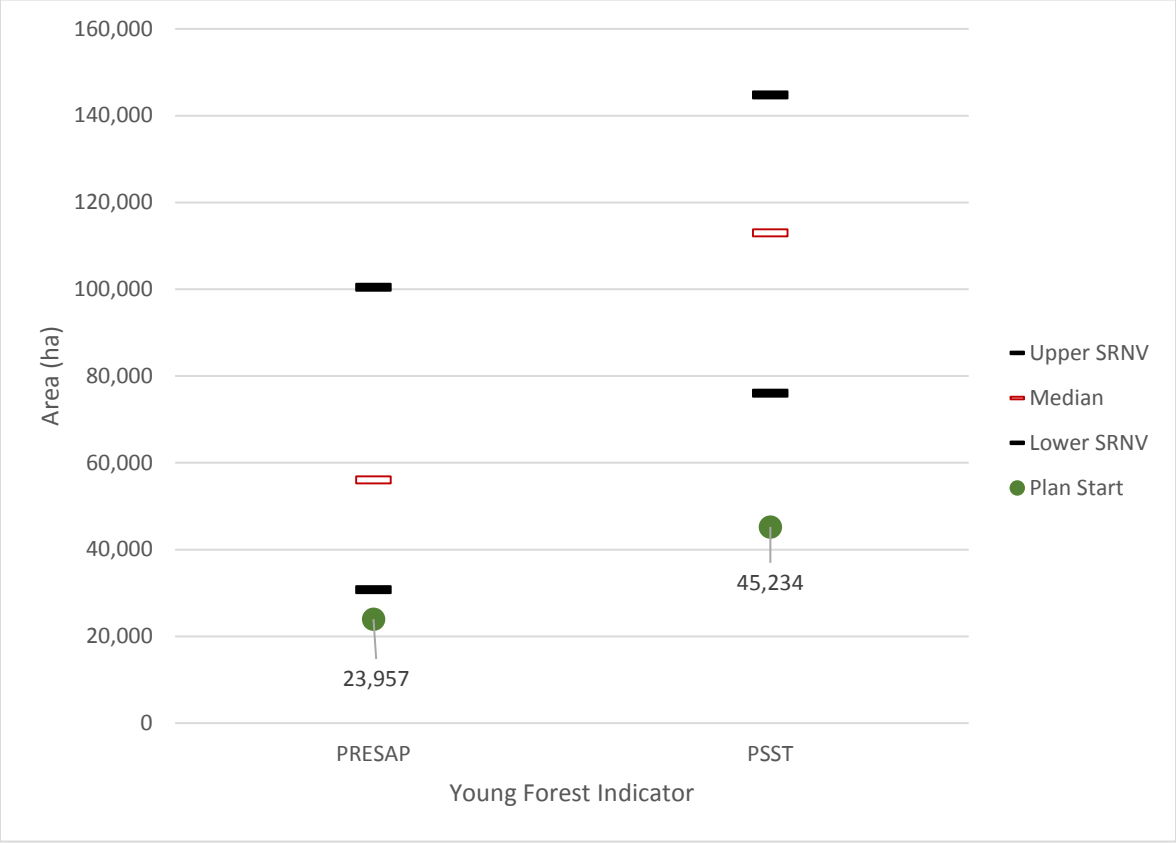


Figure 39 Summary of the Presapling-Sapling & Landscape Class Area Indicator

Figure 40 and Figure 41 shows the summary of the Texture of mature and old forest at 500-hectare scale for the plan start condition and the Simulated Range of Natural Variation. A similar theme as described in the figures above is made evident with the plan start level for this indicator. The frequency of the texture classes with higher proportions of mature and older forest are above the SRNV, and the frequency of texture classes with lower proportions of mature and old forest are below the SRNV.

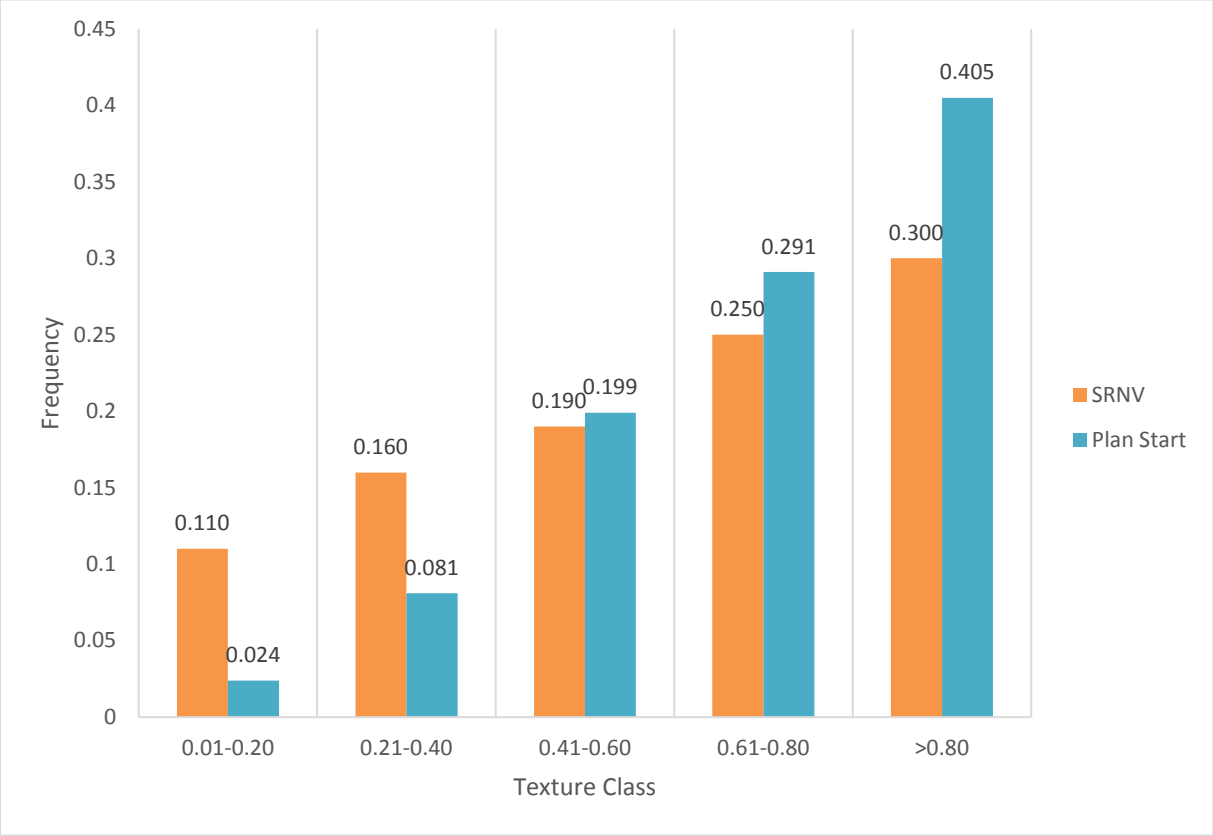


Figure 40 Summary of the texture of mature and old forest at 500-hectare scale Indicator

Figure 41 shows the summary of the Texture of mature and old forest at 5000-hectare scale for the plan start condition and the Simulated Range of Natural Variation.

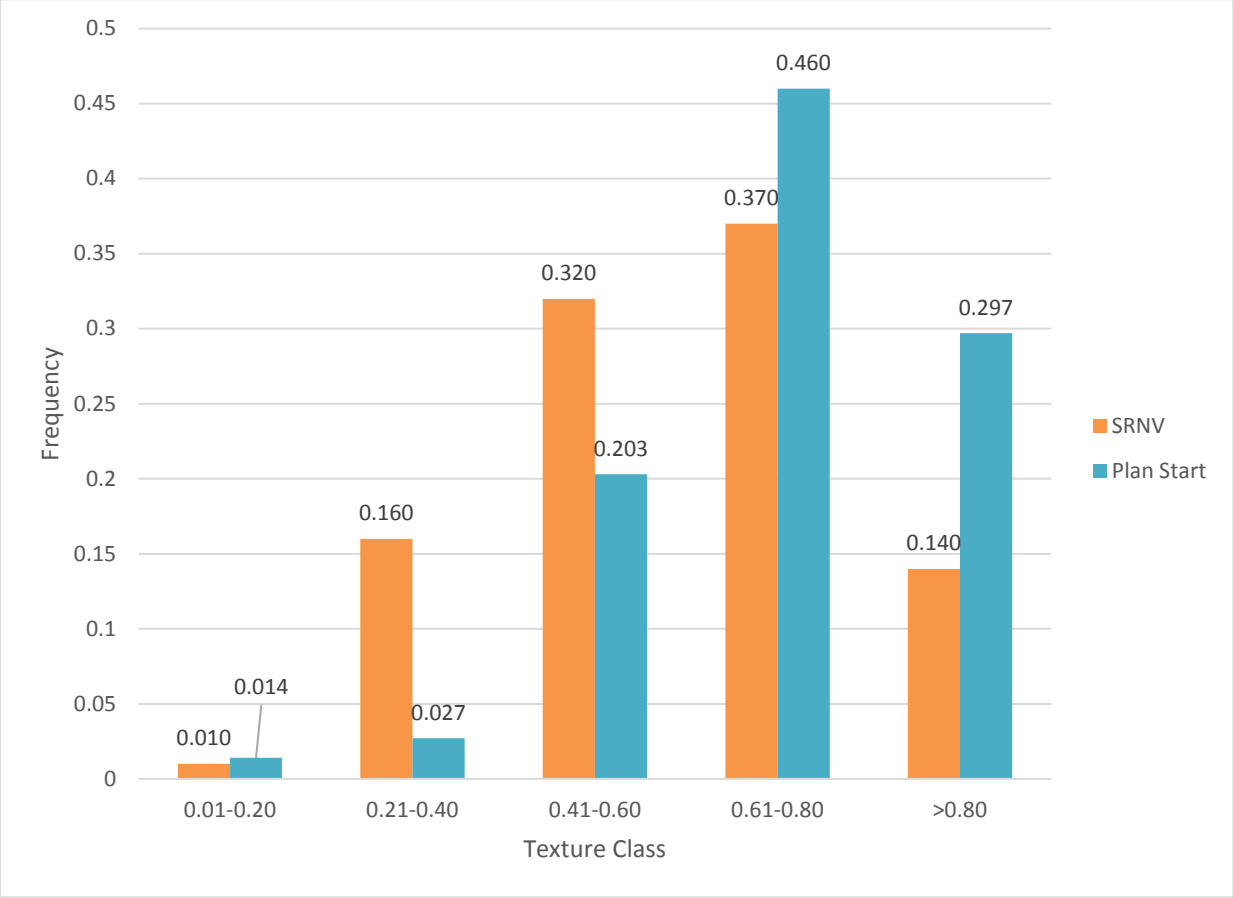
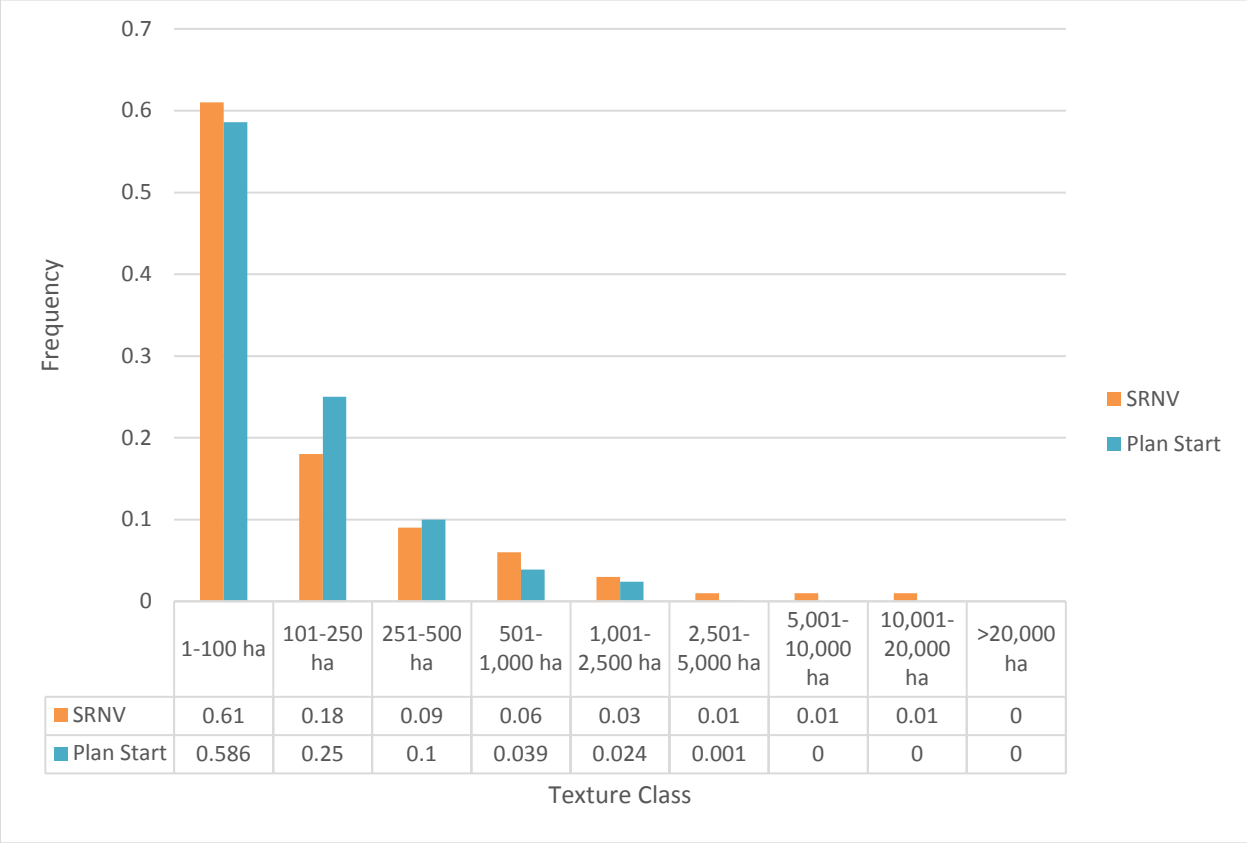


Figure 41 Summary of the texture of mature and old forest at 5000-hectare scale Indicator

Figure 42 shows the summary of the young forest patch size Indicator for the plan start condition and the Simulated Range of Natural Variation. the current levels indicate an absence of texture classes for large patches (2,500 hectares and above) and a concentration of moderate sized patches (100 to 500 hectares) This indicates that the forest would benefit from disturbances, both natural and by harvest that are larger in size.



	1-100 ha	101-250 ha	251-500 ha	501-1,000 ha	1,001-2,500 ha	2,501-5,000 ha	5,001-10,000 ha	10,001-20,000 ha	>20,000 ha
SRNV	0.61	0.18	0.09	0.06	0.03	0.01	0.01	0.01	0
Plan Start	0.586	0.25	0.1	0.039	0.024	0.001	0	0	0

Figure 42 Summary of the young forest patch size Indicator

2.1.3.3 Other Forest Classifications

Internationally, various systems exist to delineate natural regions based on ecological factors. In Ontario, the Ministry of Natural Resources and Forestry (MNRF) defines ecological units on the basis of bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect) and corresponding vegetation, and have created an Ecological Land Classification (ELC) system. This classification of the landscape enables planners and ecologists to organize ecological information into logical integrated units to enable landscape planning, monitoring and to investigate the forest classification results relative to the ELC.

The ELC program applies a standardized hierarchy of ecological classifications starting at the broader Ecozones scale and refining down to the ecosites and vegetation and substrate scale. An Ecosite is, based on the stable features of the physical landscape (substrate depth, texture, landform and nutrient regimes). It is defined as landscape areas consisting of typical, recurring combinations of vegetation and substrate types.

There are many factors that combine to influence the assembly of ecosystems. Generally, climate will have the highest influences followed by flooding (permanently or seasonally) then substrate conditions such as nutrient, textures and moisture regimes.

The TMU falls contains both the ecosite conditions of the Boreal and Great Lakes – St. Lawrence (GLSL) Forest regions and both regions are represented in the ecosite coding for the management unit. The TMU lies mostly within the Ecoregion 4E which is completely within the geographic range of the GLSL in Ontario's ecosites. Ecoregion 4E is the sole and primary ecoregion used to described stand dynamics, forest dynamics, and ecosite classification in this FMP.

The Crown production forest on the TMU is primarily comprised of fresh sandy or dry to fresh coarse loamy ecosites (77%). Moist sandy to coarse loamy ecosites make up approximately 12% of the Crown production forest. The remainder is split between dry sandy ecosites, and flooded or hydric ecosites. Table 5 below provides a breakdown of the ecosites for the Crown production forest on the TMU.

Table 5 Ecosite distribution on the TMU Crown productive forest

Ecosite	Managed and Available Crown Forest (ha)	Unmanaged and Unavailable Crown Forest (ha)	Management Unit Total (ha)
Dry, Sandy	2,126	1,934	4,060
Fresh Clayey	135	39	175
Fresh Sandy or Dry to Fresh Coarse Loamy	248,785	98,434	347,219
Fresh Silty to Fine Loamy	7,876	793	8,668
Mineral Intermediate Conifer Swamp	54		54
Mineral Poor Conifer Swamp	33		33
Mineral rich Conifer Swamp	125	3	128
Moist Sandy to Coarse Loamy	37,229	18,584	55,813
Moist Silty to Fine Loamy to Clayey	1,871	636	2,506
Non-treed Wetland		808	808

Ecosite	Managed and Available Crown Forest (ha)	Unmanaged and Unavailable Crown Forest (ha)	Management Unit Total (ha)
Permanently Flooded or Hydric	14,501	4,904	19,405
Very Shallow Dry to Fresh or Xeric	7,510	4,373	11,883
Very Shallow Humid	72	118	191
Total	*320,317*	*130,625*	*450,942*

2.1.4 Forest Resources

Although forest management plans only address the manipulation of forest cover and access into harvested timber, there is still a need to ensure that other non-timber values are being protected across the forest. These values include (but are not limited to) species at risk, fish and wildlife, tourism areas (remote tourism, parks, cottaging etc.), mining claims and mines, traplines and private land.

2.1.4.1 Inventories and Information for Species at Risk

Within the Temagami Management Unit FMP, a variety of approaches will be used to provide for the needs of species at risk (SAR). The habitat requirements for the identified species are primarily addressed via landscape level planning by directing management operations over time to ensure all forest types and seral stages are present across the landscape in approximately natural amounts (i.e. the coarse filter approach). Area of concern (AOC) prescriptions or conditions on regular operations (CRO) will be used to protect sites of particularly high SAR value and sensitivity such as nesting, spawning or denning sites. The results of this fine-filter approach can be referenced in Table FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads,

Landings, and Forestry Aggregate Pits.

The OMNRF is responsible for monitoring wildlife populations in Ontario and undertake surveys to increase our knowledge of species at risk in the Temagami Management Unit As part of the protection of SAR, the FMP contains developed conditions on regular operations (CRO's) which instructs forest operations contractors to avoid damaging any habitat they may encounter while working in the forest.

The species at risk list is constantly updated as new information becomes available. There are currently 19 known forest associated SAR listed within the TMU at this time. Ten species are listed as special concern, three are listed as threatened and five are

listed as endangered within the TMU. The habitat needs for the species at risk are addressed through the landscape indicators. Where site level protection is required it can be a much more effective and can be a complementary approach to managing the habitat requirements for these species. Where appropriate the implementation of the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (Stand and Site Guide) also enables avoidance of damage to habitat or harm to endangered or threatened species. Table 6 summarizes the SAR listing during the preparation of the Temagami Management Unit FMP. If additional SAR are encountered during plan implementation, the OMNR will be contacted and a suitable AOC prescription will be prepared and applied.

Table 6 SAR Within the Temagami Management Unit

Species	Classification
Bald Eagle *(Haliaeetus leucocephalus)*	Special Concern
Canada Warbler *(Cardellina canadensis)*	Special Concern
Common Nighthawk *(Chordeiles minor)*	Special Concern
Eastern Wood Pewee (*Contopus virens)*	Special Concern
Olive-sided Flycatcher *(Contopus cooperi)*	Special Concern
Peregrine Falcon (*Falco peregrinus)*	Special Concern
Wood Thrush *(Hylocichla mustelina)*	Special Concern
Snapping Turtle (*Chelydra serpentine)*	Special Concern
Yellow-banded Bumble Bee (*Bombus terricola)*	Special Concern
Monarch (*Danaus plexippus)*	Special Concern
Bank Swallow *(Riparia riparia)*	Threatened
Chimney Swift *(Chaetura pelagica)*	Threatened
Eastern Whip-poor-will (*Antrostomus vociferus)*	Threatened
Eastern Small-footed Myotis (*Myotis leibii)*	Endangered
Lake Sturgeon (*Acipenser fulvescens*)	Endangered
Little Brown Myotis *(Myotis lucifugus)*	Endangered
Mountain Lion *(Puma concolor)*	Endangered
Northern Myotis (*Myotis septentrionalis)*	Endangered
Tri-coloured Bat (*Perimyotis subflavus)*	Endangered

2.1.4.2 Fish and Wildlife Inventories

The TMU intersects the boundaries of all or part of several Wildlife Management Units and is entirely within Fisheries Management Zone 11. Values protection for the various species (e.g. nests, spawning areas, dens) will be carried out through Area of Concern prescriptions as provided in the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (2010)

Big game species important to recreational users include moose, white tail deer and black bear. Small game species include ruffed grouse, spruce grouse, sharp-tail grouse, willow ptarmigan and snowshoe hare. Furbearers include otter, mink, marten, fisher, lynx, fox, wolf, coyote, red squirrel, skunk, beaver, muskrat and weasel. Migratory birds such as geese, ducks, woodcock and snipe are also important.

Black Bear

There are 35 Bear Management Areas (BMA's) on the TMU where licensed guides offer their services to non-resident Black Bear Hunters. Black Bears are found in forested areas throughout most of Ontario, are an important component of Ontario's biodiversity and healthy ecosystems and provide social and economic benefits to thousands of residents and visitors to the province each year, generating millions of dollars in economic activity each year through hunting.

Black bears are a natural part of forested habitats and an integral component of healthy ecosystems. Black bears are omnivorous carnivores that use a variety of natural foods that allow them to live and thrive over a wide range of climatic and habitat types (Kolenosky and Strathearn 1987a). Black bears are primarily inhabitants of forested areas where they are best able to meet their needs for cover, food and security from predators including other bears (Nuisance Bear Review Committee 2003).

Black bears rely on a variety of forest types and age classes to survive. Large diameter upper and over story white pines serve as sanctuary trees for bears and more so adult females, whom send their cubs into the canopies to avoid danger. The early spring leaf out of poplars are a critical food source for bears, similarly to the mast producing trees and shrubs such as ash, oak, beech, cherries, and hazel in late summer through to the fall. Further, black bears also rely on critical species that thrive in the understory (i.e. strawberries, blueberries, raspberries, black berries). Essential food sources and forest components used by Black Bears will be provided for by means of the broad biodiversity provisions as per the Landscape Guide (2010).

Denning sites can be dug burrows, upturned root mats or large hollow trees usually associated with mature to over mature forests. Denning sites will be protected using the fine filter approach with the development of AOC's as per the direction in the SSG (2010).

Moose

Moose are managed under the Cervid Ecological Framework (2009) and the Moose Management Policy (2009). Moose management is focused on maintaining sustainable populations through population and habitat management. Ontario's Moose program is focused on ensuring sustainable Moose populations and the ecosystems on which they rely, for the continuous provision of ecological, cultural, economic and social benefits for

the people of Ontario. Moose management on the TMU falls under the objectives of the CEZ C2. In this zone, moose populations are managed so as to maintain moderate to high density populations (20 - 40 moose per 100 square kilometres).

Wildlife Management Unit 40 is the primary wildlife management unit on the landscape with portions in WMUs 41 and 28. Harvesting can be beneficial for moose where woody browse is low. Harvesting can also be detrimental where aspects of moose quality habitat are low such as mature conifer or mixed hardwood. The documentation of moose habitat quality and strategy is found in supplementary documentation 6.3(h) – Moose Emphasis Area Documentation

Furbearer species provide social and economic benefits with respect to trapping and the processing and sale of pelts. The management of furbearers occurs on a trapline by trapline basis.

The strategy to emulate natural disturbance by harvesting shoreline cover should benefit beaver by creating younger stands. The direction in the SSG (2010) allows this approach as long as other values are not negatively affected. The creation of new beaver ponds and associated habitat will also benefit other species over the long term such as waterfowl, shorebirds, herons, fish, reptiles, amphibians and other furbearers.

All other furbearer habitat will be accounted for through the monitoring of habitat for the selected species which will cover off the broad range of habitat conditions across the forest. In addition, any denning sites for any furbearer species will be afforded protection when encountered through application of AOC prescriptions as per the SSG (2010).

Small Game and Furbearers

There are several small game and furbearers found on the forest that provide social, cultural, recreational and economic benefits. They use a wide range of habitat conditions and include Ruffed Grouse, Spruce Grouse, Snowshoe Hare, Otter, Mink, Pine Marten, Fisher, Canada Lynx, Red Fox, Gray Wolf, Coyote, Red Squirrel, Striped Skunk, American Beaver, Muskrat and a variety of weasels. Migratory birds such as geese, ducks, and woodcock are also a component of the hunting culture on th e landscape.

The small game and furbearer management framework provides policy direction for managing these species in Ontario. There are 59 trap lines on the TMU. The management of furbearer harvest occurs on a trap line by trap line basis. The management of furbearer habitat occurs under the guise of the landscape guide biodiversity objectives and by means of the site level prescriptions that protect nesting sites and dens of game and furbearing species.

Migratory game birds including ducks, geese, doves and woodcock are protected under the federal Migratory Birds Convention Act and managed by Environment Canada's Canadian Wildlife Service and will be addressed by means of an AOC or CRO on the TMU.

Raptors, Birds and Waterfowl

Nests can be encountered and identified by any individual during any routine day-to-day outdoor activity. In addition, MNRF conducts stick nest surveys during the winter months and may also conduct follow-up summer surveys to ascertain nest occupancy.

All nests are entered into the MNRFs NRVIS database. There are osprey, great blue heron, northern goshawk, broad-wing hawk, red-tail hawk, common raven, common crow, great gray owl, unknown bald eagle/osprey, unidentified hawk/owl and unknown raptor sites. Other species that are known to occur on the TMU and could be impacted by forestry operations include pileated woodpecker, American kestrel, northern harrier, great horned owl and several other small hawks and owls. The SSG (2010) provides updated direction based on the most recent science towards the protection of any nesting sites for all of these species. In addition, both pileated woodpecker and black backed woodpecker have been selected as species for modeling to ensure adequate habitat provisions are met through time.

There are herring gull, ring billed gull, sandhill crane, cormorant and common tern colony known nesting sites. The majority of these nesting sites will not be impacted by forestry operations given they are usually located on islands in large lakes (or wetland complexes (sandhill crane).

There are many waterfowl species that have been confirmed as nesting on the TMU. These include Canada goose, mallard, black duck, wood duck, green-winged teal, ring-necked duck, lesser scaup, common goldeneye, hooded merganser and common merganser. Although some are ground nesting species/individuals, others are cavity nesters. The latter can benefit from snag tree management and large diameter tree retention along the shores of waterways. Provisions for the protection of waterfowl nests are provided in the SSG (2010). Waterfowl staging areas are important sites during spring and fall migration periods. These areas can be protected through AOC prescriptions along waterways. Many waterways have wild rice beds which provide a source of food and cover. Forestry operations, if carried out in an inappropriate manner, have the potential to impact water quality which could have an effect on wild rice beds. By following the direction in the Stand and Site Guide as well as the operational direction in the Implementation Toolkit located in section The following Supplementary Documents

(including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit, water quality will be maintained and wild rice beds will be protected.

Fisheries Resources

The water bodies within the TMU contain many fish species including coldwater species (e.g. lake trout, brook trout, rainbow trout, aurora trout, splake and lake whitefish) and cool water species (e.g. walleye, northern pike, smallmouth bass and lake sturgeon). Some waterbodies contain warm water species (e.g. rock bass, pumpkinseed and brown bullhead) not native to this part of the province. Fisheries are an important resource in the area, providing remote as well as drive-in opportunities for individuals and tourism operations. The fisheries in the TMU also support commercial baitfish opportunities and First Nations subsistence.

Wetlands also abound on the TMU and are important in maintaining ecological functions on the landscape as well as providing habitat for a variety of terrestrial and aquatic species. The main wetland types include marshes, bogs, fens and swamps.

Forest management activities, if carried out in an inappropriate manner, have the potential to impact aquatic environments by affecting water quality and aquatic habitat. Some activities such as road construction can also adversely affect fish populations due to increased access and angling pressure. Operations that occur in riparian zones and along shorelines are considered higher risk for erosion, sedimentation, debris, elimination of shade and cover, a temporary increase in water temperature and alteration of the forage base. The SSG (2010) Section 4.1 provides the direction to be taken to maintain ecological functions of aquatic and wetland ecosystems.

The TMU FMP will protect fisheries values and wetland ecosystem function by:

- Application of slope dependent AOCs to regulate forest management activities around water
- Establishing AOCs around spawning areas
- Following timing restrictions for water crossing installations
- Conducting harvest operations within or adjacent to sensitive areas during winter only

During the planning stage for harvest operations adjacent to waterbodies, the planning team assessed all lakes, rivers and streams for potential impacts related to shoreline activities. In addition to the MNR's Water Classification Tool (2009) (used to assign the risk rank to all waterbodies), professional knowledge from local managers was also applied to further refine decisions around shoreline activities.

Lake sturgeon inhabits Lake Temiskaming and is considered an endangered species however, forest management activities have low potential to impact sturgeon populations is low due to the nature of the harvest activities. For example, no water crossings are required.

2.1.4.3 Values Information

The collection and mapping of natural resource information has occurred for many decades, although the formal collection and mapping of values information began with the publication of the Timber Management Planning Manual for Crown Lands in Ontario in 1986. Values recorded were primarily fish and wildlife based (i.e. brook trout creeks, stick nests and moose aquatic feeding areas) but also included cultural and life science values information. Natural resource values collection, mapping and classification are an integral part of forest management planning. Today, natural resource values collection, mapping and classification are an integral part of forest management planning.

Currently, a series of values maps have been updated for the production of this FMP using survey data, ground truthing and input from the general public and the forest industry. Forest values data are maintained at the MNRF North Bay District office and are uploaded to the provincial data sharing site Land Information Ontario (LIO). However, forest industry plays a vital role in reporting values information during plan implementation. Accurate resource values information is critical to the development and implementation of the forest management plan. Inaccurate or incomplete values information results in a deficient operational plan that is difficult to implement.

Values information is organized to portray similar types of values on one map. All values information, including a list of sources of information on Values Maps, any missing or incomplete values maps and the maps themselves can be found in Supplementary Documentation 6.2(b) – Values Maps. Sensitive values information is not shown on maps but known to the planning team and has been considered during operational planning.

The values maps consist of a set of maps based on nine broad themes:

<u>Natural Resource Features – Wildlife and Forestry</u>

Contains such features as nesting sites, moose aquatic feeding areas, mineral licks, old growth forest, significant ecological areas, and forest research areas/plots. These maps are depicted in the following file:

- MU898_2019_FMPDP_MAP_ValWild_01.pdf

Natural Resource Features – Fisheries and Wetlands

Contains such features as baitfish areas, fish spawning areas, and lakes/rivers categorized by thermal regime. These are depicted in the following file:

- MU898_2019_FMPDP_MAP_ValFish_01.pdf

Resource Uses

Contains such features as recreational trails, hunting/fishing camps, cottage areas, infrastructure, and access points. These are depicted in the following file:

- MU898_2019_FMPD_MAP_ValRec_01.pdf

Land Values

Contains such features as permitted aggregate pits, active mining claims, Crown leases and Land Use Permits, and Crown/Patent/Federal lands. These maps are depicted in the following files:

- MU898_2019_FMPDP_MAP_ValLand_01.pdf

Bear Management Areas

Portrays the current Bear Management Areas. These are depicted in the following files:

- MU898_2019_FMPDP _MAP_ValBMA_01.pdf

Trapline Areas

Provides registered trapline boundaries and trap cabin locations. These are depicted in the following file:

- MU898_2019_FMPDP_MAP_ValTrap_01.pdf

Resource Based Tourism

Contains such features as outpost camps, access points, camping sites, and snowmobile trails. These maps are depicted in the following files:

- MU898_2019_FMPDP_MAP_ValRBT_01.pdf

Cultural Heritage Values

No archaeological or cultural values have been portrayed due to sensitivity. This map provides “Archaeological Potential Areas” which were produced by Integration Branch of the MNRF using the Heritage Assessment Tool, September 2018. These maps are depicted in the following files:

- MU898_2019_FMPDP_MAP_ValCult_01.pdf

Aboriginal Values Map

No Aboriginal values have been displayed due to sensitivity of information.

The TMU contains a wide array of forest resource values. There has been a long history of resource utilization on the forest and the continuation of this will rely upon forest cover and forest cover manipulation. These values are considered in the development and implementation of this forest management planning process, and processes were created to ensure their protection. Mitigation techniques may include prescriptions that specify harvesting and road distances from values (which may reduce the harvestable area within a block), no-road zones and/or timing restrictions applied to certain harvest blocks or roads to limit disturbance during sensitive periods (i.e. peak tourism months or critical breeding periods). All of these prescriptions have an impact on forest operations.

Mineral, Aggregate and Quarry Areas

See Section 2.1.2.1 Geology above for description of surface, and bedrock geology.

Historically, mining and mineral exploration have been important activities in this management unit with asbestos, copper, nickel, zinc, silver and gold being the dominant commodities extracted. Across the forest, there are several forestry aggregate pits open, as well as several licensed pits available for extraction within the district

A description of aggregate and quarry areas can be found in Supplementary Documentation Section 6.1(e) – Social and Economic Description and Demographic Profiles.

Crown Land Recreation and Cottaging

There is high use of the Temagami Management Unit (TMU) by outdoor enthusiasts, snowmobilers, cottagers, anglers and hunters. There are many popular lakes,

snowmobile trails, hunting camps and provincial parks that are frequented yearly that are a recognized value on the forest. Many of the popular lakes and hunting areas are situated close to Temagami, New Liskeard, and Latchford. These values are considered through the forest management planning process, and in some cases, a viewscape analysis or AOC is applied to the lake or trail.

Provincial Parks, Conservation Reserves

Provincial parks, conservation reserves incorporate Crown land that is not available for forest management activities. These areas are designated under the Provincial Parks and Conservation Reserves Act. Table 7 lists the Crown land Provincial Parks and protected areas within to the TMU.

Table 7 Provincial Parks and Protected Areas Within or Adjacent to the TMU

Name	Area(ha)
· Finlayson Point Provincial Park	47
· WJB Greenwood Provincial Park	465
· Lady-Evelyn-Smoothwater Provincial Park	72,400
· Obabika River Provincial Park	20,520
· Sturgeon River Provincial Park	7985
· Solace Provincial Park	5,943
· CR40b - Temagami Island North	126
· CR15 - Cliff Lake	2,947
· CR17 - White Bear Forest	1,242
· CR40a - Narrows Island	41
· CR4a - South Temiskaming Shoreline	706
· CR3a - Matabitchuan River	87
· CR9 - Rabbit Lake West	491
· CR44 - Bob Lake	2,657
· CR32 - East Lady Evelyn Lake	5,612
· CR52 - Jim Edwards	8,656
· CR53 - North Yorston	13,323
· CR50 - Pinetorch Lake	3,623
· CR33- Sugar Lake	6,143
· CR5 - Ottertail Creek	1,650
· CR31a - Indian Bay South	241
Total	154,905

2.2 Social and Economic Description

The Social and Economic Description is available in Supplementary Documentation Section 6.1(e) – Social and Economic Description and Demographic Profiles

A brief summary is provided in the plan text below

Socioeconomics analyzes both the social impacts of economic activity and the economic impacts of social activity. In the context of Forest Management Planning (FMP), this assessment is the evaluation of social and economic impacts that are expected to occur or that have occurred as a result of pursuing the proposed forest management strategy.

Improved knowledge and understanding can be obtained by establishing a baseline socioeconomic profile of the local economy, by performing a socioeconomic analysis of management alternatives, and by observing differences in the socioeconomic impacts among alternatives. The assessment is usually based on forecasted timber harvest volume and silvicultural expenditures.

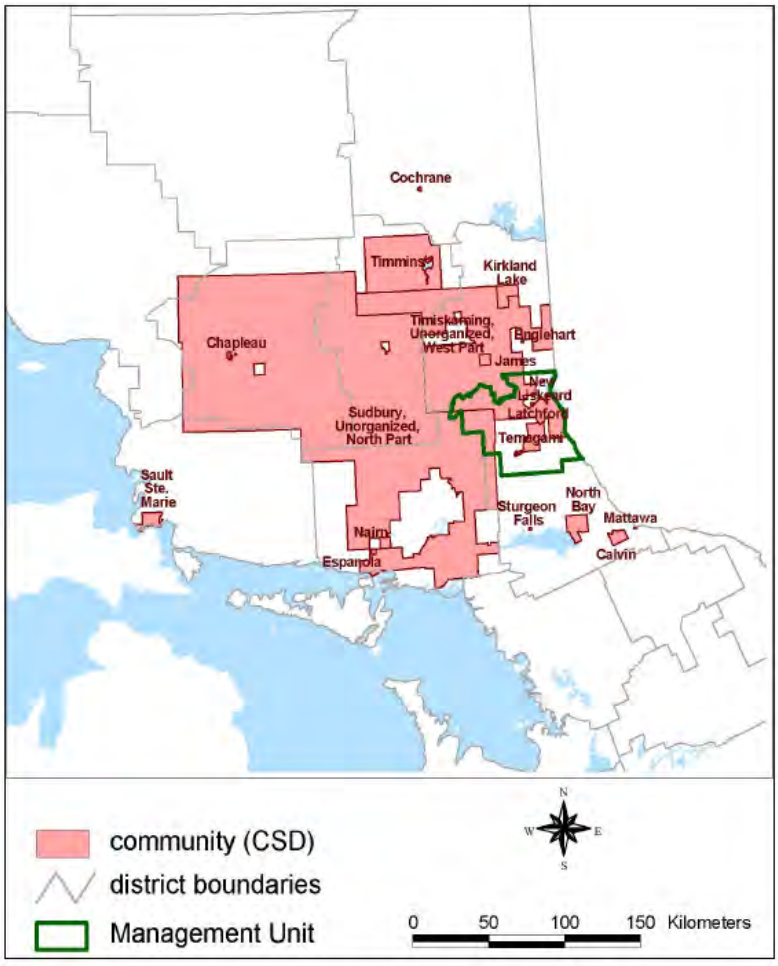


Figure 43 Temagami Management Unit and Surrounding Communities

2.2.1 Overview of Social and Economic Context

The purpose of the Social and Economic Description is to provide the 2019-29 planning team insight to the communities that are impacted directly or indirectly by the resource extraction and forestry activities within the boundaries of the TMU. The communities include local towns and First Nation communities that have traditional territory within or adjacent to the boundaries of the TMU (see Figure 1). In addition, the description will highlight the industrial and non -industrial users of the resources of the TMU including timber, recreation and tourism, mining, aggregate and hydro generation, which may be affected by forest management activities.

2.2.2 Summary of Demographic Profiles

The following is a summary of the information found in the demographic profiles for the communities on the Temagami Management Unit. A detailed demographic profile for each community is found in Supplementary Documentation 6.1(e) – Social and Economic Description and Demographic Profiles

2.2.3 Industrial and Non-Industrial Uses of the Forest

The TMU supports a wide range of activities. These benefits include commercial wood products, tourism, wildlife, recreation, aesthetics, and wilderness values. Although not always measurable in monetary terms, these activities are highly valued by Ontarians and provide significant benefits to society. Having said this, the main goal of this plan is to continue to provide these goods and services in order for long-term sustainability.

2.2.3.1 Industrial Uses of the Forest

<u>Forestry</u>

Forest industry activities include logging, wood processing, road construction, hauling, and renewal and maintenance (silviculture) of the forest. There are six five-year forest resource licensees expected to harvest wood from the TMU during the term of this plan, one of which is held by an Aboriginal community;

- Georgia Pacific Forest Products Inc. (Englehart)
- Goulard Lumber (1971) Ltd. (Sturgeon Falls)
- Eacom Timber Corperation (Elk Lake)
- Alex Welch Logging (New Liskeard)
- Sawdust City Sam (Latchford)
- DakiMenan Lands & Resource Corporation (Bear Island)

Several Mills have recently committed capital investment to support growing demands for wood products. Eacom is committed to investing in strong assets, including healthy forests and advanced technology. Its 2017 investments included technology upgrades at the Elk Lake sawmill at a cost of over $2 million. This upgrade is directed at increasing production.

In addition, capital investments have been made by Temagami's Daki Menan Lands and Resources Corporation which recently invested in a small skid-steer and Cord King M18-20 fuelwood processor for cutting and splitting fuelwood. Four part-time employees on an intermittent basis are employed to operate the fuel wood processor. This is in keeping with the TFN/TAA forestry strategy, which was developed in 2001 and continues to be developed further. This company has recently purchased an office location on the east side of Highway 11 near the entrance to the Temagami Access Road.

Mills

Wood fiber harvested on the TMU is processed into pulp, paper, veneer, dimensional lumber, oriented-strand board (OSB), fuel wood, pallets and specialty products. The wood is delivered to over 20 forest resource processing facilities in Ontario and Quebec.

Table 8 includes a list of facilities (in Ontario) that receive wood fiber from the TMU, as well as the number of employees for each company. The number of individuals that rely on the forest industry for employment is over 6,000. This includes employees that work in the processing facilities as well as in the bush.

Table 8 Processing facilities in Ontario that receive fiber from the TMU

Mill Name	Location	Product
1703097 Ontario Inc.	Coleman, ON	Not Elsewhere Specified
Cheminis Lumber Inc.	Larder Lake, ON	Sawmill & Special Product
Columbia Forest Products Ltd.	Rutherglen, ON	Veneer/Plywood
Domtar Inc.	Espanola, ON	Pulp Mill
EACOM Timber Corporation	Elk Lake, ON	Sawmill
EACOM Timber Corporation	Nairn Centre, ON	Sawmill
Fred MacKewn (South Wabi Sawmill,)	Haileybury, ON	Sawmill & Special Product

Mill Name	Location	Product
Gervais Forest Products Ltd.	Falconbridge, ON	Sawmill & Special Product
Global LVL Inc. (Ville Marie,Veneer)	Ville Marie, QC	Veneer/Plywood
Goulard Lumber Limited	Sturgeon Fall, ON	Sawmill & Special Product
GP North Woods LP Biomass	Englehart, ON	OSB
GP North Woods LP Comp	Englehart, ON	Veener
Levesque Plywood Limited Columbia Forest Products Ltd.	Hearst, ON	Veneer/Plywood
Northern Pressure Treated Wood Ltd. (	Kirkland Lake, ON	Sawmill & Special Product
Portelance Lumber Ltd.	Capreol, ON	Sawmill & Special Product
Rockshield Engineered Wood Products ULC	Cochrane, ON	Veneer/Plywood
RYAM inc.	Huntsville, ON	Sawmill & Special Product
RYAM inc.	Bearne, QC	Sawmill & Special Product
RYAM Inc.	La Sarre, QC	Sawmill & Special Product

Wood Supply obligations

The following table provides a summary of current wood supply obligation to mills, for which the TMU is expected to provide a portion of the fibre supply:

Table 9 Wood supply obligation on the TMU

Commitment Holder	Wood supply mechanism	Volume (m^3)	Species and type	Product
GP North Woods LP	Englehart	Supply Agreement	Poplar	Non-Veneer
GP North Woods LP	Englehart	Supply Agreement	White Birch	Non-Veneer
RYAM inc.	Temiscaming, QC	Supply Agreement	White Birch	Pulpwood
Georgia Pacific North Woods L.P.(Englehart)	Commitment: Supply Agreement	120,000	BW Merchantable	Composite (OSB)

Commitment Holder	Wood supply mechanism	Volume (m^3)	Species and type	Product
Georgia Pacific North Woods L.P.(Englehart)	Commitment: Supply Agreement	550,000	PO Merchantable	Composite (OSB)
Rockshield Engineered Wood Products ULC (Cochrane)	Commitment: Supply Agreement	79,080	PO Merchantable	Veneer
Temagami Cedar (Temagami)	Commitment: Ministerial Directive	30,000	CE Merchantable	Sawlog
RYAM inc.	Commitment: Supply Agreement	150,000	BW Merchantable	Pulp
Columbia Forest Products (Rutherglen)	Other	3,000	BW Merchantable	Veneer
Columbia Forest Products (Rutherglen)	Other	1,000	TOL Merchantable	Veneer
EACOM Timber Corporation (Elk Lake)	Other	810,000	SPF Merchantable	Sawlog
Fuelwood/PersonalUse /Other(NER)	Other	10,000	BW Merchantable	Fuelwood
Fuelwood/PersonalUse /Other(NER)	Other	5,000	TOL Merchantable	Fuelwood
Goulard Lumber Limited (Sturgeon Falls)	Other	112,000	PWR Merchantable	Sawlog
Goulard Lumber Limited (Sturgeon Falls)	N/A - WSCP Offer	180,000	PWR Merchantable	Sawlog
KD Quality Pellets Ltd - 020 (New Liskeard)	N/A - WSCP Offer	50,000	TOL Merchantable	Pellet

1

2 Table 10 shows the forest industry harvest volumes for the period of 2011 to 2015.

3 Table 10 Forest Industry Harvest Volumes and Expenditures

	2011-12	2012-13	2013-14	2014-15	2015-16
Actual Harvest Volume (m^3)	113,195	38,294	32,307	113,515	29,510
Total Stumpage ($)	$238,438	$94,728	$74,189	$344,630	$63,828
Payments to Forest Renewal Trust	$439,200	$136,558	$169,793	$416,801	$141,486

	2011-12	2012-13	2013-14	2014-15	2015-16
Payments to Forestry Futures Trust	$104,009	$35,546	$25,072	$73,961	$70,067
Average Crown Timber Charges per m^3	$6.91	$6.97	$8.33	$7.36	$9.33

Aggregates

There are 31 aggregate permits on the TMU for the extraction of sand, gravel and quarry stone. The total tonnage removed from the sites is approximately 62,850 tonnes. MNRF no longer administers the “tonnage” and “fee” information for permits and Licenses. This is all handled through The Ontario Aggregate Resources Corporation (TOARC), a private organization from Burlington, Ontario. The minimum royalty rate for aggregate material is prescribed by regulation and is currently at $ 0.50 per tonne.

Hydro Generation

There are four hydro generating facilities within the TMU. All generating stations in the management unit hold waterpower lease agreements with the North Bay District MNRF, with the exception of Ragged Chute, which is owned privately. Although there are numerous other dams within the TMU, due to a vast number of rivers, the principal purpose is for water control and not hydro generation. Table 11 lists all current hydro facilities in the TMU.

Table 11 Current hydro facilities within the TMU

Station	Owner	Location
Ragged Chute	Canadian Hydro Developer's Inc.	Montreal River
Hound Chute	Ontario Power Generation	Montreal River
Lower Knotch	Ontario Power Generation	Montreal River
Matabitchuan Generating Station	Ontario Power Generation	Matabitchuan River

2.2.3.2 Non-Industrial Uses of the Forest

Tourism

The Temagami Management Unit (TMU) contains unique natural, cultural and recreational resources characterised and is a popular recreation destination for canoeing, boating, fishing, hunting, hiking, snowmobiling, camping, and cottaging. The tourism industry has been an important component in Temagami, as early as 1893. Canoe campers were the pioneers of the industry, followed by the opening of lodges and cottages starting in 1905. Refer to Table 7 for land use designation of Provincial Parks and protected areas popular for recreation and tourism on the TMU.

There is a diverse range of businesses within the TMU. The hospitality sector is fueled by the wide variety of tourism opportunities that the Temagami forest provides for, including remote access and urban settings. There are over 180 tourist businesses within the Temagami area that have an interest in the management of the forest.

There are numerous tourist establishments that are not necessarily within the Temagami MU, however, many of their clients partake in activities within the Unit. These include eco-tourism and wilderness expedition companies. These companies mainly focus on local culture, wilderness adventures, personal growth and learning ways to live off of the land; typically involving travel to destinations where the flora, fauna, and cultural heritage are the primary attractions.

Another contributor to the tourism industry in the Temagami area are youth camps. Lake Temagami itself is home to nine operating youth camps; some of which are the oldest in Canada. Table 12 contains a list of the camps, as well as camper capacity. A few of the original campsites have been taken over and renamed through time. Table 12 also provides a list of historic youth camps and the years that they operated in order to demonstrate the rich history that Lake Temagami has in regards to being a pioneer of the youth camp.

Table 12 Youth camps operating within Temagami Management Unit

Camp Name	Operating years	Capacity
Canadian Adventure	1975 to current	135
Keewaydin	1904 to current	140
Langskib	1971 to current	50

Camp Name	Operating years	Capacity
Northwaters	1985 to current	50
Project C.A.N.O.E	1999 to current	22
Temagami	1999 to current	70
Wabikon	1944 to current	200
Wabun	1933 to current	90
Wanapitei	1931 to current	85

Recreation

The TMU has numerous recreational facilities that provide for cross-country skiing, dog sledding, hiking, mountain biking, snowmobiling, ice fishing, camping, canoeing, and boating. There are also a number of recreational activities that occur on Crown land in the TMU including trail systems that identify ecology, geology, and historic values, cross-country ski facilities, canoe routes, and snowmobile trail systems. Land use permits are utilized for sugar shacks and tapping trees for the production of maple syrup, boathouses, camps, and numerous other activities on Crown land.

One of the most significant organizations that is associated with and promotes trail use on Crown land in the Temagami area is Nastawgan Trails Incorporated. The Nastawgan trails are a four-season, non-motorized trail network in the Temagami area. The goal of these trails is to connect Temagami's wilderness areas and historic landmarks. The trails provide educational and recreational opportunities and aim to improve the social and economic conditions of the Temagami area. The Temagami area contains trails of all types (ATV, snowmobile, hiking, dog sled, snowshoe, and ski) some of which are prepared and groomed others that are not.

Canoeing is a very important recreational activity in Temagami and has attracted recreation-based tourism since the late 19th century. There are more than 2,400 kilometres of canoe routes within the Provincial Parks and conservation reserves in Temagami. These are combined with 150 km of portages in a network which links over 2,200 lakes and rivers.

Lake Temagami spans over 45 km in length and contains more than 1,200 islands. Lake Timiskaming is part of the Ottawa River system and offers boaters travel from New Liskeard to Pembroke. Both of these large lakes are within the Temagami area. Their

beautiful scenic shorelines attract a large number of boaters to the TMU each year. There are more than 700 cottages on Lake Temagami, primarily located on islands, which require boat access.

Hunting and Fishing

The large variety of lakes and rivers provide a wide range of angling opportunities. There are approximately 90 lake trout lakes in the TMU, including Lake Temagami, Diamond Lake and Cross Lake. Natural brook trout are found in water bodies within Lady Evelyn-Smoothwater Wilderness Park. There are also a number of lakes in the area that the MNRF stocks with fish. Stocked brook trout lakes can be found around Lake Temagami and Highway 11 areas.

Fur Harvesting

There are 34 registered trapline areas located wholly or partially within the TMU. Trappers of fur and baitfish use many active and inactive logging roads and trails to access the registered traplines, which cover the entire forest. Commercial trapping of furbearers in the context of this section includes the trapping of marten, beaver, mink and fox among others. Trapline maps can be found in 6.2(b) – Values Maps

Socioeconomic surveys were sent out to 54 trappers in December 2016 and 9 responded.

Baitfish Operations

There are a total of 36 baitfish harvest areas on the TMU. The baitfish industry is utilized by the local angling industry and provides supplemental income to individuals involved in either of these industries.

The Fisheries and Wetlands Values Map found in Supplementary Documentation Section 6.2(b) – Values Maps shows the baitfish areas on the TMU.

Socioeconomic surveys were sent to 25 baitfish licensees in December 2016 and 4 responded.

2.3 First Nation and Métis Background Information Report

The use of natural resources on the TMU by First Nation and Metis communities has been well documented within their Aboriginal Background Information Reports (ABIR).

Four First Nation and Metis communities were consulted with during every stage of the development of the 2009-2019 forest management plan. These communities are:

- Temagami First Nation
- Teme-Augama- Anishnabai
- Matachewan First Nation
- Timiskaming First Nation

Supplementary Documentation 6.1(c) – First Nation and Métis Background Information Report(s) contains the background information as made available by the communities.

3.0 DEVELOPMENT OF THE LONG-TERM MANAGEMENT DIRECTION

3.1 Introduction

The long-term management direction (LTMD) is the part of the forest management planning process where the planning team develops the strategic-level direction for the forest. The components involved in the development of the LTMD consist of the following;

- gathering background information
- identifying the current forest condition
- establishing a base model
- assembling desired forest and benefits
- developing management objectives
- proposing primary road corridors
- proposing and endorsing a long-term management direction

The long-term management direction is consistent with legislation and policy, has considered direction in forest management guides, achieves a balance of social, economic and environmental considerations and provides for the sustainability of the Crown forest on the management unit.

3.2 Management Considerations

Initially the planning team identified management considerations that may have an influence on the development of LTMD. Management considerations are changes to the forest conditions (e.g. management unit amalgamation) or social, economic or environmental concerns that will be considered in the development of the long-term management direction. These management considerations were also considered in the planning and implementation of operations. The planning team identified the following management considerations during the development of the LTMD and FMP

- Aboriginal interests – including the Lands Set Aside (LSA)

  LSA must be included in the FMP, distinct from the rest of the management unit. This must occur in modelling and in implementation of the FMP. The FMP should contain summaries of the LSA harvest, renewal, tending and road construction operations. This management consideration has been applied. Refer to Supplementary Documentation Section 6.2(d) – Lands Set Aside for a

description of the LSA, current forest condition and planned operations. FMP tables FMP-8, to FMP 20 contains headings that report specifically on the LSA.

- Current and forecasted economic condition
- Age class structure
- Existing and future access planning
- Timing of forest management operations
- Utilisation

In general, management considerations listed above were identified through experience with the implementation of the current forest management plan by the planning team, planning team advisors and the Local Citizen's Committee (LCC).

3.3 Base Model

The Base Model Inventory (BMI) and the Base Model are the starting point for the development of the LTMD for the TMU. The BMI is the forest inventory information that has been updated with forest classification information and assumptions for use in the Base Model. The Base Model will include the BMI assumptions related to the land base, forest dynamics, silvicultural options, biological limits and other identified modelling assumptions. It is a numerical representation of the TMU, and it is created to perform strategic analysis for the management plan. Legislation, policy and direction in forest management guides are considered and applied to achieve a balance of social, economic and environmental considerations which provides for the sustainability of the Crown forest on the management unit. A detailed description of the process required to create the Base Model is provided in the Supplementary Documentation 6.1(b) – Analysis Package

3.3.1 Analysis of Silvicultural Activities

Forest stands are classified based on management decision attributes such as silvicultural intensity, stage of management, age and availability. These are used to describe silviculture activities modeled and applied in the FMP. The assumptions and general assigning for the 2009-19 FMP management decision attributes were reviewed and incorporated during the preparation of the 2019-29 FMP.

Assessment of Assessments of Regeneration Success

The determination of successful regeneration for a forest stand is the achievement of height, stocking rates specified in the silviculture ground rules. Due to the tumultuous nature of harvest associated with previous FMP, assessment of regeneration success does not occur in each annual report to allow sufficient area to be included despite ongoing silvicultural effectiveness monitoring and ongoing survey of potential tending areas.

Previous Annual Reports indicate free-to-grow assessments were not conducted for the following years: 2009, 2011, 2012, 2014.

Regeneration of harvest area occurs generally within 3-5 years after harvest. 10-15 years of harvest. 60% of the areas are declared free to grow within 10 years. of the initial harvest.

Silviculture Intensity

The Silvicultural Intensity (SI) attributes contain a term used in forest modelling that provides an indicator of productivity and the expected growth and development patterns. SI apply only to even-aged forest stands that are managed under the clear-cut and shelterwood silvicultural system. SI source “SISRC” can be ACTUAL (Silvicultural Effectiveness Monitoring survey results) or ASSIGNED (based on assumptions from a combination of FRI attributes) and indicate how the silvicultural value was determined. The following silviculture intensities are those use in the FMP. Refer to the analysis package in 6.1(b) – Analysis Package.

Silviculture Intensity description:

Prsnt: Represents yields from stands that are not depleted and are existing from natural forest growth, including future forest growth following natural disturbances.

Depl: Represents yields from recent disturbance either from harvest (having not yet received silvicultural treatment) or from natural disturbance.

Delay: Represents yields from recent disturbance that have received known silviculture treatment but have not received silvicultural effectiveness monitoring and are not considered free growing stands.

Exten: Represents yields from stands successfully regenerated using a harvest method or renewal successes where the treatment intensity did not achieve the desired outcome.

Basc1: Represents yields from stands resulting from moderate effort or single a silvicultural treatment following harvest.

Intn1: Represents yields from stands resulting from high efforts or multiple silvicultural treatment follow harvest.

DAMG1: Represents yields from older stands (mature and over mature) resulting from past or current spruce budworm insect infestations and that have significant spruce and balsam fir mortality. Stands assigned this silvicultural intensity within the clearcut silviculture system will reflect and lower volumes, and will have unique post-harvest succession rules.

A detailed breakdown of SI and its interaction with development states can be seen in the Analysis Package Section 3.2.1. in Supplementary Documentation 6.1(b) – Analysis Package

Silviculture System

The assignment of Silviculture Systems describes the method of harvest and regeneration for a forest stand. All silviculture systems employed on the TMU result in a forest that iseven-aged. The occurrence of Forest Units that are typically managed under the selection silviculture system (uneven age) are known to be low grade, requiring a thin from below to create the forest condition for selection management. For this reason, no uneven aged silviculture systems will be applied.

Management Stage

The Stage of Management indicates the next harvest or cut treatment that is scheduled to occur for a productive forest stand. The stage of management depends on the silvicultural system employed and the development stage

3.3.2 Analysis of Past Silvicultural Performance

Silvicultural effectiveness monitoring (SEM) analysis results are based on a limited sample size as fluctuating harvest and monitoring have occurred throughout the duration of the current 2009 TMU FMP. The successional pathways that were developed for the 2009 FMP were based on the results of 15,000 hectares of survey work where data could be applied to forest units where the definitions were consistent between periods.

Survey work completed since the start of the 2009 FMP totaled just over 3,200 hectares and the results were used to review, and modify where appropriate, the 2009 FMP post renewal forest succession proportions by Forest Unit and Treatment. For the 2009 FMP, the depleted forest unit, applied SGR and resulting FTG forest unit were compared and used to inform the development of similar strategic silviculture options developed in the 2019 SFMM model.

It is important to note that the 2009 FMP Forest Unit definitions have evolved and are not consistent with the 2019 FMP forest units in their definition or in their aggregation via the Structured Query Language (SQL) sort order. The most notable variations include the lower stocking criteria for the 2019 BW1 and PO1 forest units (FU) compared to the 2009 BWCC and POCC FU's, the removal of the 2009 FMP mixed hardwood dominated forest unit (MHWD), and the addition of the 2019 FMP SB, and SP1 Forest Units. These updated FU's created the need to develop new strategic silviculture options based on applied treatment packages on adjacent forests and from information provided in technical reports. The following materials were used in the analysis of renewal and tending and the development of strategic silviculture options.

- Post-renewal succession rules and analysis from the adjacent Timiskaming Forest 2011 FMP.
- 2016 NE Regional Post Renewal Forest Succession paper –authored by Ken Lennon.
- Local knowledge and expert opinion.
- 2011 paper titled "Modelling landscape level effects of reduced herbicide use in two forests in North Ontario" (Dacosta et al. 2011).
- Analysis of renewal success of 2009 TMU FMP silvicultural ground rules.

The results of the analysis were used to create an updated, or new, pre-and-post-renewal forest unit description when warranted. The results were based on the compiled available data and used to create the successional matrix seen in table FMP-5. Each of the resulting FTG forest units by applied silvicultural ground rule were assessed using survey work completed in 2010 and 2013. The 2004 FMP and the 2009 FMP used similar silviculture ground rules and forest units which make this comparison possible. This information is based on limited data and therefore the results shown for each applied SGR and resulting FTG forest unit will continue to require verification from future survey data. However, to alleviate some of the uncertainty, this information was used to in conjunction with the resources listed above to formulate the strategic silviculture options in the 2019 SFMM.

Table FMP-4 shows the most common treatment package applied by FU and the expected proportions of forest unit by SI returning following renewal. Rationale for the modifications or creation of new strategic silviculture options in the 2019 FMP are located in the Analysis Package located in the Supplementary Documentation 6.1(b) – Analysis Package. Note that the information used in this table contains Forest Unit definitions from the North East Standard Forest Unit for the Boreal Forest. While similarities exist between forest units, the definitions are not identical and therefore are considered as important context for even-aged forest managed under the clearcut silviculture system. Forest Units discussed in this analysis include: PO1, BW1, SB1, LC1, MW1, MW2, PJ1, PJ2, SF1, SP1, OH1, PRW, and PW1.

The complete table of post-renewal proportions by forest unit, silviculture intensity and treatment are available in Section 4.3 in the Analysis Package available in the Supplementary Documentation 6.1(b) – Analysis Package

3.4 Desired Forest and Benefits

The desired forest and benefits is a description of the future forest structure, composition and goods and services which are desired from the forest to achieve a balance of social, economic, and environmental needs over time.

A meeting on May 3rd 2017was held at the Temagami Community Center and Arena. The Planning Team and the Temagami Local Citizens Committee as well as member alternates were invited by the North Bay District Manager to participate in the development of the desired forest and benefits for the 2019-2029 TMU FMP. All of the desired forest and benefits meetings served to define new or confirm existing plan objectives, indicators of sustainability, and associated desired levels. The meetings also presented the opportunity for participating members share their respective interests in the management of the forest and to understand other opinions, and expectations for the FMP. The planning team considered all input provided from the meetings. Some material was incorporated into new plan objectives or used to confirm existing ones, while other input could not be considered in the objective suite since they were adjudicated as outside the scope of forest management planning. All participants, including planning team members were left with an appreciation of the range, and often conflicting, perspectives on the desired forest condition and an enhanced appreciation of the complexity in attaining a balanced objective achievement.

Section 6.1(k) – Summary of Public Consultation found in the Supplementary Documentation, documents the participation in the desired forest and benefits process, and documents the desired forest and benefits summary.

Two separate meetings were held (March 21st 2017 and February 28th 2017) to capture input into the desired forest and benefits for the Lands Set Aside Strategic Management Zone. Both of these meetings were held on Bear Island with First Nation community members. These meetings included a background information session on the forest and a review of forest management and forest management planning followed by a facilitated objective gathering sessions.

3.5 Strategic Management Zones

The development of six Strategic Management Zones (SMZ) have been coded into the Base Model for the purpose of understanding the harvest and succession dynamics in each zone. These SMZs were developed using landscape features such topography, and water body features or were based on previous higher-level land use policy decisions. Figure 44 illustrates the SMZ areas for the TMU. The following SMZ labels are used for reporting and strategic modeling.

Strategic management zone descriptions:

Centr (Center): area along the Highway 11 corridor with primary access roads up to water boundary features or based on land use policy direction.

North (North): area surrounding Eagle Lake Road

LSA (LSA): The area within the Lands Set Aside for settlement negotiation. Also referred to as potential settlements land in other land claim documents relevant to the LSA.

South (South): area in the south-eastern corner of the unit that borders significant waterbody features.

WestB (West B): west of Lake Temagami and along the boundary of the unit and determined by land use policy direction.

WestA (West A): west of lake Temagami along the boundary of the unit surrounded by waterbody features within Enhanced Management Areas.

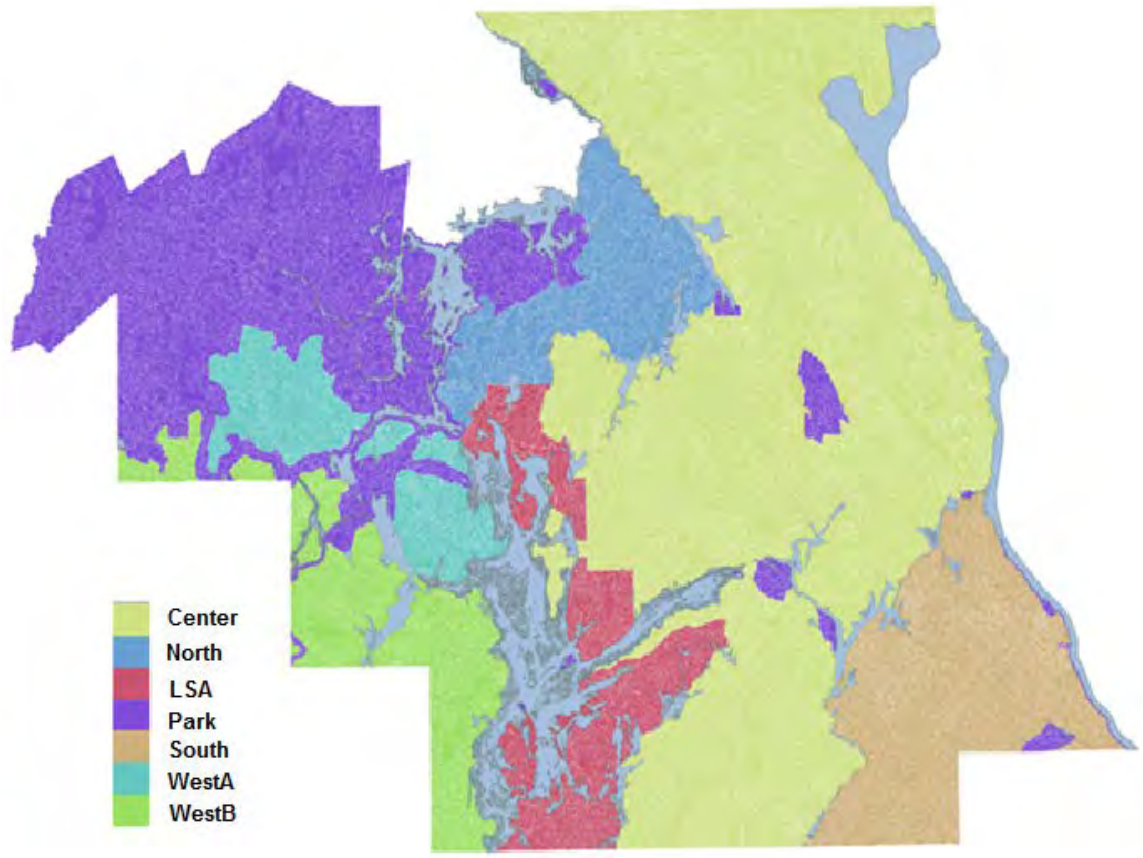


Figure 44 Illustration of the TMU Strategic Management Zones

3.6 Management Objectives and Indicators

This section will describe the suite of management objectives including the associated indicators and the timeline for indicator assessment. For each indicator, the planning team has developed desirable levels and targets by considering the background information, management guide direction, desired forest and benefits meeting results and the results of the scoping analysis. For each objective grouping the management objectives, associated indicators, desirable levels and targets, and the timing of assessment are described in detail below and are also summarized in Table FMP-10: Assessment of Objective Achievement

The primary goal of a forest management plan is to achieve a healthy, sustainable forest ecosystem, which is vital to the well-being of forest and non-forest based Ontario communities. The CFSA directs that all management objectives, and their associated

indicators developed for a forest management plan be compatible with one of four primary objective groupings. These groupings are as follows;

- Forest Diversity
- Social and Economic
- Provision of Forest Cover
- Silviculture

For the 2019 TMU FMP, a fifth objective grouping was created specifically for the Lands Set Aside area.

For each individual grouping there are one or more related objectives, with associated indicators, desirable levels and targets. The Forest management plan objectives are developed for benefits or outcomes that can be achieved by manipulating forest cover. The associated indicators for achieving these objectives will involve the application of silvicultural methods for harvest, renewal and tending since these are the processes by which forest cover is manipulated. In some cases, there is one or more indicator supporting an objective. For each indicator, there are associated desired levels and targets that can be measured either qualitatively or quantitatively and will include an associated timeline for the assessment of success. A desired level reflects the planning team's interpretation of the ideal condition without consideration of any other objective.

The establishment of the target level on the other hand, reflects the necessity for balancing contrasting management objectives. These trade-offs between various management objectives may result in targets that differ from the desired levels. The planning team developed the targets with input from the Local Citizen's Committee and Aboriginal community members at the desired forest and benefits meetings. The chosen target levels were supported by scoping analysis results using Strategic Forest Management Model (SFMM) and the Ontario Landscape Tool (OLT) spatial habitat model. The planning team also considered the available background information and the direction provided by the relevant forest management guides and science information. Sections 4.0, 5.0 and 6.0 of the Analysis Package located in 6.1(b) – Analysis Package of the Supplementary Documentation describe in detail the inputs, results and conclusions for the development of management objectives and scoping investigations.

The CFSA objective grouping associated with each objective and indicator noted above are summarized in table FMP-10: Assessment of Objective Achievement, As well, management objectives specific to the LSA area are included in the table. Each grouping considers the requirement of information available to the planning team in order to properly assess the achievement of each objective. The following describes the management objectives, associated indicators, desirable levels and targets categorized

by CFSA objective category. Each objective is numbered for ease of reference with table FMP-10: Assessment of Objective Achievement.

The selection of areas for harvest operations is required to support the achievement of management objectives described in 3.6.1 Forest Diversity Objective Category to 3.6.3 Lands Set Aside Objective Category. The MNRF Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (SSG) was considered throughout the selection of operations. The SSG provides direction on specific operational prescriptions required to protect or enhance environmental, recreational, and cultural heritage values which were all considered during the selection of area for operations. For example, the residual forest requirements were evaluated and applied consistently with the SSG. Modified operation adjacent to water bodies are also consistent with the SSG. The Forest Management Guide for Cultural Heritage Values was also considered and provides direction for the protection or avoidances of area with historic, architectural, archaeologic, spiritual or other cultural significance. The Forest Management Guide for Great Lakes-St. Lawrence Landscapes was also considered during the selection of areas for operations. The guide provides direction for the achievement of texture-based indicators of sustainability such as the size and arrangement of young, mature and old forest.

The collection of these guides provides for the health of the forest at different scales of space and time.

3.6.1 Forest Diversity Objective Category

Refer to section 8.0 FOREST MANAGEMENT PLAN TABLES, FMP-10: Assessment of Objective Achievement for all management objectives to read this section in table format.

<u>Management Objective 1</u>

To direct forest management activities to maintain or enhance natural landscape structure, composition, texture and patch size that provide for the long-term health of forest ecosystems and associated wildlife species by applying the Landscape Guide

Indicator(s):

1.1 Hectares of Tolerant Hardwood Landscape Class (TOL)
   a. Desired Levels:18,338 - 25,385
   b. Target Levels: Cause movement to increase within 18,338 - 25,385
   c. Timing of Assessment: Stage 2 - LTMD Development

1.2 Hectares of Intolerant hardwood Landscape Class (INTOL)

a. Desired Levels: 18,633 - 33,142
b. Target Levels: Cause movement to maintain within 18,633 - 33,142
c. Timing of Assessment: Stage 2 - LTMD Development

1.3 Hectares of White pine mixedwood Landscape Class (PWMIX)

a. Desired Levels:55,980 - 70,440
b. Target Levels: Cause movement to increase within 55,980 - 70,440
c. Timing of Assessment: Stage 2 - LTMD Development

1.4 Hectares of Mixedwood Landscape Class (MIXED)

a. Desired Levels:49,790 - 65,679
b. Target Levels: Cause movement to decrease within 49,790 - 65,679
c. Timing of Assessment: Stage 2 - LTMD Development

1.5 Hectares of Mixed Pine Landscape Class (MXPRJ)

a. Desired Levels:29,692 - 51,686
b. Target Levels: Cause movement to maintain within 29,692 - 51,686
c. Timing of Assessment: Stage 2 - LTMD Development

1.6 Hectares of Spruce Fir Cedar Landscape Class (SFC)

a. Desired Levels:64,341- 86,237
b. Target Levels: Decrease to within 86,237 - 64,341
c. Timing of Assessment: Stage 2 - LTMD Development

1.7 Hectares of Old Growth Forest by Planning Forest Units

a. Desired Levels:
    - MCL: 4,009 - 7,772
    - MWCC: 5,369 - 12,343
    - MWUS: 2,528 - 5,503
    - PO: 1,160 - 3,607
    - BW: 2,968 - 7,211
    - PR: 64 – 394
    - PWUS: 15,650 -24,418
    - PWST: 1,591 - 3,204
    - PJ1: 573 - 3,281
    - PJ2: 2,248 - 6,375

- SP1: 1,515 - 4,272
- SF: 2,007 - 6,295
- PWUSC 1,495 -3,503
- SB: 1,190 - 4,406
- HDUS1: 12,297 - 21,162

b. Target Levels:

- MCL: Cause movement to maintain within 4,009 - 7,772
- MWCC: Cause movement to maintain within 12,343 - 5,369
- MWUS: Movement to decrease within 2,528 - 5,503
- PO: Cause movement to within 1,160 - 3,607
- BW: Cause movement to increase within 2,968 - 7,211
- PR: Cause movement to maintain within 64 - 394
- PWUS: Cause movement to increase within 15,650 -24,418
- PWST: Cause movement to maintain within 1,591 - 3,204
- PJ1: Cause movement to maintain within 573 - 3,281
- PJ2: Cause movement to maintain within 2,248 - 6,375
- SP1: Cause movement decrease within 4,272 - 1,515
- SF: Cause movement to within 6,295 - 2,007
- PWUSC: Cause movement to decrease within 3,503 - 1,495
- SB: Cause movement to maintain within 1,190 - 4,406
- HDUS1: Cause movement to increase within 12,297 - 21,162

c. Timing of Assessment: Stage 2 - LTMD Development

1.8 Hectares of Red and White Pine Forest (PWPR)

a. Desired Levels:

- PWPR: 76,350 - 89,570
- PWR: Above 1995 amount (64,774 ha)

b. Target Levels:

- PWPR: Cause movement to maintain 76,350 - 89,570
- PWR: Maintain above 1995 amount (64,774 ha)

c. Timing of Assessment: Stage 2 - LTMD Development

1.9 Hectares of young forest in presapling development stage (PRESAP)

a. Desired Levels:

- PRESAP: 30,750 - 100,462

b. Target Levels:

- PRESAP: Cause movement to within 30,750 - 100,462

c. Timing of Assessment: Stage 2 - LTMD Development

1.10 Hectares of Presapling Sapling and T-Stage development stage (PSST)

a. Desired Levels:
    - PSST: 76,024 - 144,781
b. Target Levels:
    - PSST: Cause movement to within 76,024 - 144,781
c. Timing of Assessment: Stage 2 - LTMD Development

1.11Texture of Mature and Old Forest - (Proportion of 500 ha Hexagon)

a. Desired Levels:
    - 0.11 in the (0.1 - 0.2 ha) hexagon
    - 0.16 in the (0.21- 0.4) hexagon
    - 0.19 in the (0.41 - 0.6) hexagon
    - 0.25 in the (0.61 - 0.8) hexagon
    - 0.3 in the (>0.80) hexagon
b. Target Levels:
    - Increase in the (0.1 - 0.2 ha) hexagon
    - Increase in the (0.21- 0.4) hexagon
    - Maintain in the (0.41 - 0.6) hexagon
    - Decrease in the (0.61 - 0.8 ha) hexagon
    - Decrease in the (>0.80) hexagon

c. Timing of Assessment: Stage 2 - LTMD Development, Stage 3 - Planned Operations

1.12Texture of Mature and Old Forest - (Proportion of 5000 ha Hexagon)

a. Desired Levels:
    - 0.01 in the (0.1 - 0.2 ha) hexagon
    - 0.16 in the (0.21- 0.4) hexagon
    - 0.32 in the (0.41 - 0.6) hexagon
    - 0.37 in the (0.61 - 0.8) hexagon
    - 0.14 in the (>0.80) hexagon
b. Target Levels:
    - Maintain in the (0.1 - 0.2 ha) hexagon
    - Increase in the (0.21- 0.4) hexagon
    - Increase in the (0.41 - 0.6) hexagon
    - Decrease in the (0.61 - 0.8) hexagon
    - Decrease in the (>0.80) hexagon
a. Timing of Assessment: Stage 2 - LTMD Development, Stage 3 - Planned Operations

1.13 Patch size of Young Forest (<36 years) - Proportion of Patches

a. Desired Levels:

- 0.61 in the (1-100 ha) patch size
- 0.18 in the (101-250) patch size
- 0.09 in the (251-500) patch size
- 0.06 in the (501-1,000) patch size
- 0.03 in the (1,001-2,500) patch size
- 0.01 in the (2,501-5,000) patch size
- 0.01 in the (5,000-10,000) patch size
- 0.01 in the (10,000-20,000) patch size
- 0.00 in the (>20,000) patch size

b. Target Levels:

- Maintain in the (1-100 ha) patch size
- Decrease in the (101-250) patch size
- Maintain in the (251-500) patch size
- Increase in the (501-1,000) patch size
- Maintain in the (1,001-2,500) patch size
- Maintain in the (2,501-5,000) patch size
- Maintain in the (5,000-10,000) patch size
- Maintain in the (10,000-20,000) patch size
- Maintain in the (>20,000) patch size

c. Timing of Assessment: Stage 2 - LTMD Development, Stage 3 - Planned Operations

<u>Management Objective 2</u>

To develop and implement forest management activities in a manner that protects or enhances environmental, wildlife, recreational and cultural heritage values by applying the Stand and Site Guide.

Indicator(s):

2.1 Compliance with AOC prescriptions and Conditions on regular operations.

a. Desired Levels: 100 % compliance
b. Target Levels: 100 % compliance

c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 3

To evaluate moose carrying capacity across the forest (as it relates to forest structure and composition) to determine if Moose Emphasis Areas (MEAs) are needed and to improve the quality of habitat within MEAs where needed.

Indicator(s):

3.1 Review of total moose carrying capacity

b. Desired Levels:0.35 - 0.40
c. Target Levels: None
d. Timing of Assessment: Stage 2 - LTMD Development

3.2 Structure and Composition of Moose Emphasis Area ONE: browse-producing habitat

d. Desired Levels:5-30%
e. Target Levels:9%
a. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.2 Structure and Composition of Moose Emphasis Area ONE: mature conifer dominated habitat

b. Desired Levels:15-35%
c. Target Levels: 56%
d. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.3 Structure and Composition of Moose Emphasis Area ONE: Hardwood/Mixedwood dominated habitat

a. Desired Levels:20-55%
b. Target Levels: 24%
c. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.4 Structure and Composition of Moose Emphasis Area TWO: browse-producing habitat

a. Desired Levels: 5-30%
b. Target Levels: 12%
c. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.5 Structure and Composition of Moose Emphasis Area TWO: mature conifer dominated habitat

e. Desired Levels:15-35%
f. Target Levels: 52%
g. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.6 Structure and Composition of Moose Emphasis Area TWO: Hardwood/Mixedwood dominated habitat

a. Desired Levels:20-55%
b. Target Levels: 22%
c. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.7 Structure and Composition of Moose Emphasis Area THREE: browse-producing habitat

a. Desired Levels:5-30%
b. Target Levels:20%
c. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.8 Structure and Composition of Moose Emphasis Area THREE: mature conifer dominated habitat

a. Desired Levels:15-35%
b. Target Levels: 35%
c. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

3.9 Structure and Composition of Moose Emphasis Area THREE: Hardwood/Mixedwood dominated habitat

a. Desired Levels:20-55%
b. Target Levels: 34%
c. Timing of Assessment:

<u>Management Objective 4</u>

To minimize productive forest area loss by forest management activities and to increase the amount of Crown productive forest by regenerating, where appropriate, non-forest area.

Indicator(s):

4.1 Hectares of Managed Crown Forest available for timber production

a. Desired Levels: 320,317

b. Target Levels: 320,317
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

4.2 km/km2 of roads in EMA
a. Desired Levels: NA
b. Target Levels: NA
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

4.3 km/km2 of roads in EMA
a. Desired Levels: NA
b. Target Levels: NA
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 5

To ensure silviculture regenerates harvested forest area to the targeted forest units and silvicultural intensity

Indicator(s):

5.1 Percent of harvested forest area assessed as free-growing by forest unit
a. Desired Levels: 100%
b. Target Levels: 91-100%
d. Timing of Assessment: Year 5 and Year 10 Annual Reports

5.2 Planned and actual percent of harvest area treated by silvicultural intensity
a. Desired Levels: 100%
b. Target Levels: 91-100%
e. Timing of Assessment: Year 5 and Year 10 Annual Reports

5.3 Planned and actual percent of area successfully regenerated to the projected forest unit by forest unit
a. Desired Levels: 100%
b. Target Levels: 91-100%
f. Timing of Assessment: Year 5 and Year 10 Annual Reports

5.3 Planned and actual percent of area successfully regenerated to the projected forest unit by forest unit

a. Desired Levels: 100%
b. Target Levels: 91-100%
g. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 6

Improve marketability of low grade, degraded, or overstocked stands by conducting a stand improvement silviculture project annually.

Indicator(s):

6.1 Number of completed stand improvement projects in tolerant hardwood forest

a. Desired Levels As needed to address all potential stand improvement projects
b. Target Levels: Annual project implementation
c. Timing of Assessment: Annual reports

Management Objective 7

Maximize where feasible, underutilized available silviculture tools such as prescribed burn, manual tending or any other where they can be shown to improve silviculture success and forest health.

Indicator(s):

7.1 Completed silviculture treatment

a. Desired Levels: Annual project implementation
b. Target Levels: Annual project implementation
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 8

Maintain a forest resilient and adaptive to climate change through the movement towards a natural pattern, structure and composition and through the reporting and treating of invasive insects, pathogens and plants.

Indicator(s):

8.1 Indicators from Management objective 1

a. Desired Levels: See Desired Levels for management objective 1
a. Target Levels: See Targets for management objective 1
b. Timing of Assessment: See timing for management objective 1

8.2 Reporting signing of invasive species

a. Desired Levels: unlimited
b. Target Levels: unlimited
c. Timing of Assessment: Annual Reports

Management Objective 9

Investigate opportunities and economically viable alternatives and effects to structure and composition objectives from the application of herbicides.

Indicator(s):

9.1 Complete LTMD scoping and sensitivity analysis of herbicides use in SFMM silviculture options

a. Desired Levels: NA
b. Target Levels: Completed relevant scoping and sensitivity analysis
a. Timing of Assessment: Stage 2 - LTMD Development

9.2 Proportion of herbicide use per hectare of renewal activities

a. Desired Levels: as needed to achieve plan objectives
b. Target Levels: Establish benchmark historical use by plan start and evaluate during plan implementation at Year 5 annual report
c. Timing of Assessment: Stage 4 - Draft Plan, Stage 5 - Final Plan, Year 5 and Year 10 Annual Reports

3.6.2 Socio and Economic Objective Category

Management Objective 10

Provide for a maximum, continuous, predictable, even and cost-effective long-term wood supply.

Indicator(s):

10.1 Long Term Projected Annual Available Harvest Area (ha) by Plan Forest Unit for the South, North, Center, West A and West B Strategic Management Zones

a. Desired Levels:
    - MCL: Meet Structure and Composition objectives and supply CID
    - MWCC: Meet Structure and Composition objectives and supply CID
    - MWUS: Meet Structure and Composition objectives and supply CID

- PO: Meet Structure and Composition objectives and supply CID
- BW: Meet Structure and Composition objectives and supply CID
- PR: Meet Structure and Composition objectives and supply CID
- PWUS: Meet Structure and Composition objectives and supply CID
- PWST: Meet Structure and Composition objectives and supply CID
- PJ1: Meet Structure and Composition objectives and supply CID
- PJ2: Meet Structure and Composition objectives and supply CID
- SP1: Meet Structure and Composition objectives and supply CID
- SF: Meet Structure and Composition objectives and supply CID
- PWUSC: Meet Structure and Composition objectives and supply CID
- SB: Meet Structure and Composition objectives and supply CID
- HDUS1: Meet Structure and Composition objectives and supply CID
- Total AHA: Meet Structure and Composition objectives and supply CID

b. Target Levels:

- MCL: 33.6
- MWCC: 866.8
- MWUS: 21.4
- PO: 279.5
- BW: 232.9
- PR: 10.1
- PWUS: 61.9
- PWST: 369.6
- PJ1: 115.4
- PJ2: 133.4
- SP1: 316.1
- SF: 223.5
- PWUSC: 63.6
- SB: 53.2
- HDUS1: 43.7
- Total AHA: 2824.8

c. Timing of Assessment: Stage 2 - LTMD Development

10.2 Long Term Annual Projected Annual Available Harvest Volume (m3/yr.) by Species Group for the South, North, Center, West A and West B Strategic Management Zones

a. Desired Levels:
    - Birch: 46,279.8
    - Poplar: 65,000.0
    - SPF: 129,899.0
    - PWPR: 80,000.0
    - Cedar: 12,991.5
    - Tolerant Hardwood: 6,351.1
    - Total Species group annual harvest volume: 340,521.4
b. Target Levels:
    - Birch: 46,279.8
    - Poplar: 65,000.0
    - SPF: 129,899.0
    - PWPR: 80,000.0
    - Cedar: 12,991.5
    - Tolerant Hardwood: 6,351.1
    - Total Species group annual harvest volume: 340,521.4

c. Timing of Assessment: Stage 2 - LTMD Development

<u>Management Objective 11</u>

Enable to the degree possible, that actual harvest area and volume to equal available harvest area and volume through the development of cost effective road planning, allocations and timing that will support the achievement of Management Objective 1 and overall forest health.

Indicator(s):

11.1 Actual Annual Harvest Area of Plan Forest Unit (%) for the South, North, Center, West A and West B Strategic Management Zones

a. Desired Levels:100%
b. Target Levels:50 - 100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

11.2 Actual total harvest area utilization (%) over the current and preceding planning period

a. Desired Levels:100%
b. Target Levels:50 - 100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

11.3 Actual Annual Harvest Volume (%) by Species Group for the South, North, Center, West A and West B Strategic Management Zones

a. Desired Levels: =<100%
b. Target Levels:50-100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

11.4 Actual Total Annual Harvest Volume utilization (%) over the current and preceding planning period

a. Desired Levels: 100%
b. Target Levels:50-100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

11.5 Distribution of, and arrangement of allocations by Analysis unit and resulting from the Use of Third Party Tools to develop marketable allocations

a. Desired Levels: Documented use
b. Target Levels: Documented use
c. Timing of Assessment: Stage 3 Planned Operations

Management Objective 12

Develop and Maintain a comprehensive road status and quality inventory describing road quality, drivability and life span.

Indicator(s):

12.1 Km of road type

a. Desired Levels: Established by Plan Start
b. Target Levels: TBD
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

12.2 Road lifespan indicator

a. Desired Levels: Established by Plan Start
b. Target Levels: TBD
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 13

To encourage the maximum harvest of available merchantable forest fiber while implementing forest operations.

Indicator(s):

13.1 % utilization of planned vs actual stand volume harvested by block

a. Desired Levels: 100%
b. Target Levels: 80-100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

13.2 % compliance in Utilization activity over the current and preceding planning period

a. Desired Levels: 100%
b. Target Levels: 100%
c. Timing of Assessment: Annual Reports

Management Objective 14

To identify and mitigate management impacts to recreational commercial and other values from the forest resource and to identify and manage impact to forest management activities from recreational or other commercial values.

Indicator(s):

14.1 % Compliance with AOC prescriptions over plan implementation

a. Desired Levels: 100%
b. Target Levels: 100%
c. Timing of Assessment: Annual Reports

Management Objective 15

To emphasize and provided access to non-timber values on the Temagami forest.

Indicator(s):

15.1 Compliance with AOC prescriptions.

a. Desired Levels: 100%
b. Target Levels: 100%
c. Timing of Assessment: Annual Reports

15.2 High mining potential access.

a. Desired Levels: as feasible
b. Target Levels: as feasible
c. Timing of Assessment: Operation Planning

15.3 Mapping where appropriate areas of potential non-timber values

a. Desired Levels: all areas mapped
b. Target Levels: as appropriate
c. Timing of Assessment: Year 5 and Year 10 Annual Report

Management Objective 16

To undertake all forest management operations such that any negative environmental impacts are avoided or minimized.

Indicator(s):

16.1 % forest operation inspections in non-compliance, by activity and remedy type

a. Desired Levels: NA
b. Target Levels: 0 %
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 17

To engage Local Citizens Committee in effectively participating in the development and implementation of the forest management plan.

Indicator(s):

17.1 LCC self-evaluation

a. Desired Levels: Full Support
b. Target Levels: Majority Support
c. Timing of Assessment: Stage 3 - Proposed Operations, Stage 4 - Draft Plan, Stage 5 - Final Plan, Year 5 and Year 10 Annual Reports

17.2 Support Management objectives

a. Desired Levels: Full Support
b. Target Levels: Majority Support
c. Timing of Assessment: Stage 3 - Proposed Operations, Stage 4 - Draft Plan, Stage 5 - Final Plan, Year 5 and Year 10 Annual Reports

17.3 Support Stage 4 - Draft Plan

a. Desired Levels: Full Support
b. Target Levels: Majority Support
c. Timing of Assessment: Stage 3 - Proposed Operations, Stage 4 - Draft Plan, Stage 5 - Final Plan, Year 5 and Year 10 Annual Reports

17.4 Support Stage 5–Final Plan

a. Desired Levels: Full Support
b. Target Levels: Majority Support
c. Timing of Assessment: Stage 3 - Proposed Operations, Stage 4 - Draft Plan, Stage 5 - Final Plan, Year 5 and Year 10 Annual Reports

17.5 Number of field trips per year

a. Desired Levels: as per LCC terms of Reference
b. Target Levels: as per LCC terms of Reference
c. Timing of Assessment: Annually, starting in 2019

Management Objective 18

To collaborate with First Nations, and Metis in identifying feasible economic opportunities that contribute to capacity building and education on a broad range of forest management related activities.

Indicator(s):

18.1 Number of First Nation community's activity involved in the Forest Management Planning and implementation process

a. Desired Levels: All
b. Target Levels: All
c. Timing of Assessment: Stage 2 - LTMD Development, Stage 4 - Draft Plan, Year 5 and Year 10 Annual Reports

18.2 Number of concerns successfully resolved by all parties involved

a. Desired Levels: All
b. Target Levels: All
c. Timing of Assessment: Stage 2 - LTMD Development, Stage 4 - Draft Plan, Year 5 and Year 10 Annual Reports

18.3 Number of field trips to forest management operations

a. Desired Levels: 1 per year
b. Target Levels: 1 per year
c. Timing of Assessment: Annual Reports

Management Objective 19

To collaborate with local municipalities in identifying feasible economic opportunities that contribute to capacity building and education on a broad range of forest management related activities.

Indicator(s):

19.1 Number of Municipalities involved in the Forest Management Planning and implementation Process

a. Desired Levels: one representative on the planning team
b. Target Levels: one representative on the planning team
c. Timing of Assessment: Stage 2 - LTMD Development, Stage 4 - Draft Plan, Year 5 and Year 10 Annual Reports

19.2 Number of concerns successfully resolved by all parties involved

a. Desired Levels: All
b. Target Levels: All
c. Timing of Assessment: Stage 4 - Draft Plan, Year 5 and Year 10 Annual Reports

19.3 SEIM model results

a. Desired Levels: NA
b. Target Levels: TBD
c. Timing of Assessment: Stage 2 LTMD

19.4 Number of field trips to forest management operations

a. Desired Levels:1 per year
b. Target Levels: 1 per year
c. Timing of Assessment: Annual Reports

Management Objective 20

Issue personal use fuel wood permits

20.1 Mapping and issuance of personal fuelwood

a. Desired Levels: NA
b. Target Levels: All Areas as Appropriate

c. Timing of Assessment: Stage 3 - Planned Operations annual

Management Objective 21

Research opportunities to provide for future and emerging markets by establishing scientific trials for under-utilized species, and new technologies requiring long term local involvement.

Indicator(s):

21.1 Engagement, evaluation and exploration of opportunities

a. Desired Levels: 2 projects
b. Target Levels: 2 projects
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 22

To use effective communication tools for the dissemination and gathering of information related to forest management activities that can brand forestry in a positive and forward-thinking manor that promotes the forest health, cultural identity and economic well-being of local communities.

Indicator(s):

22.1 Records of communication

a. Desired Levels: NA
b. Target Levels: NA
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

22.2 Use of website, signs, posting and media notices that are accessible locally and remotely

a. Desired Levels: accessible, visible and interactive presence within communities and online
b. Target Levels: accessible, visible and interactive presence within communities and online.
c. Timing of Assessment: NA

3.6.3 Lands Set Aside Objective Category

In addition to the objectives grouped under the four required CFSA categories, additional objectives were developed specifically for the LSA areas as follows.

Management Objective 23

To build youth capacity by training and enabling youth to participate in forest management through a diversity of opportunities in silviculture, harvest, access and monitoring activities on or nearby to the Lands Set Aside that allows an individual to see the full suite of management activities within the 10-year plan.

Indicator(s):

23.1 Number of field trips or training opportunities carried out

a. Desired Levels: one per year
b. Target Levels: one per year
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

23.2 Distribution of harvest and renewal activities

a. Desired Levels: location of activities such that the community may take advantage of local training opportunities
b. Target Levels: NA
c. Timing of Assessment: Stage 3 - Planned Operations, Year 5 and Final Year AR

23.3 Forestry programs established within the community

a. Desired Levels: Have a program in place that has the capacity to accommodate the level of interest within the community
b. Target Levels: Have a program in place that has the capacity to accommodate the level of interest within the community
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 24

To ensure moose habitat is evaluated and considered and improve the quality of habitat within moose emphasis areas where needed through forest management activities.

Indicator(s):

24.1 Structure and Composition of Moose Emphasis Area FOUR: browse-producing habitat

d. Desired Levels:5-30%
a. Target Levels: 7%
b. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

24.2 Structure and Composition of Moose Emphasis Area FOUR: mature conifer dominated habitat

d. Desired Levels:15-35%
a. Target Levels:48%
b. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

24.3 Structure and Composition of Moose Emphasis Area FOUR: Hardwood/Mixedwood dominated habitat

a. Desired Levels:20-55%
b. Target Levels:40%
c. Timing of Assessment: Stage 3 - Planned Operations, Final Year AR

Management Objective 25

To make contributions to forest management activities that maintain or enhance natural landscape structure, composition, texture and patch size that provide for the long-term health of forest ecosystems and associated wildlife species by applying the Landscape Guide within the LSA.

Indicator(s):

25.1 See Management Objective 1

a. Desired Levels: See Management Objective 1
b. Target Levels: See Management Objective 1
c. Timing of Assessment: See Management Objective 1

Management Objective 26

To provide an accessible and available wood supply so that Temagami First Nation can benefit from all forest management activities (harvest and renewal) on the Lands set aside.

Indicator(s):

26.1 Long Term Projected Available Harvest Area (ha) for LSA Strategic Management Zones

a. Desired Levels:
    - MCL: 7.4
    - MWCC: 84.8

- MWUS: 12.7
- PO: 0.9
- BW: 28.3
- PR: 0.2
- PWUS:4.7
- PWST: 12.0
- PJ1: 2.3
- PJ2: 5.0
- SP1: 23.1
- SF: 49.3
- PWUSC: 3.8
- SB: 1.4
- HDUS1:5.3
- Total AHA: 241.2

b. Target Levels:

- MCL: 7.4
- MWCC: 84.8
- MWUS: 12.7
- PO: 0.9
- BW: 28.3
- PR: 0.2
- PWUS:4.7
- PWST: 12.0
- PJ1: 2.3
- PJ2: 5.0
- SP1: 23.1
- SF: 49.3
- PWUSC: 3.8
- SB: 1.4
- HDUS1:5.3
- Total AHA: 241.2

c. Timing of Assessment: Stage 2 - LTMD Development

26.2 Long Term Projected annual Available Harvest Volume (m3/yr.) by Species Group for the LSA Strategic Management Zones

a. Desired Levels:

- Birch: 4,031.1
- Poplar: 2,834.9
- SPF: 9,698.6
- PWPR: 5,000.0

- Cedar: 1,659.4
- Tolerant Hardwood:769.3
- Total Species group annual harvest volume: 23,993.0

b. Target Levels:
- Birch: 4,031.1
- Poplar: 2,834.9
- SPF: 9,698.6
- PWPR: 5,000.0
- Cedar: 1,659.4
- Tolerant Hardwood:769.3
- Total Species group annual harvest volume: 23,993.0

c. Timing of Assessment: Stage 2 - LTMD Development

26.3 Actual Harvest Area (%) for the LSA Strategic Management Zones

a. Desired Levels: 100%
b. Target Levels: 50-100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

26.4 Actual total harvest area utilization (%) over the current planning period

a. Desired Levels: 100%
b. Target Levels: 50-100%
d. Timing of Assessment: Year 5 and Year 10 Annual Reports

26.5 Actual Harvest Volume by Species Group for the LSA Strategic Management Zones

a. Desired Levels: 100%
b. Target Levels: 50-100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

26.6 Distribution and arrangement of allocations by Analysis Unit resulting from the Use of third party tools to develop marketable allocations

a. Desired Levels: use a tool
b. Target Levels: NA
c. Timing of Assessment: plan development

26.7 Percent of harvested forest area assessed as free-growing by forest unit

a. Desired Levels: Documented use
b. Target Levels: Documented use
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

26.8 Planned and actual percent of harvest area treated by silvicultural intensity
a. Desired Levels: 100%
b. Target Levels:90-100%
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

26.9 Planned and actual percent of area successfully regenerated to the projected forest unit by forest unit
a. Desired Levels: 100%
a. Target Levels:90-100%
b. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 27

To utilize non-herbicide tools for silviculture including fire and manual tending where appropriate as alternatives to herbicides and to build capacity within the community.

Indicator(s):

27.1 Number of completed silviculture projects involving the community
a. Desired Levels: 1 per year
b. Target Levels: 1 per year
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 28

To implement demonstration projects such as thinning, cleaning of forest within the LSA that provide for future long-term economic benefit and forest health.

Indicator(s):

28.1 Number of completed Silviculture projects involving the community
a. Desired Levels: 1 per year
b. Target Levels: 1 per year
c. Timing of Assessment: Year 5 and Year 10 Annual Reports

Management Objective 29

To recognize, provide opportunity and coordinate the harvest of non-timber forest products such as maple syrup and medicinal plants for the benefit of TFN/TAA (Qualitative)

Management Objective 30

To communicate and brand forest management related activates in a positive and forward-thinking manner that promotes the cultural identify, economic wellbeing and long-term forest health of Temagami First Nation people and traditional lands. (Qualitative)

3.7 Long-Term Management Direction

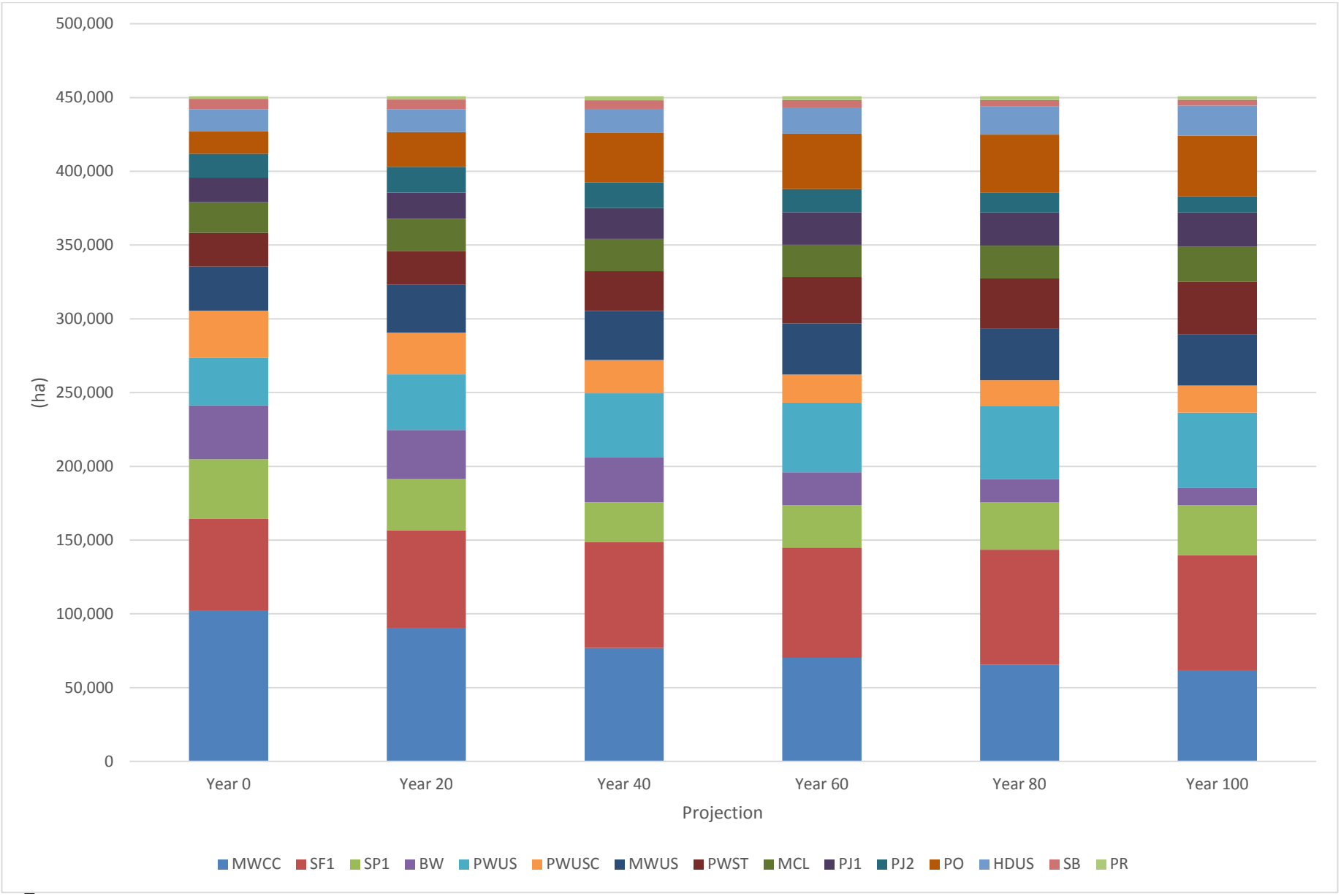
The Strategic Forest Management Model (SFMM) was used as the primary analysis tool for the strategic planning of this FMP. This computer model simulates the Temagami Management Unit (TMU) forest condition through time by projecting changes to the forest structure, composition and age for 200 years into the future. SFMM also evaluates forested areas for their contribution to forest diversity, timber production, and wildlife habitat. SFMM was used to determine the levels of harvest, renewal and tending activities required to adequately manipulate the forest cover to best achieve the management objectives. SFMM was also used in the development and assessment of achievable targets for the proposed long-term management direction. The model outputs include a description of the forest condition for the Crown productive forest, habitat levels of selected wildlife species, available harvest area by forest unit and available harvest volume by species group.

The planning team also utilized geographic information system (GIS) based spatial modelling tools and the Ontario Landscape Tool (OLT), which is a GIS-based landscape structured language (LSL) model. These tools were used to evaluate and establish target levels for the development of this plan and for completing the required spatial assessments during the development of the LTMD. Detailed information on the development of inputs and the use of SFMM for the preparation of the FMP can be found in Section 4.0 of Section 6.1(b) – Analysis Package of the Supplementary Documentation.

The following will describe the projected forest structure and the types and levels of activities required to manage the forest cover to balance the achievement of management objectives.

Projected forest condition of the Crown productive forest

The long-term projections created by SFMM show a change in the condition of the forest over the next 200 years. A description of each forest unit is provided in table FMP-2. A graphical representation of this data and the implications of those changes is provided below in a series of graphs.



2 Figure 45 Projected Condition of the Crown Productive Forest by forest unit (Area)

Figure 45 shows the amount of area in each forest unit that is projected to be on the landscape over the next 100 years. The most significant forest units currently on the landscape are the mixedwood (MWCC) and spruce-fir (SF) forest units. Both of these forest units contribute to the MIXED and SFC landscape class which are intended to be reduced towards the desired level on the landscape. The graph shows that by Year 100, mixedwood will decrease in area however, reserve forest dynamics overshadow much of the progress made towards achieving other desired levels. Figures 46-57 how each individual forest unit changes over time, allowing for a more nuanced description of the shifts in forest conditions.

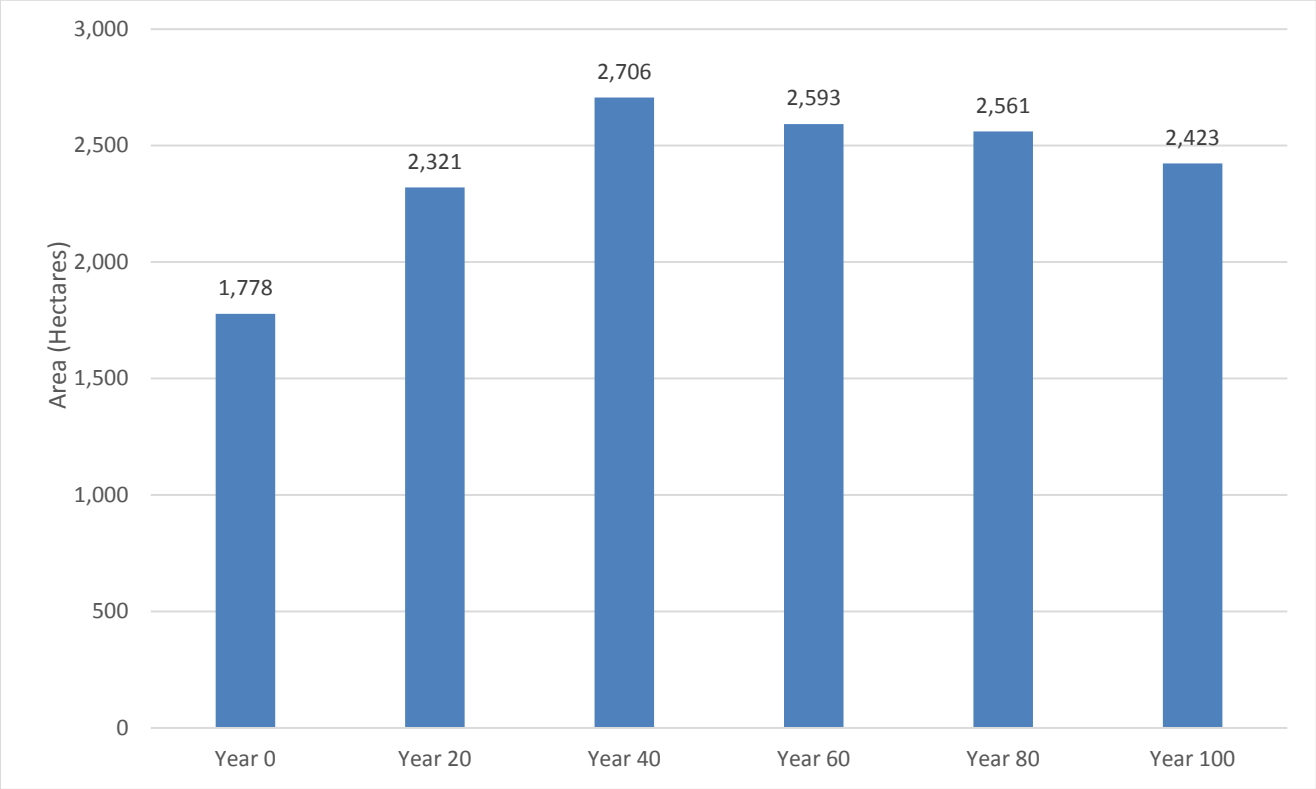


Figure 46 Projected Condition of the Crown Productive PR Forest Unit

Figure 46 above describes the amount of red pine forest unit area projected to be on the landscape over the next 100 years. The graph shows that the amount of red pine forest on the TMU should increase in the next 40 years from 1,778 hectares to a peak of 2,706 hectares. The amount of red pine forest will then remain relatively steady at roughly 2,500 hectares. This is consistent with management objective 1 of maintaining the mixed pine landscape class on the landscape. For a description of the contributions of the management activities towards achieving the desired level refer to Section 6.1.1 to 6.1.8 of Appendix III in the Analysis Package found in Supplementary Documentation Section 6.1(b) – Analysis Package

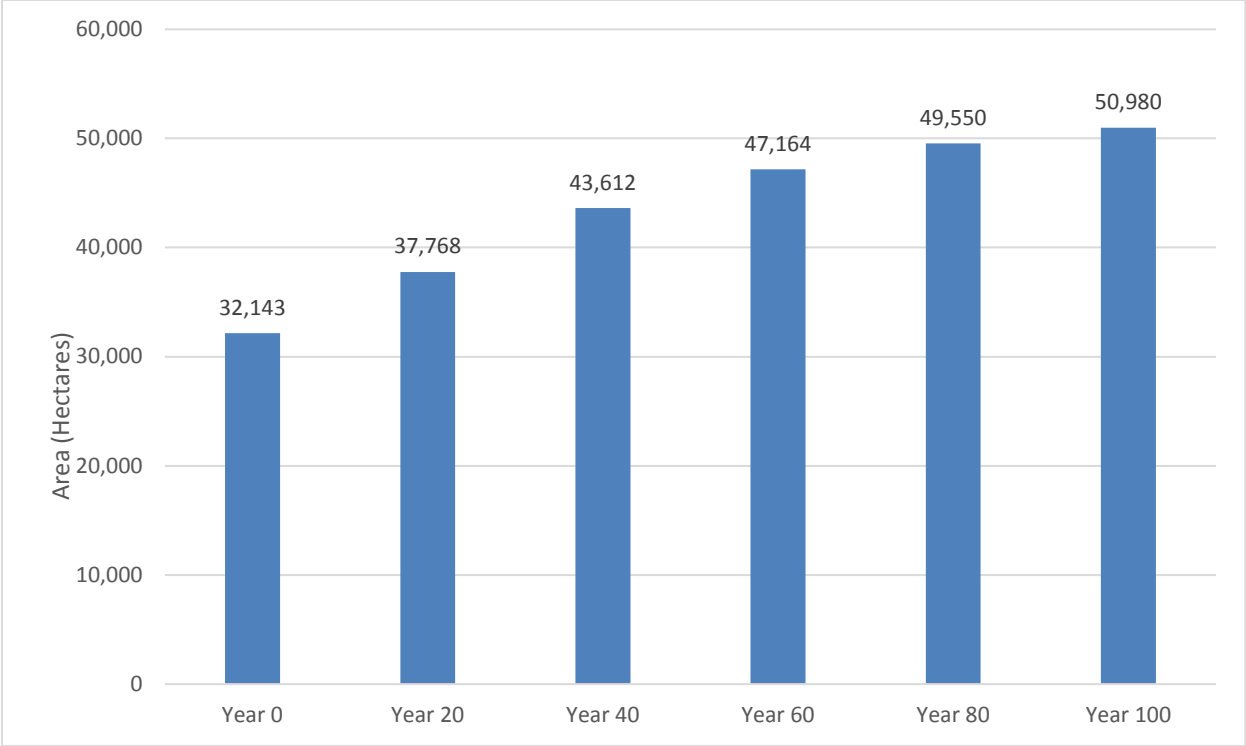


Figure 47 Projected Condition of the Crown Productive PWUS Forest Unit

Figure 47 above describes the amount of white pine shelterwood forest projected to be on the landscape over the next 100 years. The graph shows that the amount of white pine shelterwood forest on the TMU should consistently increase in the next 100 years from 32,142 hectares to a peak of 50,980 hectares. This is consistent with the management objective 1 and causes movement of the PWMIX landscape class towards the desired level. This does however, contribute to eventually exceeding the desired level of total white and red pine forest in the long term.

For a description of the contributions of the management activities towards achieving the desired level refer to Section 6.1.1 to 6.1.8 of Appendix III in the Analysis Package found in Supplementary Documentation Section 6.1(b) – Analysis Package

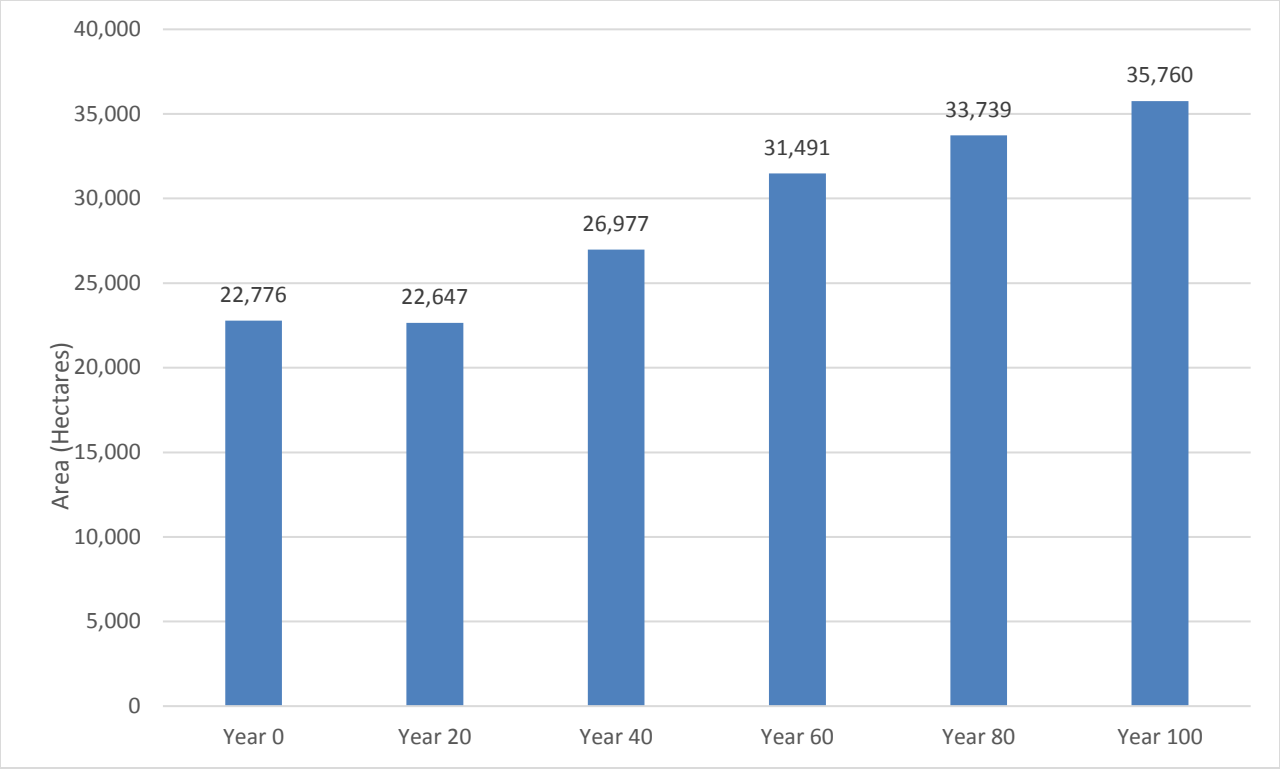


Figure 48 Projected Condition of the Crown Productive PWST Forest Unit

Figure 48 describes the amount of white pine seed tree forest unit area projected to be on the landscape over the next 100 years. The graph shows that the amount of white pine seed tree forest unit area on the TMU should remain steady for the next 20 years after which time it will increase steadily to 35,760 hectares over the remaining 80 years. This is consistent with management objective 1 of increasing the white pine mixedwood landscape class on the landscape. In the long term, the total area of red and white pine will exceed the desired level, however this dynamic is largely caused by the unmanaged and unavailable forest where management activities cannot affect forest composition aside from allowing natural succession to take place.

For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of appendix III in the analysis package found in 6.1(b) – Analysis Package

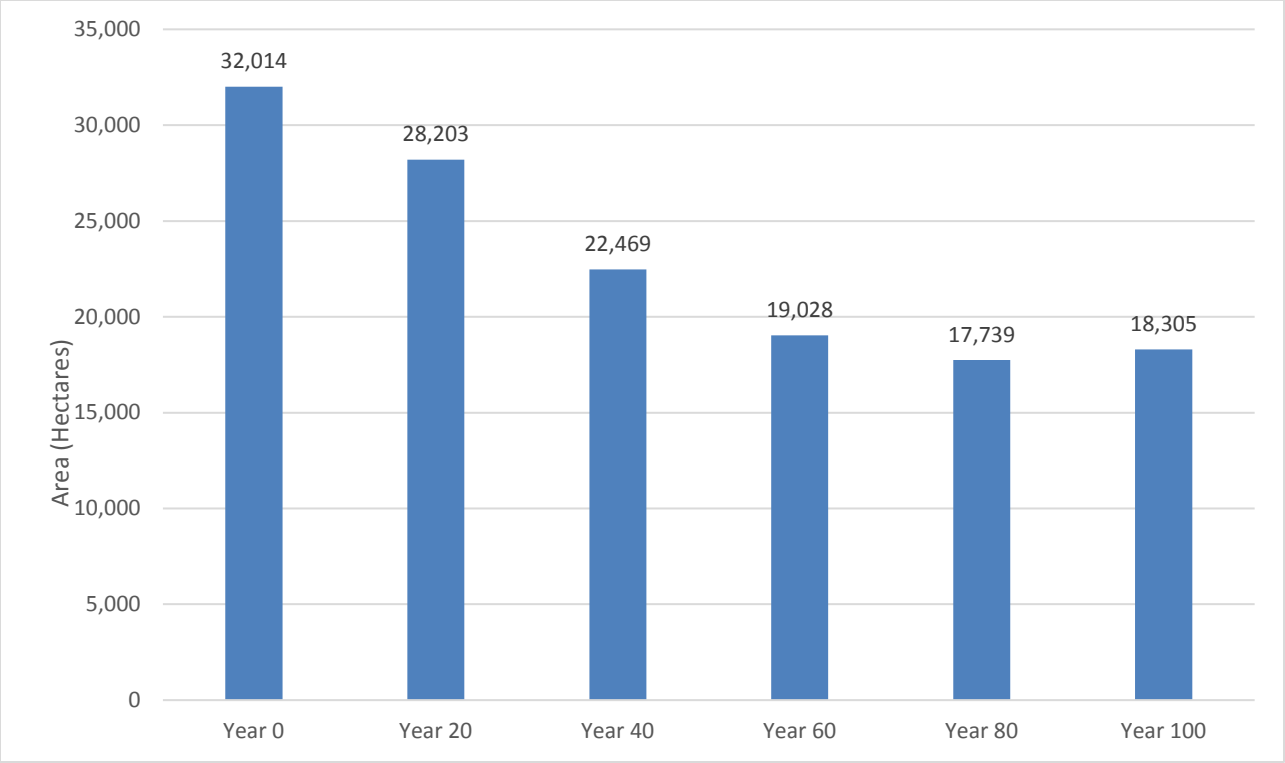


Figure 49 Projected Condition of the Crown Productive PWUSC Forest Unit

Figure 49 describes the amount of PWUSC area projected to be on the landscape over the next 100 years. The graph shows that the amount of this forest unit area will decrease steadily over the next 60 years, from 32,013 hectares to 19,027 hectares, before it stabilizes until Year 100. Although this may appear inconsistent to the management objective white pine mixedwood landscape class, the PWUSC forest unit does not contribute to the white pine mixedwood landscape class indicator. The species composition of the PWUSC forest unit (refer to FMP-2: Description of Forest Units) contains lower amounts of white pine stocking than the other white pine shelterwood forest unit (PWUS)

The PWUSC forest unit contributes to the mixed pine landscape class indicators and much the achievement is attributable due to the considerable amount of old growth present for this forest unit (refer to Figure 37). Reducing the occurrence of this forest unit towards the desired level of old growth, in favor of creating more higher stocked white pine stand (i.e. PWUS) and rebalancing the contributions to the mixed pines landscape class by creating more PR, PJ1 and PJ2 forest units leads to a steady decline of the PWUSC forest unit on the landscape. This trend is indicative of management objective 1. For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of the analysis package found in section 6.1(b) – Analysis Package

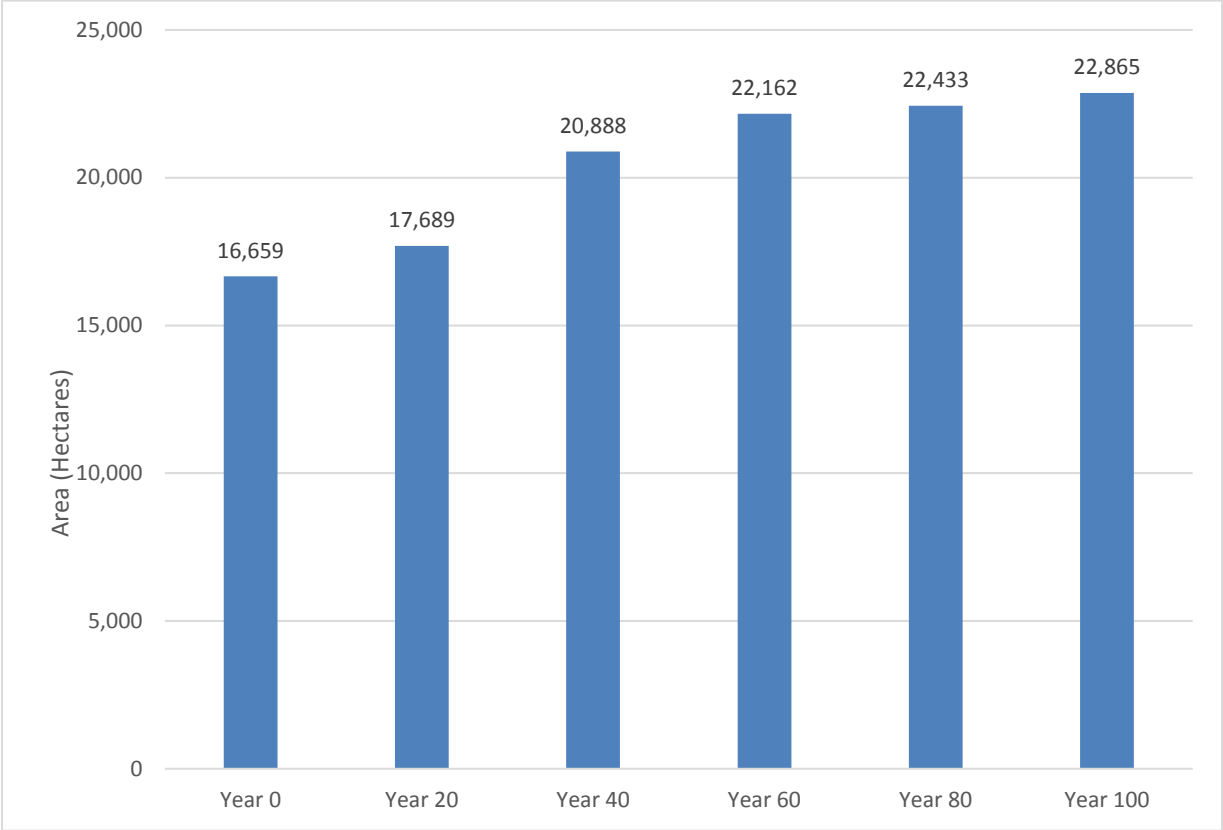


Figure 50 Projected Condition of the Crown Productive PJ1 Forest Unit

Figure 50 above describes the amount of pure jack pine forest unit area projected to be on the landscape over the next 100 years. The graph shows that the amount of jack pine forest on the TMU should increase steadily over the next 60 years, from 16,658 hectares to 22,162, before it remains relatively stable until Year 100. This is consistent with the management objective to maintain mixed pines on the landscape. The imbalance in area contributing to the mixed pines landscape class (more area coming from old PWUSC) is being corrected throughout the 100 year planning horizons. See Figure 50 above which shows the reduction in area within the PJ1 forest unit.

For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of the analysis package and appendix III in the analysis package found in 6.1(b) – Analysis Package

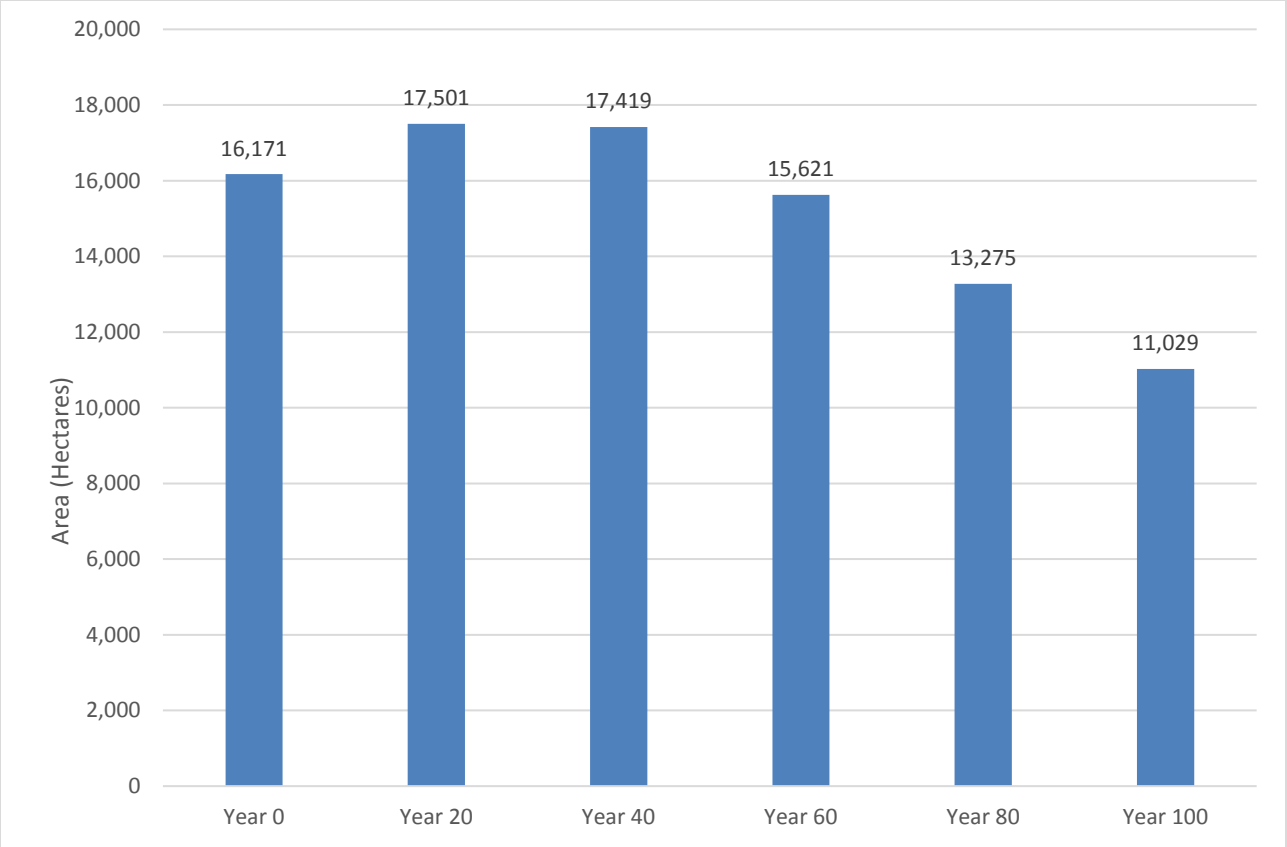


Figure 51 Projected Condition of the Crown Productive PJ2 Forest Unit

Figure 51 above describes the amount of jack pine conifer forest unit area projected to be on the landscape over the next 100 years. The graph shows that the amount of jack pine 2 forest on the TMU should increase slightly from 16,171 hectares to 17,419 hectares over the next 40 years, before a steady decrease to 11,028 hectares from 60-100 years. The achievement of the mixed pine landscape class desired level (which the mature and old PJ2 contribute to) and the area of old growth of PJ2 desired level in 100-years indicates that the rise and fall of the PJ2 by approximately 5,000 hectares is consistent with the forest dynamics that contribute to the achievement of the mixed pine landscape class in management objective 1.

For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of the analysis package and appendix III in the analysis package found in 6.1(b) – Analysis Package

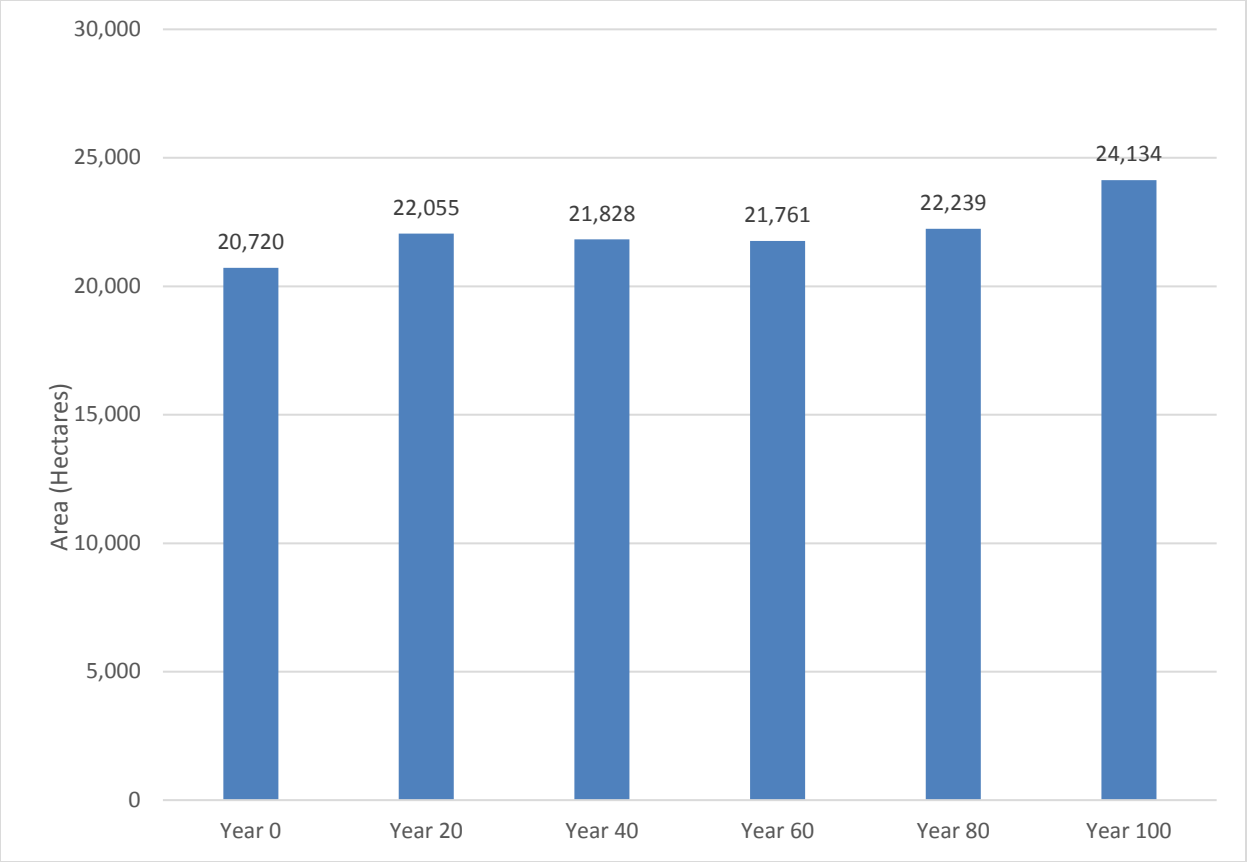


Figure 52 Projected Condition of the Crown Productive MCL Forest Unit

Figure 52 above describes the amount of mixed lowland conifer forest unit area projected to be on the landscape over the next 100 years. The graph shows that there are small increases in this forest unit over the next 100 years, starting at 20,720 hectares at Year 0 and 24,134 hectares at Year 100. The MCL forest unit contributes to the SFC landscape class for which the desired level requires a decrease from plan start. This trend is consistently caused by the considerable amount of area captured in reserve forest where management activities cannot influence forest structure. The progress towards desired levels is often overshadowed (as is the case here) by the forest dynamics occurring in the reserve forest.

For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of and appendix III in the analysis package found in 6.1(b) – Analysis Package

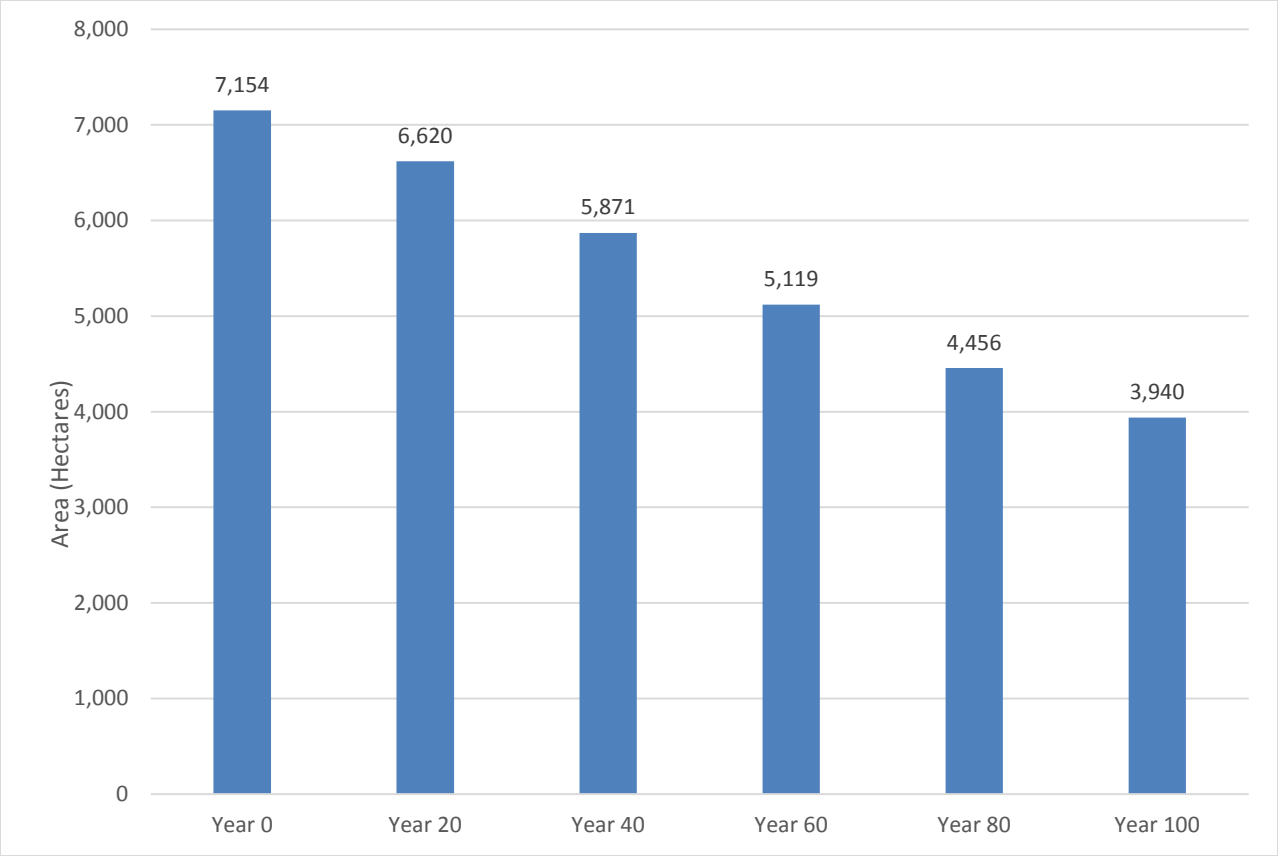


Figure 53 Projected Condition of the Crown Productive SB Forest Unit

Figure 53 above describes the amount of black spruce forest unit area projected to be on the landscape over the next 100 years. The graph shows that the amount of black spruce forest on the TMU should decrease from 7,153 hectares in Year 0 to 3,940 hectares by Year 100. This trend moves the forest closer to its pre-industrial condition.

For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of and appendix III in the analysis package found in 6.1(b) – Analysis Package

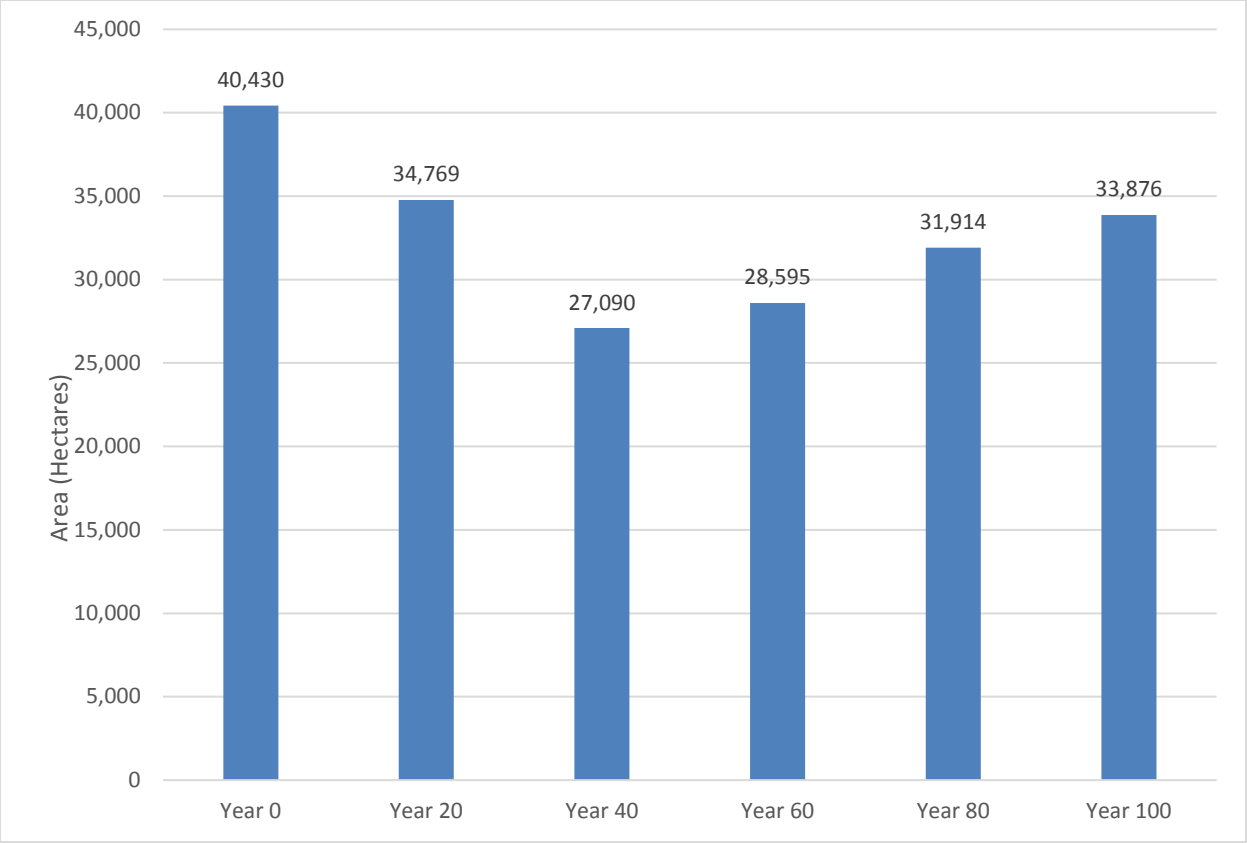


Figure 54 Projected Condition of the Crown Productive SP1 Forest Unit

Figure 54 above describes the amount of upland black spruce forest unit area projected to be on the landscape over the next 100 years. This forest unit represents one of the more significant forest types on the TMU. The graph shows that the amount of spruce pine decreases over the next 40 years from 40,030 hectares to 27,090 hectares. It then increases steadily up to 33,876 hectares by Year 100. The SP1 forest unit in the mature and over mature development stages contributes to MIXED landscape class which is intended to decrease in the LTMD. Much of the strategic silviculture options applied to reduce the SFC landscape class include a proportion of forest transitioning to the SP1 forest unit. This explains how the SP1 forest unit declines in the earlier portion of the planning horizon (transitioning to PJ1 and PJ2) then increases in the later periods of the planning horizon (as new young SP1 forest ages and becomes mature). The progress towards desired levels is often overshadowed (as is the case here) by the forest dynamics occurring in the reserve forest. For a description of the contributions of the management activities towards achieving the desired level refer to section 6.1.1 to 6.1.8 of and appendix III in the analysis package found in 6.1(b) – Analysis Package

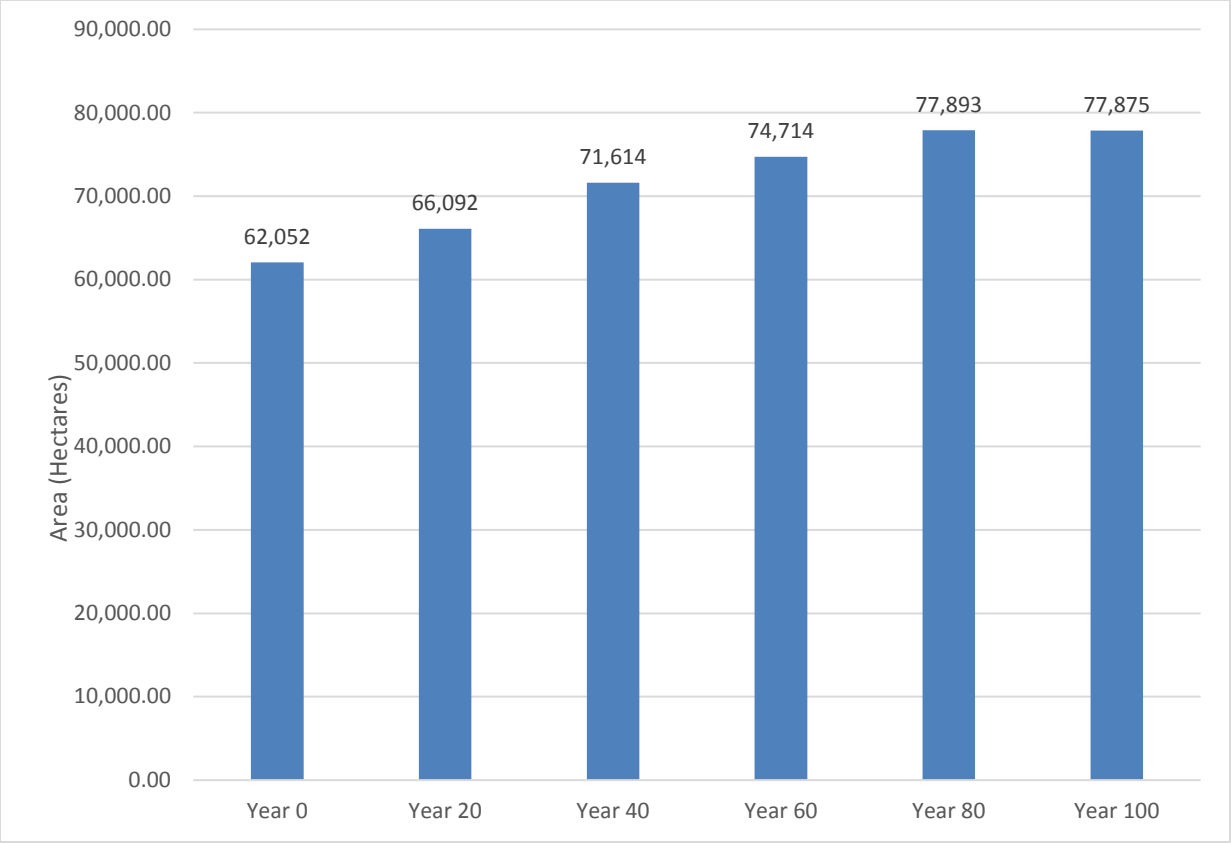


Figure 55 Projected Condition of the Crown Productive SF Forest Unit

Figure 55 above describes the amount of spruce-fir forest unit area projected to be on the landscape over the next 100 years. This forest unit represents one of the more significant forest types on the TMU. The graph shows that the amount of spruce-fir forest increases slightly over the next 100 years from 62,052 hectares to 77,874 hectares. The progress towards desired levels is often overshadowed (as is the case here) by the forest dynamics occurring in the reserve forest. For a description of the Spruce Fir Cedar landscape class (mature and old SF forest unit contributes to this landscape class) towards achieving the desired level refer to section 6.1.1 to 6.1.8 of the analysis package found in 6.1(b) – Analysis Package

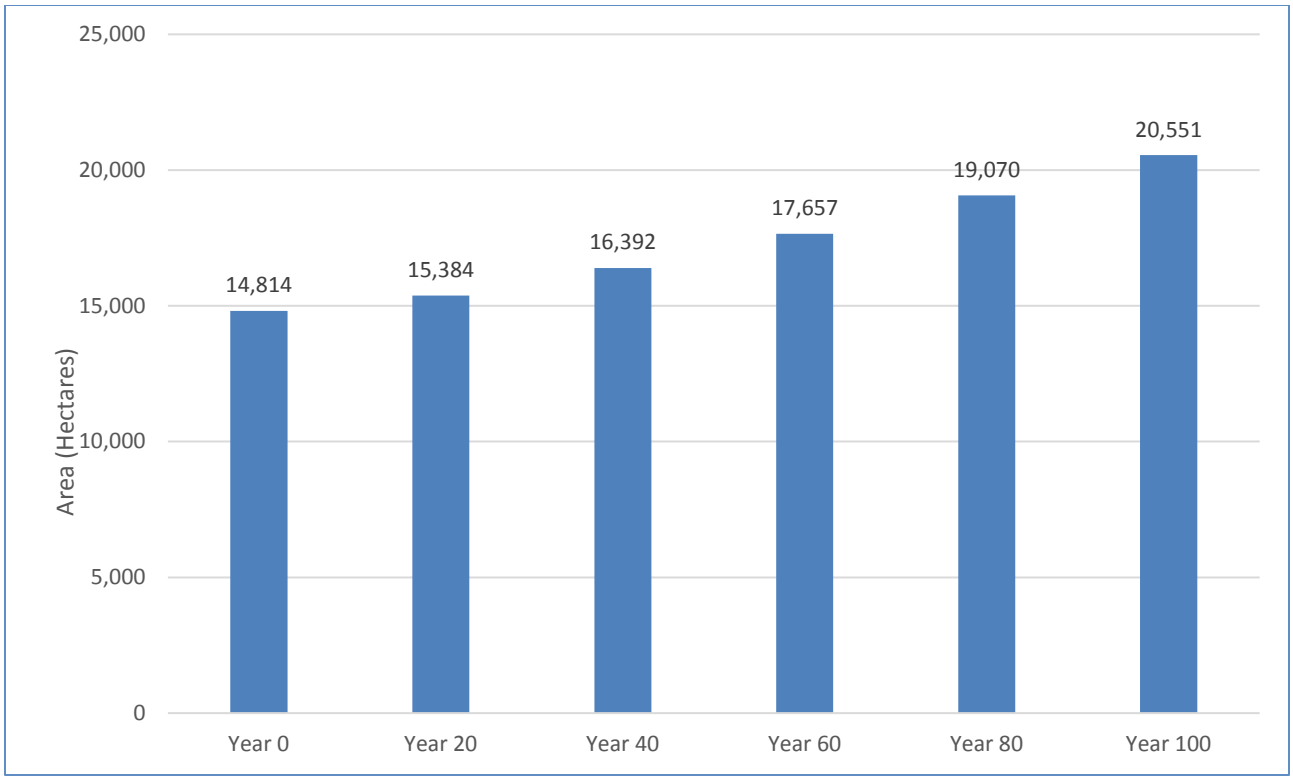


Figure 56 Projected Condition of the Crown Productive HDUS1 Forest Unit

Figure 56 above describes the amount of tolerant hardwood forest unit area projected to be on the landscape over the next 100 years. This forest unit should increase in area over the next 100 years, from 14,813 hectares to 20,551 hectares. This trend is consistent with the increase in the area of the tolerant hardwood landscape class (TOL). For a detailed explanation of how this forest unit and associated landscape are moving towards the desired level refer to section 6.1.1 to 6.1.8 and appendix III of supplementary documentation 6.1(b) – Analysis Package

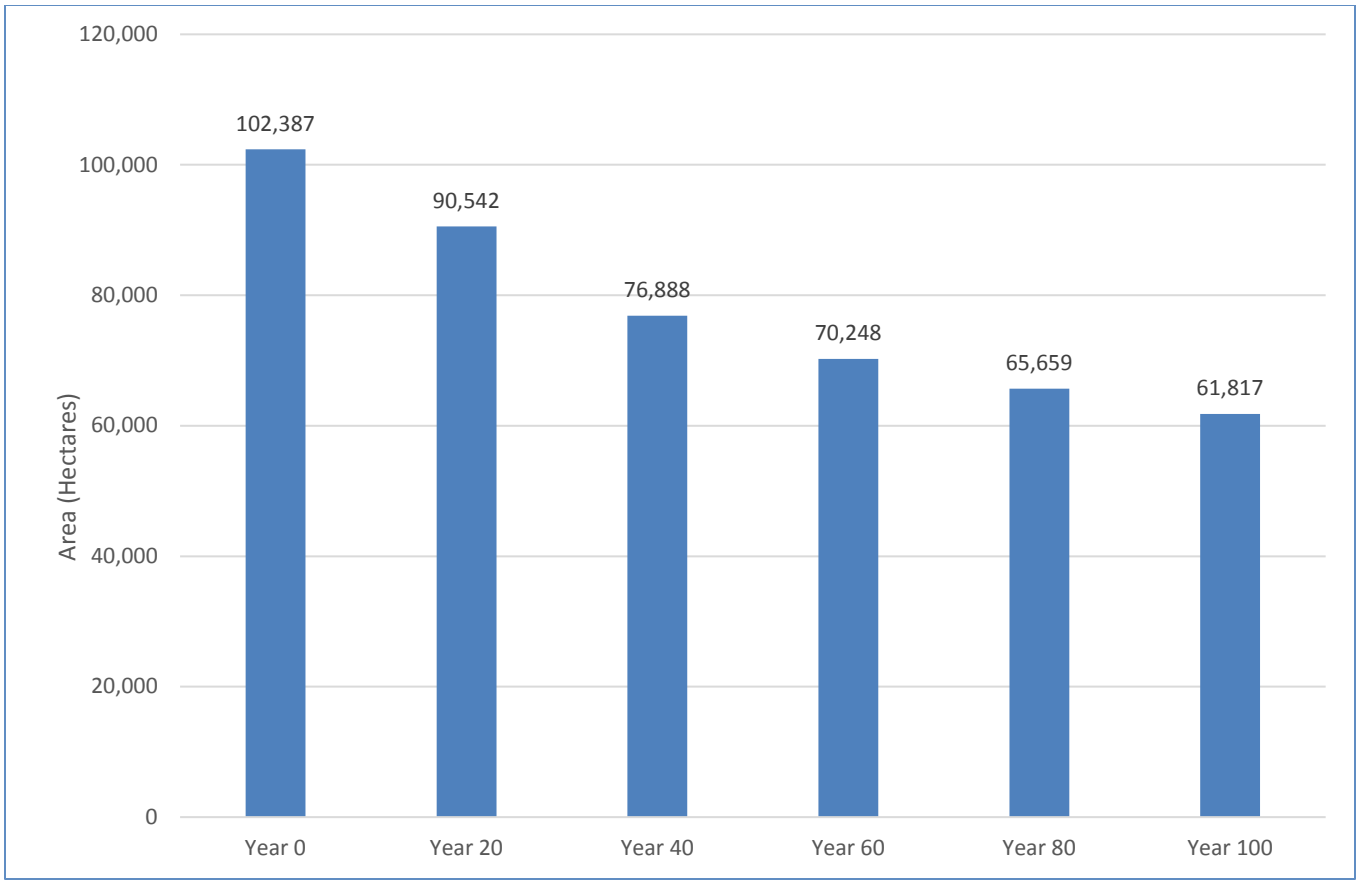


Figure 57 Projected Condition of the Crown Productive MWCC Forest Unit

Figure 57 above describes the amount of mixedwood forest unit area projected to be on the landscape over the next 100 years. This forest unit represents the largest forest condition on the TMU, however it is overrepresented compared to the pre-industrial condition of the forest. The graph shows that the amount of mixedwood forest unit area will decrease dramatically over the next 100 years, from 102,387 hectares to 61,816 hectares. This trend is one of the most significant shifts required to allow the conversion of an over-represented site condition to other forest units that are currently under-represented such as the white pine and hardwood forest units. These planned strategic changes in forest condition, carried out over extended periods of time are consistent with the achievement of desired levels of the MIXED landscape class. Refer to section 6.1.1 to 6.1.8 and appendix III of supplementary documentation 6.1(b) - Analysis Package for in-depth description of the desired levels and achievements.

Projected available harvest volume by species group

The figures below describe the projected harvest volumes on the landscape over the next 100 years, described in species groups and product group. When describing harvest volumes, the species group refers to tree species that are used in similar forest products processing facilities. For example, the species in the Spruce/Pine/Fir group are utilized in a similar way and in similar facilities that are different than how and where tolerant hardwoods would be processed. Product groups refer to the size/quality of the harvested wood, separated into pulp, pole, saw and veneer quality logs. A detailed description of the projected volume of all species and product groups over the next 200 years can be found in table FMP-9. Figure 58 to Figure 77 below present this information graphically.

The Ontario Forest Accord Advisory Board (OFAAB) benchmark for the TMU is set at 88,000 m^3/y. The TMU will far exceed this benchmark in the available harvest volume however FMP-14: Planned Harvest Volume and Wood Utilization describes the planned wood utilization. Values in table FMP 14 are representation of the available harvest area based on the proportions of historical harvest by area of forest unit reported in the year 7 annual report. Improvements to the harvest trends in the year 7 annual report are expected and consequently so will recovered volume.

Figure 58 shows the volumes for the projected management strategy (PMS) of all species groups over the next 100 years, with the previous 20 years of planned and actual harvests added as a reference. The graph shows that the projected harvests levels are slightly higher (~350,000 ha/yr.) compared to previous plans (~300,000 ha/yr.). This increase can be attributed in part to the inclusion of the LSA in the FMP contributing about half of the volume difference. The other half is attributable to changes in inventory, yield curve specifications and changes in the makeup of planned harvest area account for the rest of difference. The actual total harvest area in the past has significantly underachieved what was available. This can be attributed in part to challenging terrain affecting harvest road construction and block layout, which is expected to be improved in this FMP through the use of and “up to date” inventory and use of third party tools like SkyForest™ to evaluate the viability of harvest areas and make refinements.

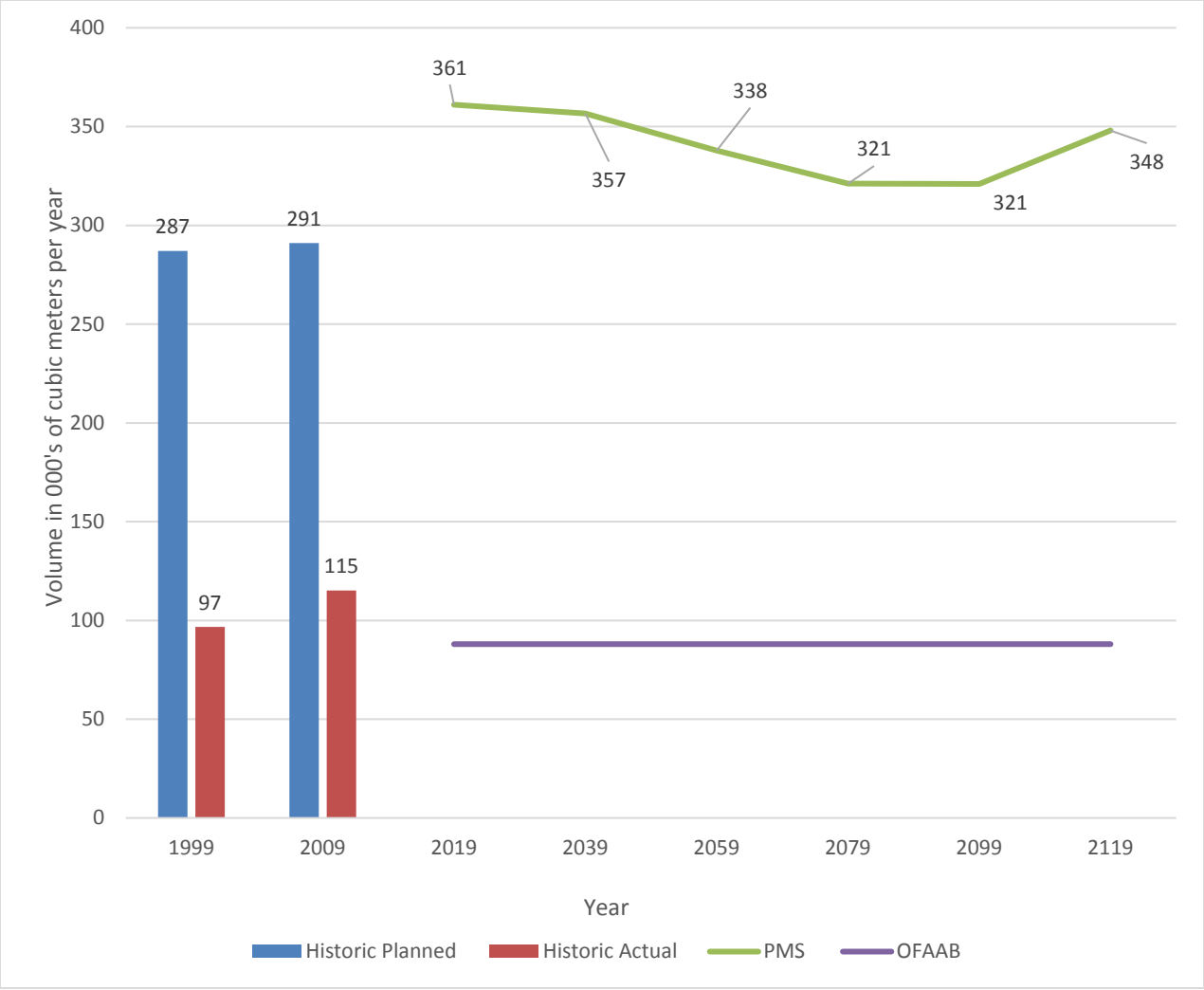


Figure 58 Projected annual available harvest volumes ‘000/yr (total species group)

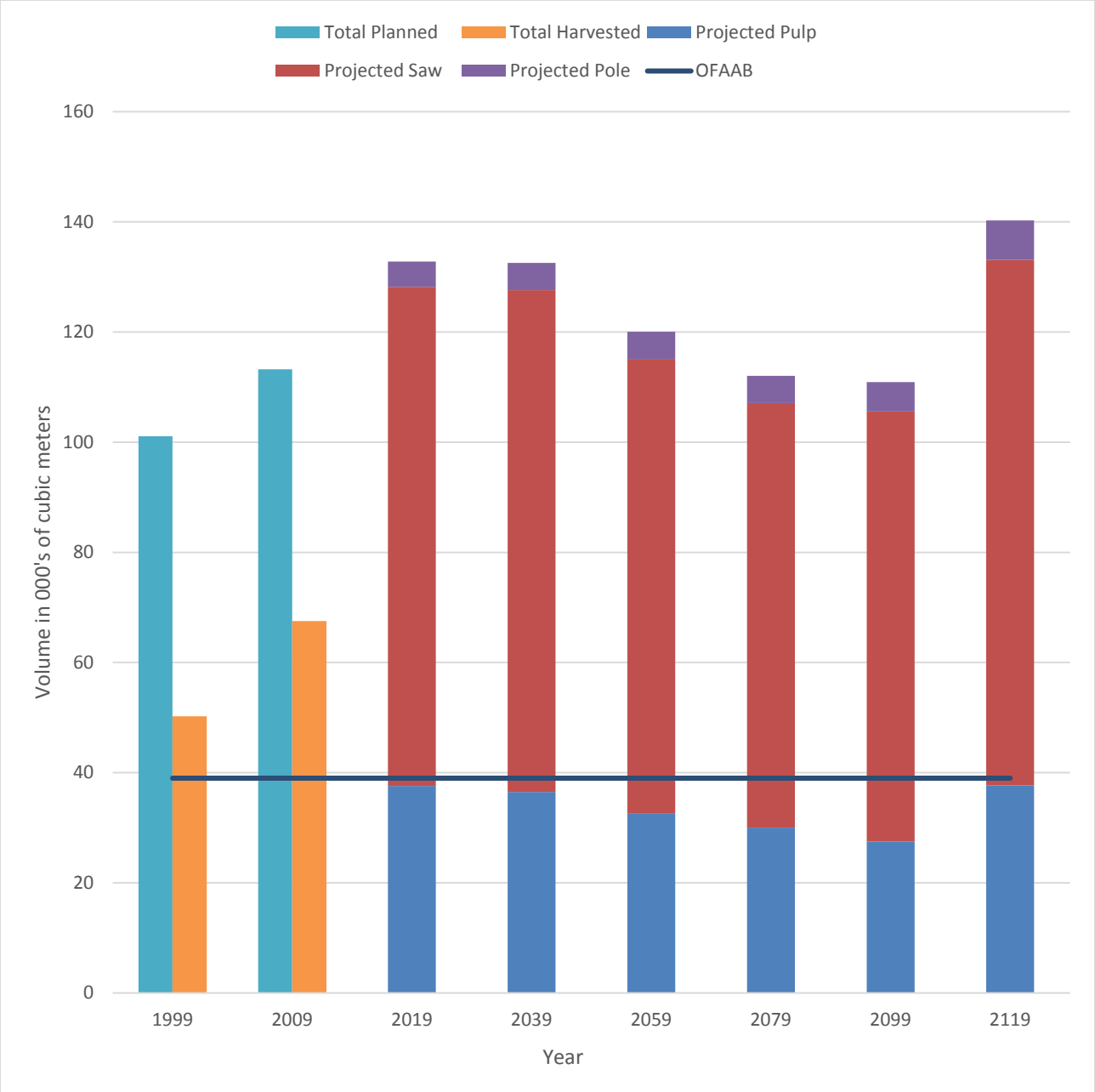


Figure 59 Projected annual available harvest volumes for SPF

Figure 59 above shows the projected volumes of the spruce/pine/fir species group subdivided by product group. This species group represents the second largest category of wood supply in the TMU. 50,000 to 65,000 m^3/year were harvested from 1999 to 2016. The inclusion of the LSA in the TMU creates a moderate increase in the planned volume. Much of the SPF volume is found within the PWST and MWCC forest units which have historically not been harvested in high proportions relative to pure conifer dominated forest units such as PJ1, PJ2, SP1, and SB.

Saw-log and pulpwood logs make up the majority of projected SPF volume (90,000 m3/y and 37,000 m3/y respectively), with pole-wood providing marginal amounts (<5,000 m3/year). Overall harvesting volumes are expected to decrease marginally over the next 90 years before recovering in 100 years and will remain well above the OFAAB benchmark (39,000 m3/y).

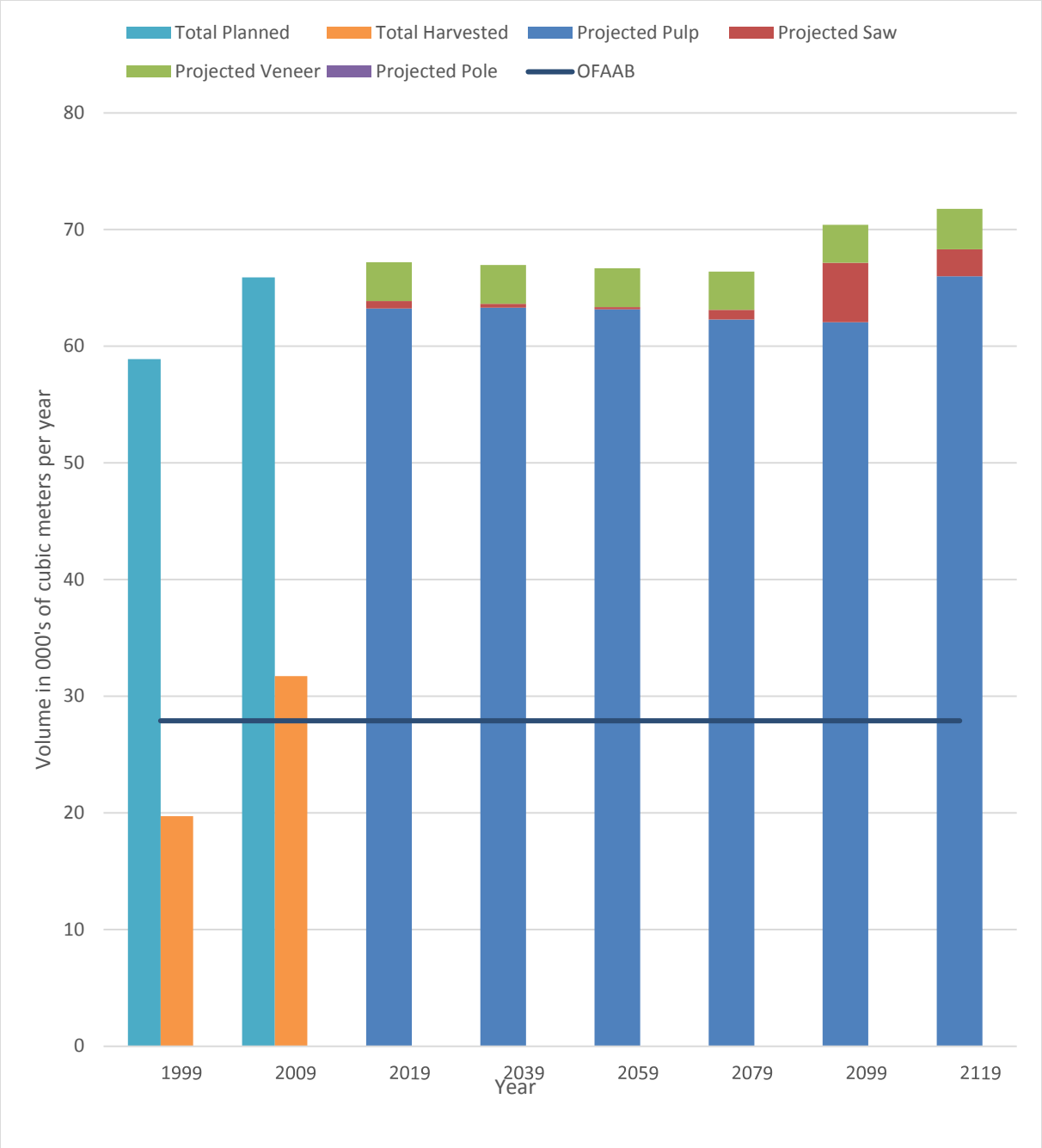


Figure 60 projected annual available harvest volumes for Poplar

Figure 60shows the projected volumes of the poplar species group for TMU, subdivided by product group. During the previous and current plan, roughly 60,000 m3/year was projected to be harvested however only 20,000 to 30,000 m3/year was realized.

Looking forward, the TMU is expected to provide a similar amount of available harvest area. The majority of this area will produce mostly pulpwood (~60,000 m3/year) with veneer recovery projected at approximately 3,000 m3/year consistently over the course

of the plan. The production potential for poplar sawlogs will be very low for the first 90 years with an increased supply projected to becoming available in 2099 as a second cycle of poplar stands reach maturity. Overall, the TMU will be able to meet the OFAAB harvesting benchmarks.

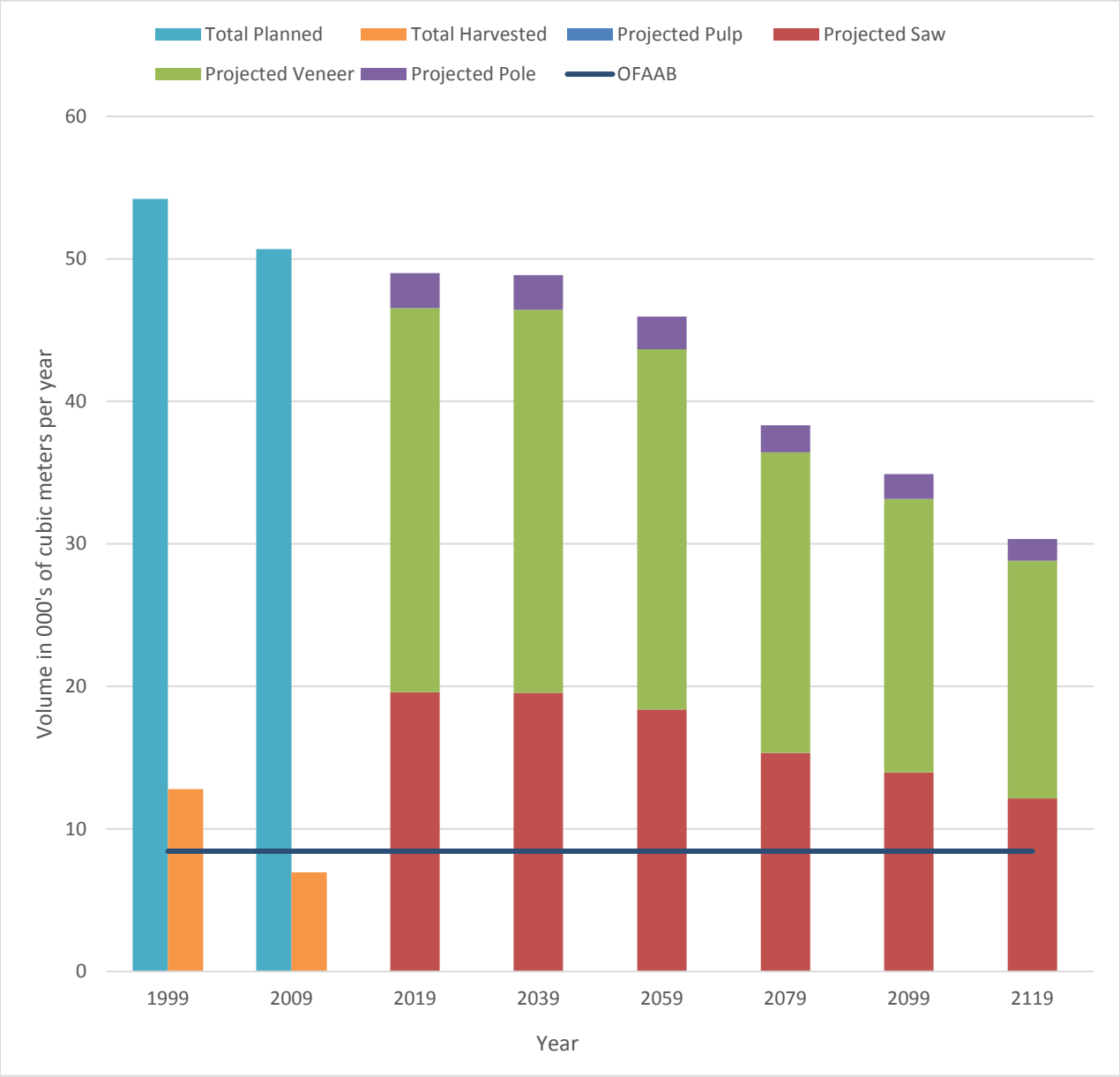


Figure 61 Projected annual available harvest volumes for Birch

Figure 61 above shows the projected and past harvest volumes for the birch species group. Historically, the TMU has had ample available harvest volumes (50,000 to 55,000 m3/year), but only 7,000 to 12,000 m3/year has been harvested. The under-utilization of this species can be attributed to lower than projected quality, an underutilization of the

other species group stands and the lack of a market. The 2019 plan projects that the amount of available harvest area will remain stable in the next 40 years, but it will diminish in the long term to less than 30,000 m3/year as the TMU projected harvest volumes shifts towards conifer. This decreased available area should have minimal impact on harvest levels, as both the historic harvest levels and the OFAAB benchmark (8,000 m3/year) can be produced by harvesting at levels well below the available area. The birch species group is expected to supply mostly veneer and sawlog products throughout the projected period.

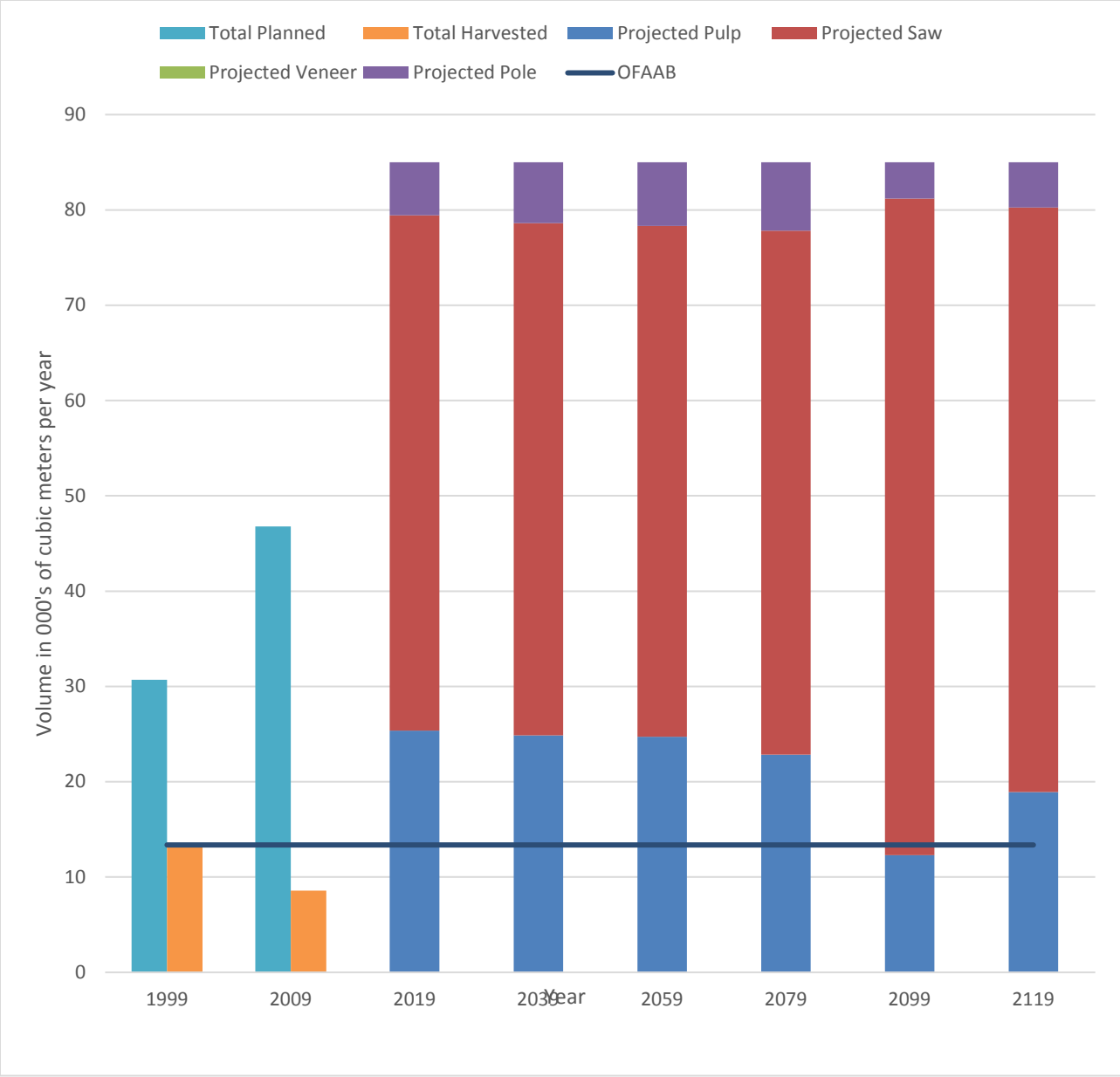


Figure 62 Projected annual available harvest volumes for Red and White Pine

Figure 62 describes the projected harvest volumes for red and white pine and includes historical harvest levels as a reference. The TMU was projected to produce 30,000 m3/year to 47,000 m3/year between 1999 and 2019, but actual harvest recoveries have been between 8,000 to 13,000 m3/year. This is below the benchmark level set by the OFAAB. The TMU is projected to produce more red/white pine volume in the future, with available volumes projected to be 85,000 m3/year in both the short and long term. The majority of this volume (54,000 m3/year) is expected as sawlogs and 25,000 m3/year is expected to be pulpwood. A relatively small portion of the projected harvest volume (5,000 m3/year) is expected to be polewood.

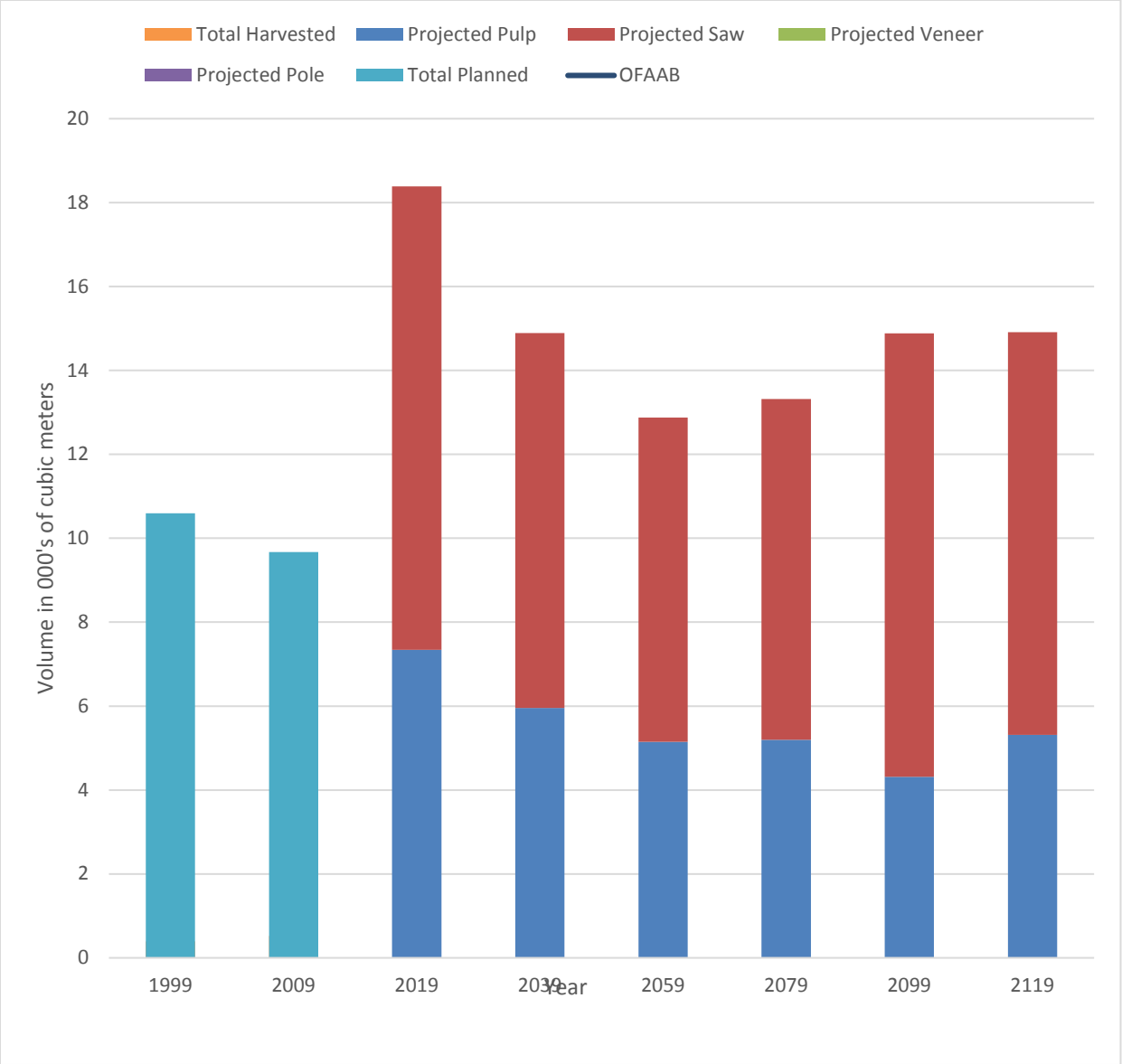


Figure 63 Projected available harvest volumes for Cedar

Figure 63 above shows the projected and past available harvest for the Cedar species group. The amount of cedar harvested on the TMU is practically non-existent, although previous plans had projected volume available. The OFAAB benchmark for this species group is set at 0. The TMU is capable of providing 18,000 m3/year. in the short term and 12,000 to 15,000 m3/year in the long term. The majority of this volume is projected to be sawlogs, with the remainder being projected to be pulpwood.

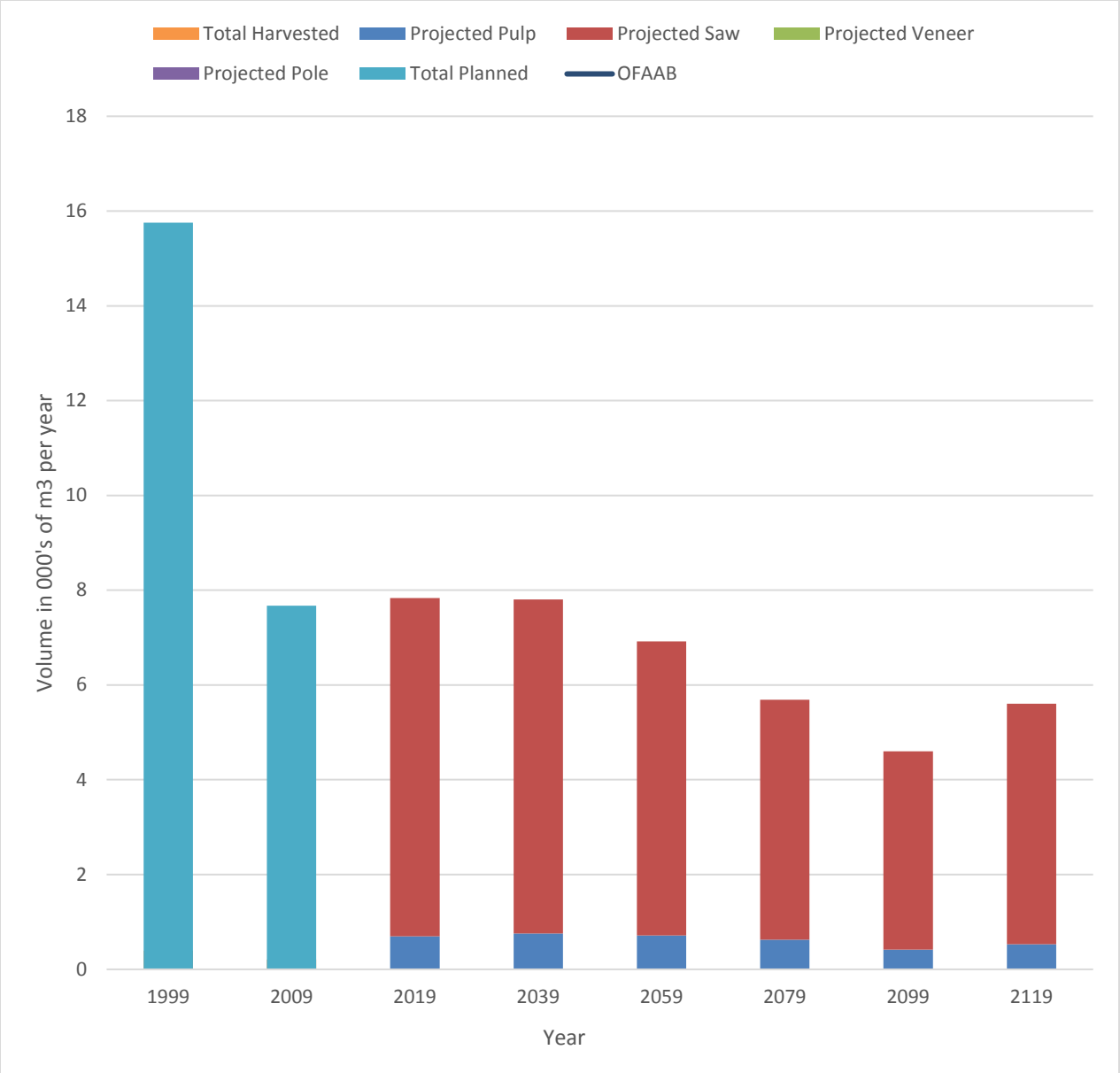


Figure 64 Projected available harvest volumes for Tolerant Hardwood

Figure 64 above shows the previous and future available harvest volumes for hardwood. Much like the cedar species group, tolerant hardwood harvests are minimal on the TMU, although volume had been available in previous plans. The OFAAB benchmark for this species group is set at 0. Available harvest volumes for this species group are projected to be stable in the next 40 years at 8,000 m^3/year, then will slowly decline to 4,000-6,000 m^3/year from 60 to 100 years. This is largely due to the relatively small amount of the forest units that derive this volume and the active management decision to harvest and improve the quality of the tolerant hardwood forest which have previously been mismanaged. Improving the quality of the tolerant hardwood requires harvest which explains the higher volume at the start of the planning horizon.

3.7.1 Available Harvest Area

Regulation of the harvest in Ontario is achieved by calculating sustainable harvest area levels. The area projected for harvest for the first ten-year term of the plan is referred to as the available harvest area (AHA). Projections and assessment of AHA is an important component of the long-term management direction. The AHA has an associated available harvest volume (AHV) as described in the previous section. A separate AHA level is determined for each forest unit. The AHA is summarized, by forest unit, in table FMP-8 (Section 8.0). Figure 65 illustrates the projected AHA found in table FMP-8 as well as the spatial distribution of the planned harvests for the next four term (40 years).

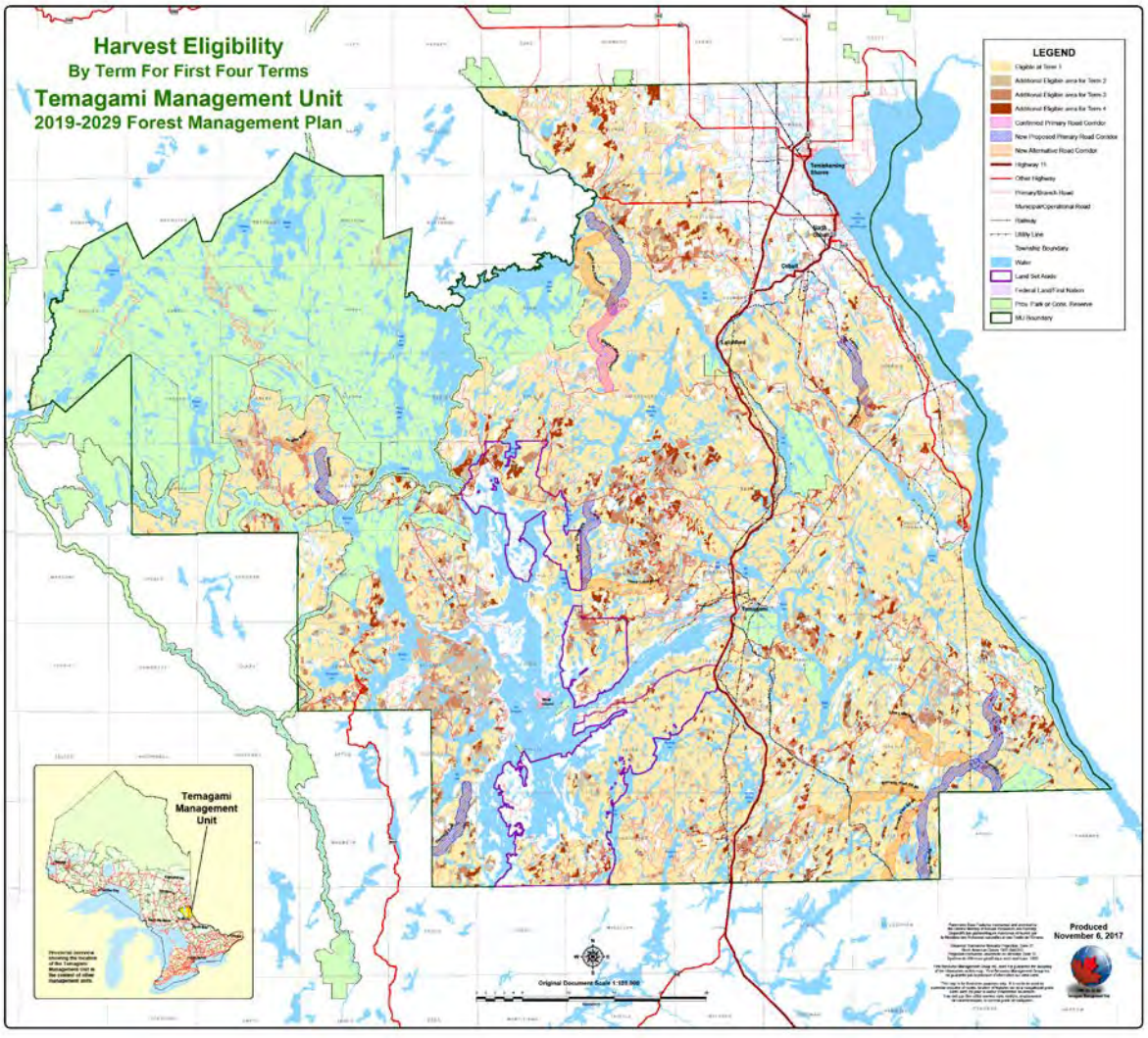


Figure 65 Spatial distribution of harvests over the next four terms

The map shows that the majority of area on the TMU is eligible for harvest in the first 10-year term. Consistently through recent history, low harvest levels in an aging forest have

created conditions where most stands are now mature enough to be eligible for harvest. As the forest continues to age, additional area becomes eligible for harvesting in term 2, 3 and 4. The criteria for eligibility and allocation will be further described in Section 3.7.2.

The calculated harvest levels for the first ten-year term of the plan is referred to as the available harvest area (AHA). Projections and assessment of AHA is an important component of the long-term management direction and the determination of sustainability. The AHA has an associated available harvest volume (AHV) as described in the previous section. A separate AHA is determined for each forest unit. The AHA is summarized, by forest unit, in Table FMP-8 (Section 8.0). Figure 66 through Figure 77 illustrates a comparison of the projected AHA found in table FMP-8.

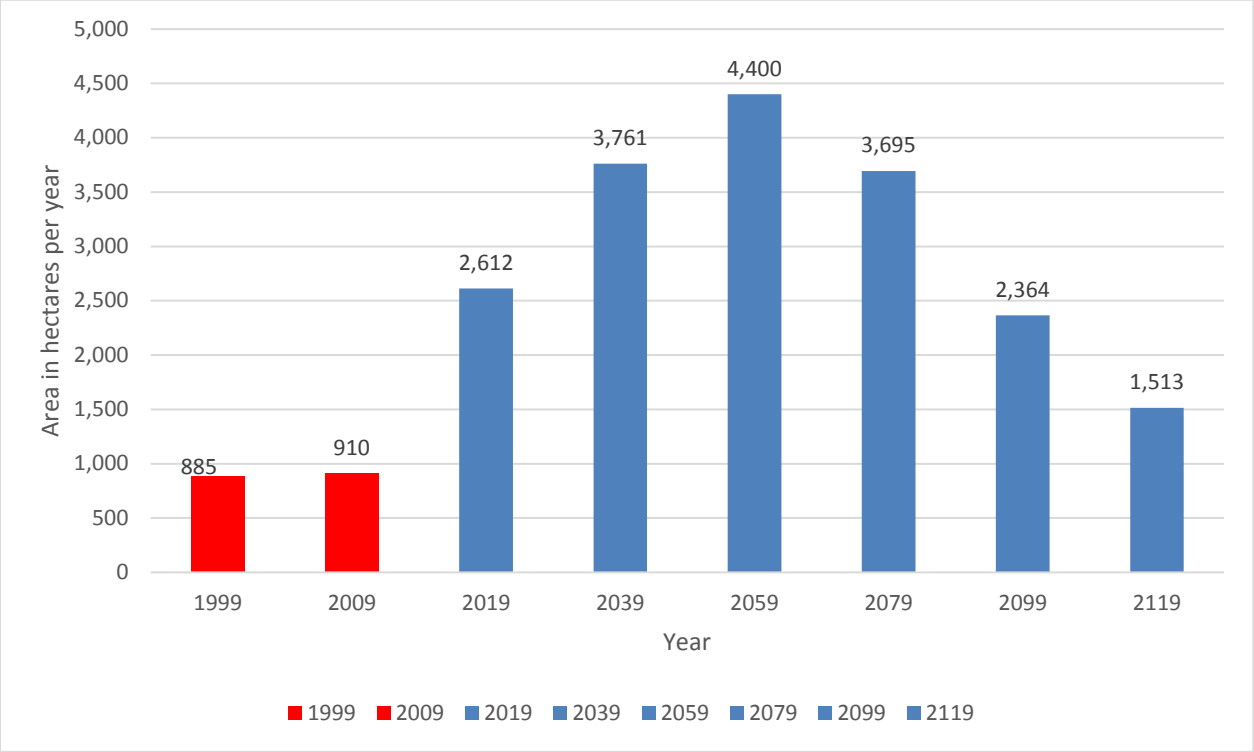


Figure 66 Projected available harvest area for the BW Forest Unit

Figure 66 above shows the previous and projected harvest area for the birch forest unit. Previous plans have allowed for approximately 900 ha to be harvested in each term. However, actual harvest levels have been significantly lower than the maximum, creating a large surplus of area. Furthermore, the forest will be transitioning into a composition with a greater conifer component, creating pressure to harvest birch forest units to make area available for conversion to conifer forest units. These factors create an increased amount of area available in the next 40 years. By 2059, the amount of available area

peaks at 4,400 hectares per term. At this point, the pressure to harvest birch forest units will diminish, until it reaches levels similar to present day at 1,513 hectares per term.

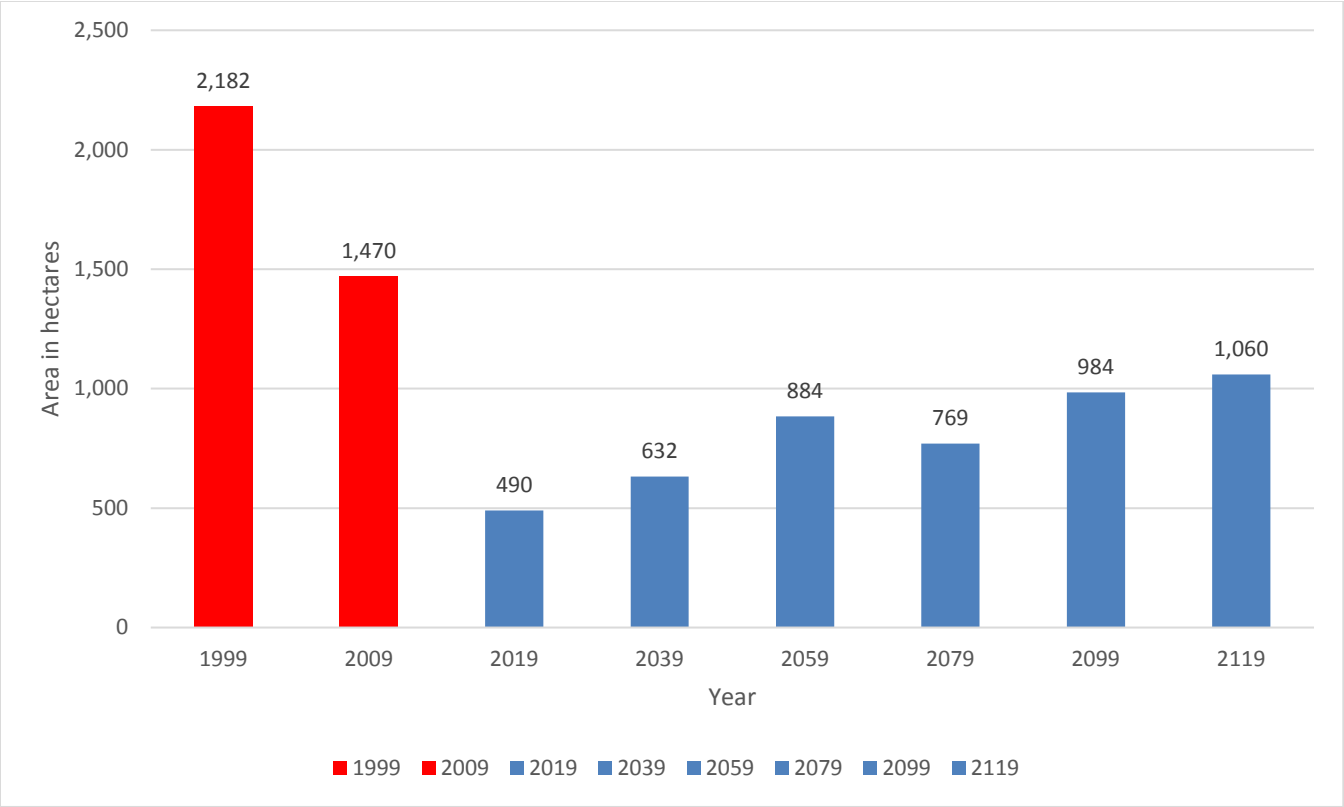


Figure 67 Projected available harvest area for the HDUS1 Forest Unit

Figure 67 above shows the projected available harvest area for the hardwood shelterwood forest unit with the previous plans AHA added for context. It is important to note that the hardwood forest unit encompasses several kinds of forest, ranging from yellow birch to oak to tolerant hardwoods. It also inhabits a small component of the TMU. Previous plans allowed for significant area to be available for harvesting; 2,182 hectares in the 1999 plan and 1,470 hectares in the current plan. However, the amount of area is projected to be considerably lower in the next 100 years. In the 2019 term, available area will be 490 hectares. This AHA level will gradually increase each term until 2119, where the total available area will be 1,060 hectares. There is limited quantity and generally poor-quality tolerant hardwood therefore efforts are focused on improving these stands over the long term.

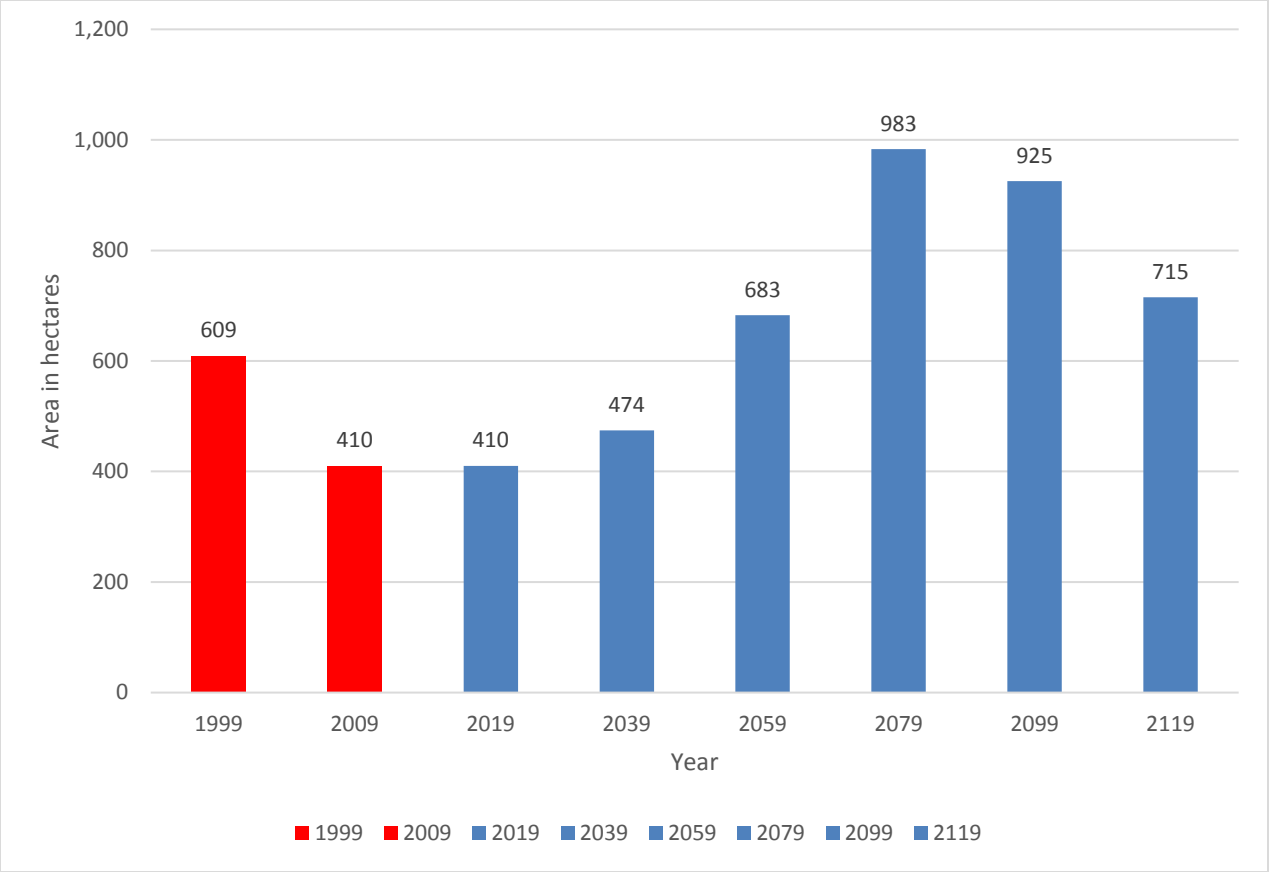


Figure 68 Projected available harvest area for the MCL Forest Unit

Figure 68 above shows the calculated available harvest area in the previous, current and 2019 FMP for the mixed lowland conifer forest unit. This forest unit represents a very small component of the TMU. In the 1999 FMP, only 609 hectares were made available for harvest and only 410 hectares were made available in 2009. The amount of area will increase steadily to 983 hectares by 2079.

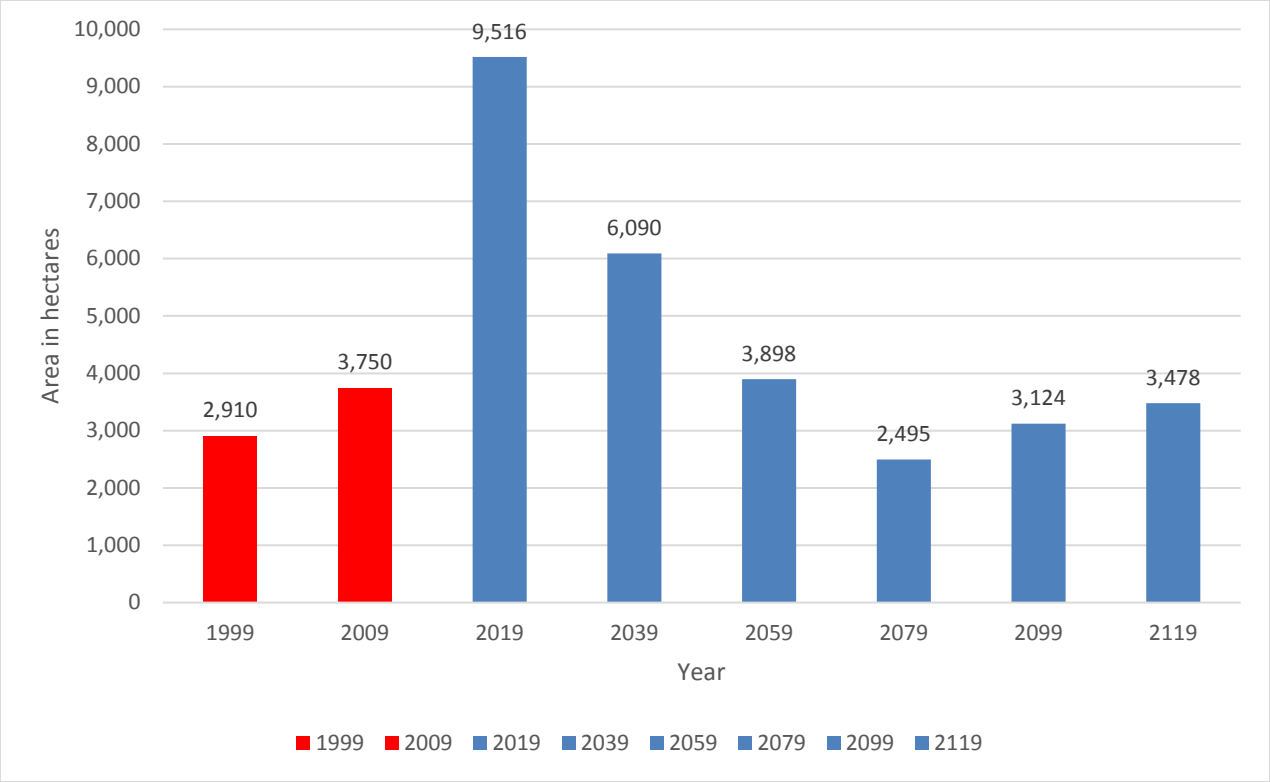


Figure 69 Projected available harvest area for the MWCC Forest Unit

Figure 69 shows the previous and projected available harvest area for the mixedwood clearcut forest unit. AHA from the previous two plans was 2,910 and 3,750 hectares respectively. Projections allow for a steep increase for the 2019 plan, at around 10,000 ha. This increase is intended to reduce the area of mixedwood forest on the TMU, which is overrepresented compared to the pre-industrial condition on the forest. The available area will then decrease to 6,090 hectares in 2039 and 3,898 hectares in 2059. From 2079 onwards, the amount of available area will remain relatively stable around 3,200 hectares. As the amount of area in this FU approaches the SRNV levels, an associated increase in under-represented forest units will occur.

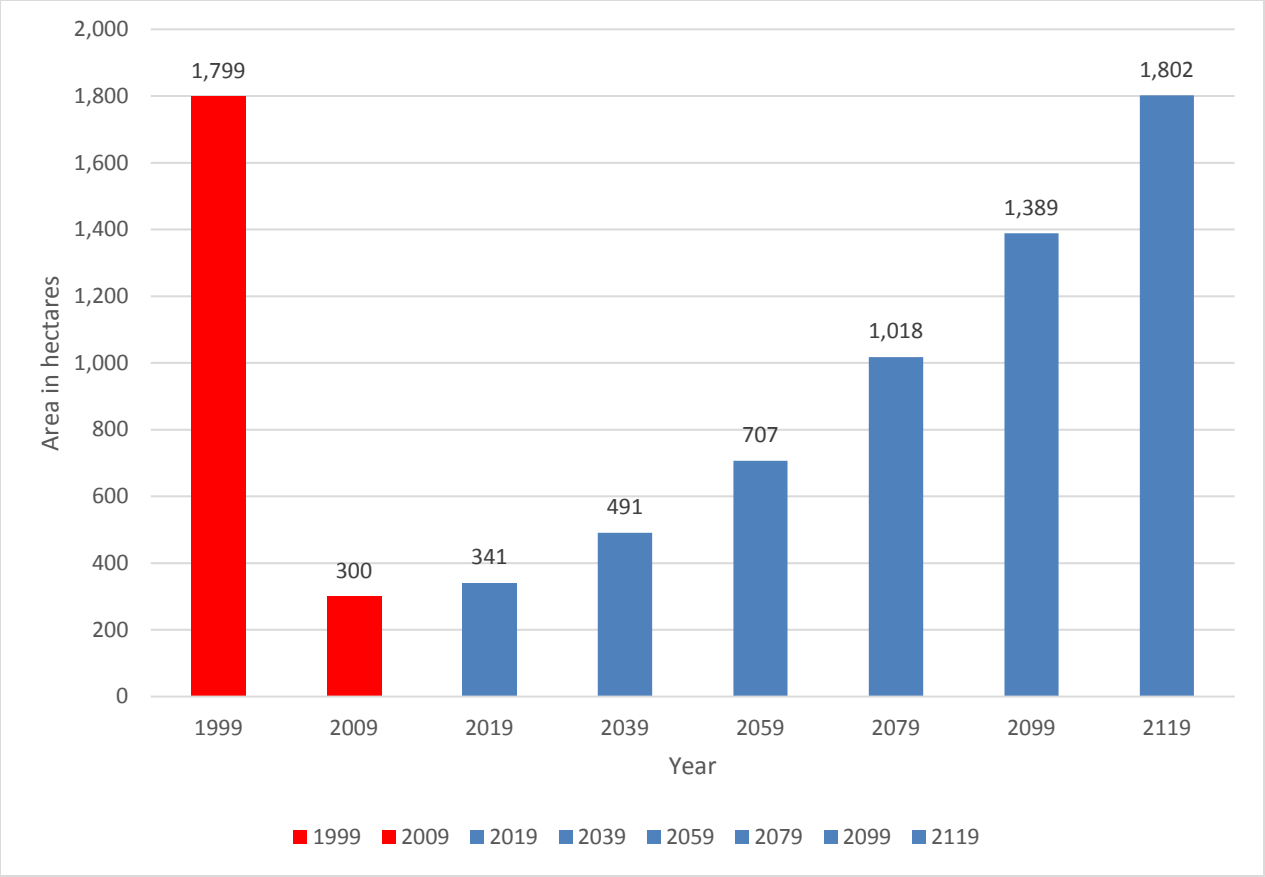


Figure 70 Projected available harvest area for the MWUS Forest Unit

Figure 70 above describes the previous and projected available harvest area for the mixedwood shelterwood forest unit. This forest unit only represents a small component of the TMU. The 1999 plan allowed for a significant harvest of 1,799 hectares, whereas the 2009 plan only allowed for 300 hectares. Moving forward, the amount of area available will steadily increase from 341 hectares in 2019 to 1,802 hectares in 2119.

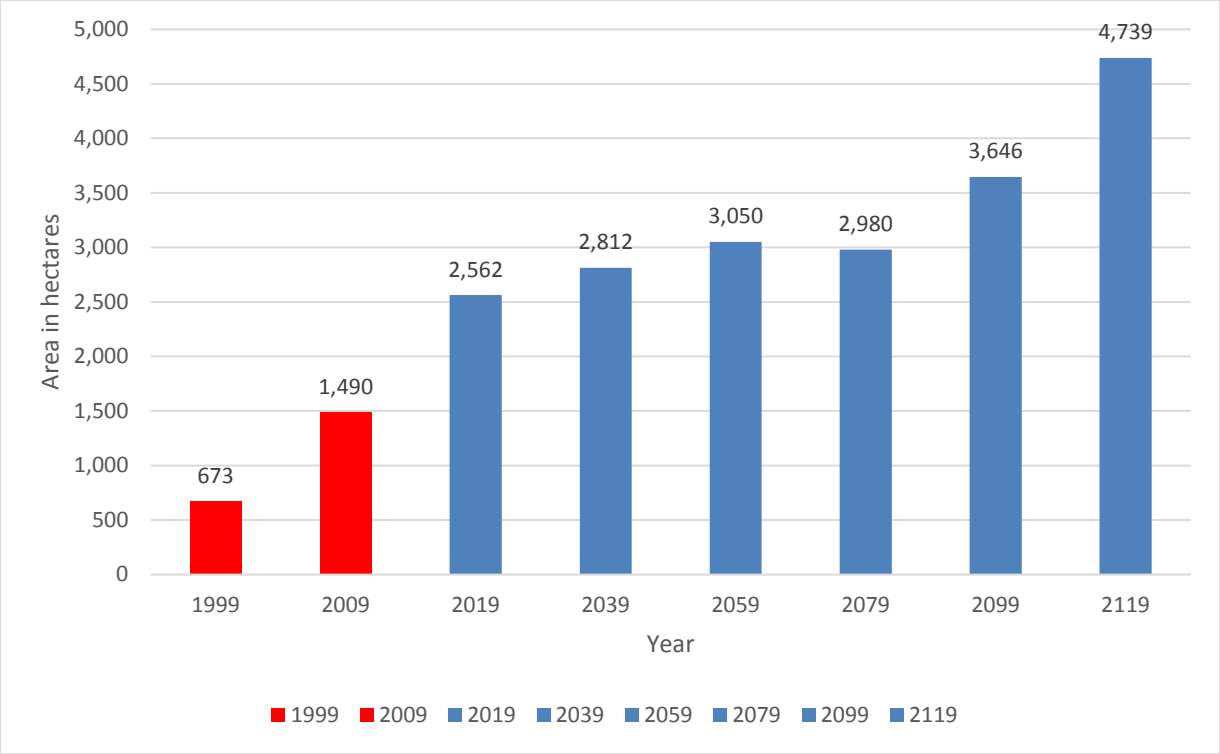


Figure 71 Projected available harvest area for the PJ1 Forest Unit

Figure 71 above describes the projected available harvest area for the jack pine clearcut forest unit with the previous plans added for context. The 1999 plan allowed for 673 hectares of harvest and 1,490 hectares in 2009. The 2019 plan allows for 2,562 hectares. That harvest level will slowly increase until 2079. In the long term, efforts made to increase the jack pine component on the TMU will allow for increased harvest, allowing for 3,646 hectares in 2099 and 4,739 hectares in 2119.

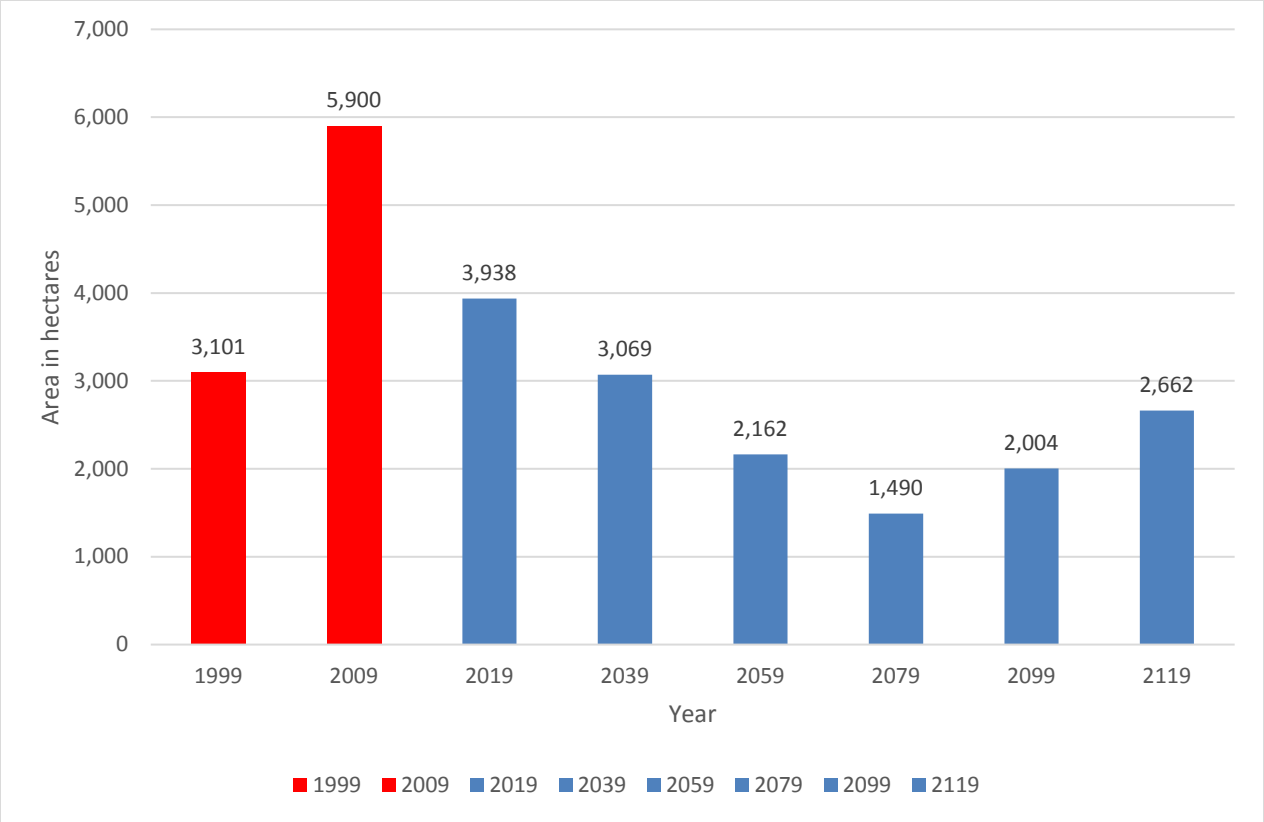


Figure 72 Projected available harvest area for the SP1 Forest Unit

Figure 72 above shows the previous allowable harvest area in comparison to the projected available area for the pine spruce forest unit. In 1999, 3,101 hectares were available and in 2009, 5,900 hectares were available. The projected area in 2019 is set at 3,938 hectares. It will decline to 3,069 hectares in 2039, 2,162 hectares in 2059 and to 1,490 hectares in 2079. It will make a small increase in 2099 to 2,004 hectares and 2,662 hectares in 2119.

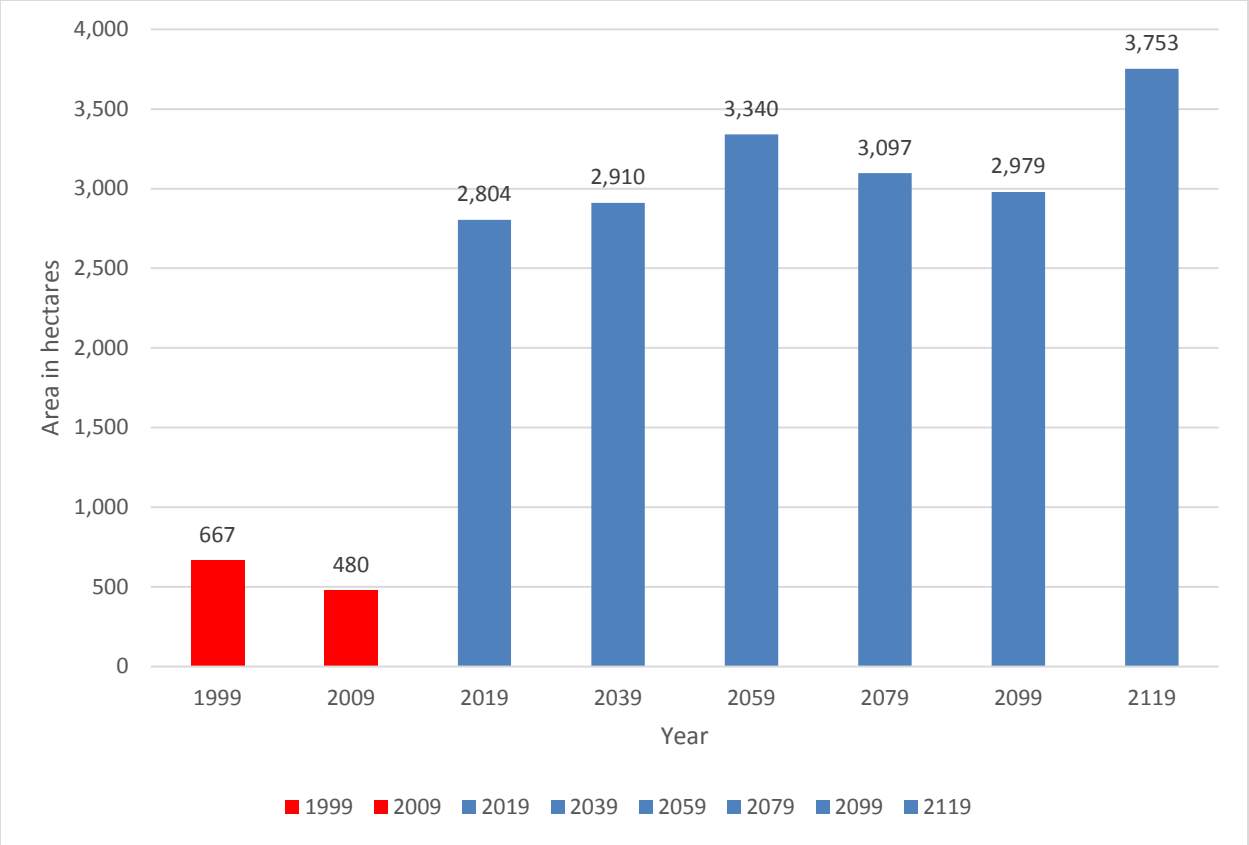


Figure 73 Projected available harvest area for the PO Forest Unit

Figure 73 above describes the projected available harvest area for the poplar clearcut forest unit with the previous plans added for context. Note that the forest unit definition/ classification has been updated from the 2009 and prior FMPs. Changes to the stocking requirements for the PO forest unit the removal of a 2009 forest unit called mixed hardwood create the perceived increase in harvest area. Allowable harvest levels were low in 1999 and 2009 at 667 and 480 hectares respectively. In the 2019 plan, harvest areas are projected to be considerably higher. This is because to PO forest unit now captures some of the area which would have been captured in an old forest unit. In 2019, the allowable area is set at 2,804 hectares. The allowable area remains at a similar level towards 2099. In 2119, the allowable harvest increases to 3,753 hectares.

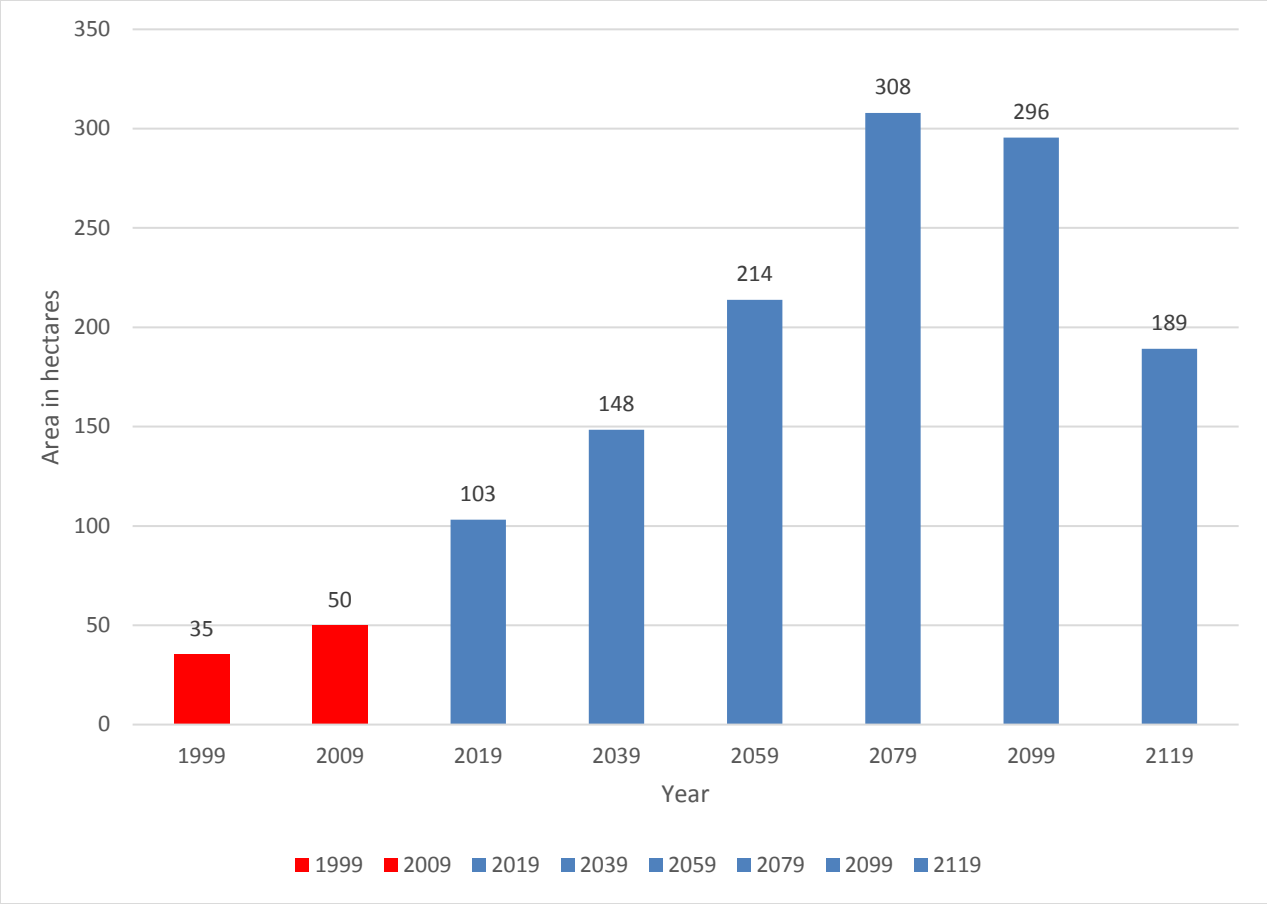


Figure 74 Projected available harvest area for the PR Forest Unit

Figure 74 above describes the available harvest area for the red pine forest unit. This forest unit represents a very small component of the TMU. In 1999 and 2009, only 35 and 50 hectares respectively were made available for harvest. In the next 90 years small increases to the harvest levels are projected; 103 hectares in 2019, 214 hectares in 2059 and peaking at 308 hectares in 2079.

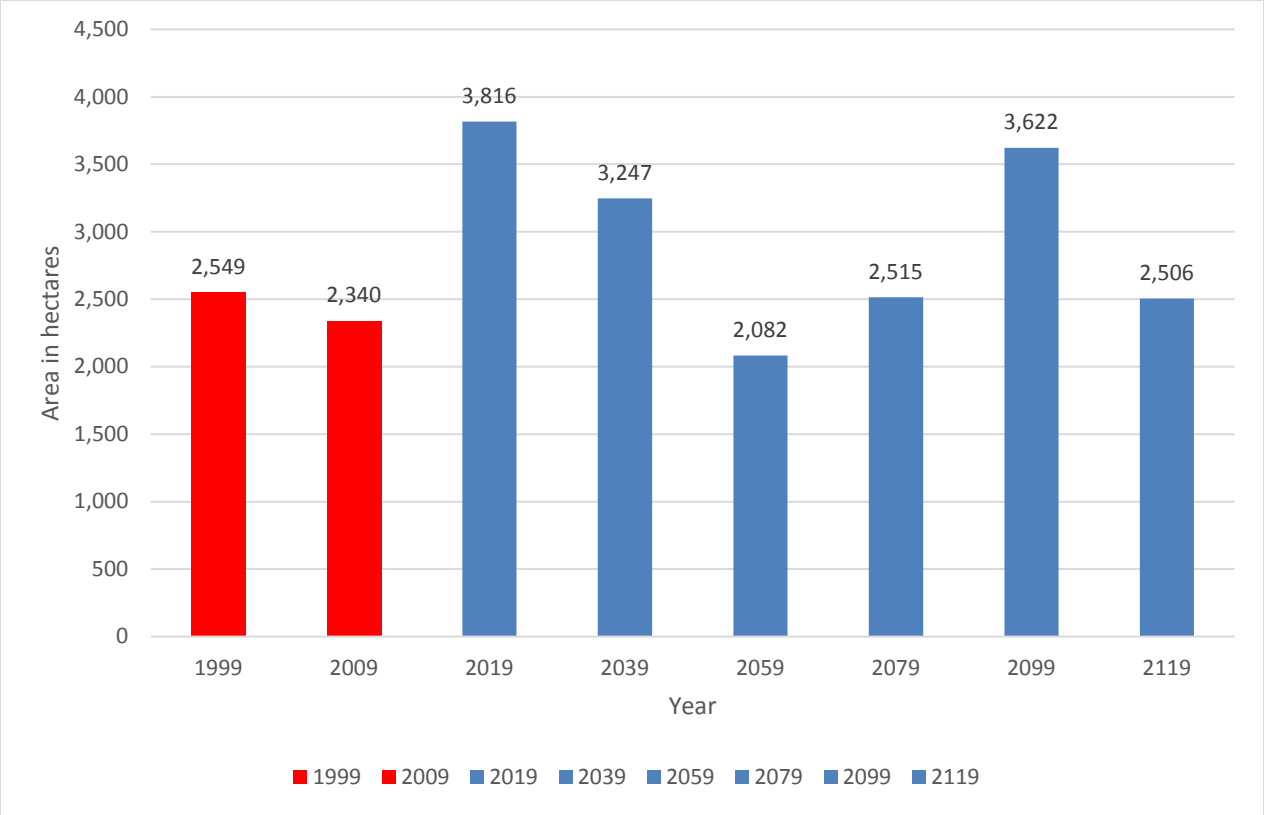


Figure 75 Projected available harvest area for the PWST Forest Unit

The available harvest area for the white pine seedtree forest unit is described in Figure 75. The 1999 and 2009 plans allowed for 2,549 and 2,340 hectares of harvest area respectively. In 2019, the amount of area available will increase to 3,816 hectares. It will decrease sharply to 2,082 hectares in 2059 before increasing again back to 3,622 hectares in 2099. This fluctuating area reflects the cyclical nature of PWST, which allows for large harvests in predictable intervals with little harvesting in between.

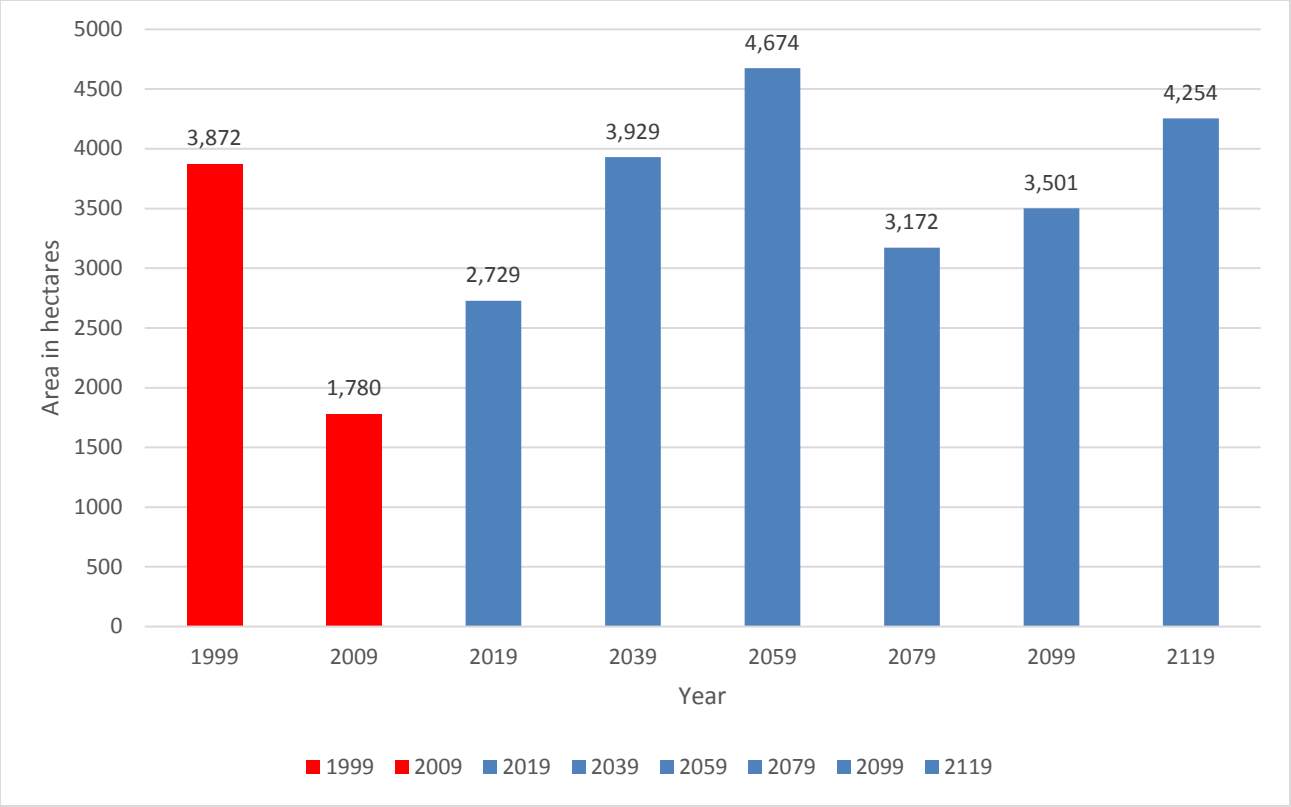


Figure 76 Projected available harvest area for the SF Forest Unit

The projected available area for the spruce fir forest unit is described in Figure 76. The 1999 plan allowed for 3,872 hectares compared to 1,780 in the 2009 plan. The 2019 plan will allow 2,729 hectares of harvest, 3,929 hectares in 2039 and 4,674 hectares in 2059. The allowable harvest then decreases 3,172 hectares in 2079 before increasing to 4,254 hectares in 2119.

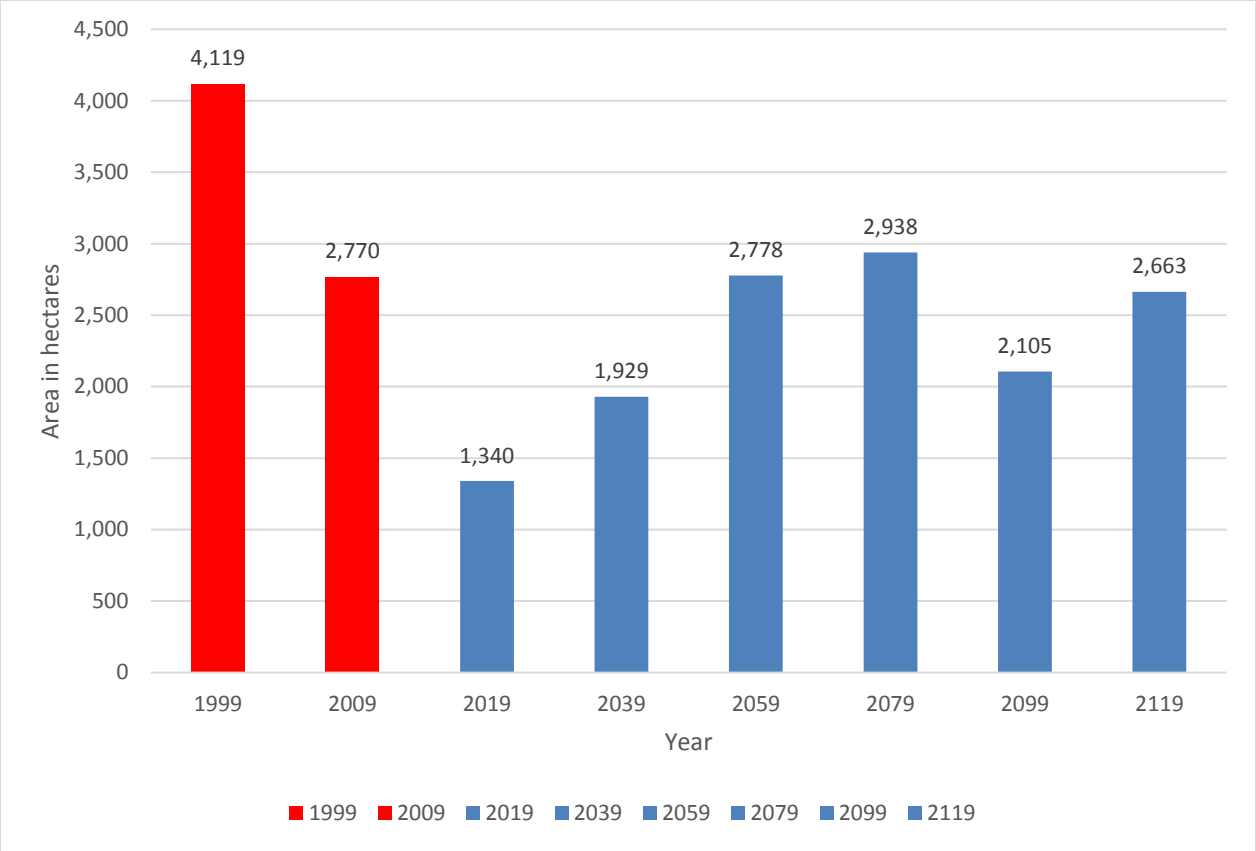


Figure 77 Projected available harvest area for the PWUS Forest Unit

Figure 77 above described the available harvest area for the white pine shelterwood forest unit from previous plans as well as the projected area from the 2019 plan. The 1999 plan allowed for 4,119 hectares of harvest, while the 2009 plan allowed for 2,770 hectares. The 2019 plan allows for 1,340 hectares in the short term, 1,929 hectares by 2039 and 2,938 hectares in 2079.

3.7.2 Selection of Areas for Harvest

In order for the long-term management direction to be implemented, areas must be selected for harvest for the ten-year term. Areas are selected for harvest based on defined selection criteria. This section of the plan text contains a description of the criteria used for the selection of harvest areas. Also discussed are the effects of the harvest area selection criteria on the long-term management direction.

During Stage Three – Information Centre: review of Proposed Operations, eligibility criteria for selecting harvest areas was presented at public information centers along with maps displaying the resulting eligible areas for the 10-year period. The proposed and

optional areas for harvest were chosen from the eligible area and displayed along with proposed contingency areas for the public's consideration and comment.

The following criteria were used to identify areas selected for harvest for the 10 year term of the plan. These are not listed in order of priority.

- The forest stand will be managed, and available for forestry:
- The forest stand will be of an age eligible for harvest based on it the reaching the age of operability in the 10-year FMP. Operability ages are provided in section 4.4.2 of the Analysis Package. Found in supplementary documentation 6.1(b) – Analysis Package
- The forest stand will meet the criteria of the first 10 year of allowable harvest area from the proposed management strategy by forest unit class, else it will be rationalized.

Additional Criteria

- The forest stand is near or adjacent to future or existing road infrastructure
- The forest stand is not of a size or delineation that would create operational challenges such as requiring additional water crossings to be installed, or roads constructed.
- The forest stand is not located immediately adjacent to a feature (water or other) and within the area which will be buffered by a no cut reserve.
- Proximity to municipalities (i.e.: ability to supply forest benefits adjacent to communities)
- The forest stands that adjacent to operations that, if left unharvested, would render it inoperable in the future due to size or location of the stand.
- The forest stand is near or immediately adjacent to existing road infrastructure, markets and labor force.
- The forest stand is part of a larger cluster of stands that are also preferred.
- The forest stand does not contain management concerns such as steep terrain, rock, wet etc.
- The forest stands exhibits characteristics of operable volume potential. (ie: stocking, height, site class, silviculture intensity)
- The forest stand shows potential to be used as demonstration project for general public information about forest management practices. (i.e.: management of white pine or cut to shore operations)
- The forest stand contributes to meeting the balanced allowable harvest area that cause movement towards the structure and composition, and patterns of the proposed management strategy.

The planning team allocated areas based on the available harvest area by forest unit age-class combinations, as concluded in the development of the long-term management direction. All the above criteria were applied for the selected allocations. Some criteria factored more prominently than others depending on the circumstance. The ten-year allocations do not exceed the available harvest area.

There are many factors, or combinations of factors that limit the selection of areas for harvest. For example, the geographic location of the required forest unit/age class area on the land base, the distribution and configuration of non-harvest reserves (AOC's) and the forested/non-forested lands that are not available for harvest also limited the planning team's flexibility to allocate the AHA. Non-forested land and private land are not available for harvest, yet the spatial distribution of this area affects the assemblage of disturbances across the TMU landscape.

Finally, public input influences the allocation process in particular when proposed allocations are in the proximity of their value. Consultation with Aboriginal communities, local cottage associations, resource-based tourism operators, affected towns and communities and individual landowners have all resulted in adjustments to the allocations.

3.7.3 Assessment of Management Objective Achievement

The achievement of individual management objectives was assessed against the LTMD outcomes, preliminary spatial sustainability assessments. The assessment of objective achievement was based on the extent to which the established desirable levels and targets for each indicator have been satisfied. There are some targets and desirable levels that were determined by using the Landscape Guide and the apportioned simulated range of natural variation (SRNV) values therein. SRNV refers to the modeled state of the forest landscape, within an acceptable range of likelihood that would have existed in the period before European settlement for specific indicators (i.e. old growth). Through modelling fire disturbances and natural succession outcomes, these simulated ranges of natural variation show the highest and lowest levels of the occurrences of specified natural forest conditions that likely would have occurred before European influence.

The planning team developed a total of 42 indicators of sustainability resulting from the desired forest and benefits meeting, in addition to the mandatory indicators in the FMPM (Figure A3). The following is a summary of those indicators that can be assessed against the results of the LTMD as well as harvest areas that have been identified. Many of the 43 indicators are time sensitive or time-dependent and therefore cannot be assessed until

the identified point in the future, whether that be at final plan approval or in years to come. Only those that can be assessed are listed.

Management Objective 1

To direct forest management activities to maintain or enhance natural landscape structure, composition, texture and patch size that provide for the long-term health of forest ecosystems and associated wildlife species by applying the Landscape Guide.

Assessment:

Objective 1.1 Composition of forest based on Landscape Guide Classes

Table 13 Assessment of Landscape Class Composition toward Natural Range

Landscape Class	Target Area in Hectares (from the LTMD)	Plan Start area	10 Year (ha)	20 Year (ha)	100 Year (ha)
TOL	18,338 - 25385	12,360	13,585	14,461	19,990
INTOL	18,633 - 33,142	22,399	22,542	26,549	15,898
PWMIX	55,980 - 70,440	35,617	35,585	41,510	70,285
MIXED	49,790 - 65,679	82,984	88,012	87,475	65,679
MXPRJ	29,692 - 51,686	45,000	45,563	41,378	32,163
SFC	64,341- 86,237	109,325	104,864	95,801	85,997

Table 13 above describes the current and projected composition of the TMU versus the target area. The 2019 start values are what the planning team has to work from. These levels are a direct result of past human intervention in the forest to exclude disturbances whether natural (fire) or by harvesting or insect infestation. Land use decisions intended to completely exclude disturbance in the forest (ie area located within Provincial Parks and conservation reserves) have further influenced the initial landscape-level forest composition .

The amount of tolerant hardwood and white pine mixedwood on the TMU is below the LTMD target at plan start, while mixedwood and spruce-fir are overrepresented. The intolerant and mixed pine landscape classes are within target range from plan start.

A gradual progression toward the composition goal can be observed in the table,

however, these goals are not reached until the long term. The target directional milestone is achieved because management activities cause movement towards the desired level throughout the planning horizon.

Objective 1.2 Hectares of Old Growth Forest

Table 14 Assessment of Old Growth Area Targets

Forest Unit	Target Area (Hectares)	Plan Start area	10 Year (ha)	20 Year (ha)	100 Year (ha)
MCL	4,009 - 7,772	6,280	9,602	11,282	4,962
MWCC	5,369 - 12,343	14,786	16,033	18,498	12,651
MWUS	2,528 - 5,503	3,852	6,092	9,291	17,325
PO	1,160 - 3,607	1,060	635	1,704	1,901
BW	2,968 - 7,211	2,647	3,807	5,258	903
PR	64 - 394	176	206	270	79
PWUS	15,650 -24,418	13,999	17,032	13,974	24,746
PWST	1,591 - 3,204	2,965	3,770	2,043	4,401
PJ1	573 - 3,281	2,035	3,262	2,796	318
PJ2	2,248 - 6,375	4,098	5,902	5,475	2,459
SP1	1,515 - 4,272	15,088	19,820	16,072	3,487
SF	2,007 - 6,295	10,225	18,024	22,182	23,453
PWUSC	1,495 -3,503	8,690	11,398	9,314	2,870
SB	1,190 - 4,406	3,225	3,967	4,030	1,195
HDUS1	12,297 - 21,162	601	1,145	2,037	8,817

Table 14 describes the current and projected amount of forested area that is considered old growth on the TMU, separated by forest unit. Overall, the plan will create old growth area that will either meet or exceed the target amounts in each measured time period into

the future. The majority of forest units that will not meet the old-growth targets represent forest types that are dominated by short lived, shade-intolerant species (e.g. poplar and birch) that tend to succeed, at least in part, into other forest units during a very short succession period (ie the transition period from the pre-succession forest condition, the onset of old growth, and end of old growth is quick). If an age class imbalance or distribution exist in the earlier portions of the planning horizon it will dip below the desired level. The HDUS1 forest unit stays below the target range throughout the projection, but represents the best efforts of the planning team to ensure that the direction of this forest unit is moving towards the target at each stage of the projection.

Objective 1.3 Hectares of Red and White Pine Forest

Table 15 Area of Red and White Pine Forest

Forest Unit	Target Area (Hectares)	Plan Start area	10 Year (ha)	20 Year (ha)	100 Year (ha)
PWR	76,350 - 89,570	88,710	88,756	90,939	107,469
PWR	> 1995 amount (64,774)	88,710	88,756	90,939	107,469

Table 15 shows the amount of area on the TMU that contains young red and white pine forest represented within the PWR forest unit. Note that white and red pine occur throughout the forest in significant levels in the other non-PWR forest units. The table shows that the TMU starts slightly below the target range, but comes into the range after 10 years and increases with each term. At 100 years the presapling area falls marginally below the range however this represented best efforts by the planning team and overall was adjudicated that the plan achieves the objective of maintaining red and white pine forests on the landscape.

Objective 1.4 Hectares of Young Forest

Table 16 Hectares of Young Forest

Seral Stage	Target Area (Hectares)	Plan Start area	10 Year (ha)	20 Year (ha)	100 Year (ha)
Presap	30,750 - 100,462	23,957	32,185	32,215	29,246
Presap, Sapling & T-Stage	76,024 - 144,781	45,234	66,089	90,768	102,589

Table 16 describes the amount of area on the TMU that contains young forests across all forest units. In the short term, the plan will be able to achieve its targets for pre-sapling

forests, but doesn't achieve its T-stage (until the medium term and beyond). This result is considered acceptable as each stage of the plan moves the young forest area in the direction required to meet the target.

Objective 1.5 Texture of Old and Mature Forest

Table 17 Texture of old and mature forest in 500-hectare hexagons

Proportion of 500 Hectare Hexagons	Target	Plan Start	Direction	10 Year
0.1-0.2	0.110	0.024	Increase	0.027
0.21-0.4	0.160	0.081	Increase	0.100
0.41-0.6	0.190	0.199	Maintain	0.187
0.61-0.8	0.250	0.291	Decrease	0.224
>0.8	0.300	0.405	Decrease	0.462

Table 17 above describes the *texture* of old and mature forests on the TMU. This metric is used to ensure that old and mature forests are well distributed across the unit. A detailed description of this metric can be found in the Analysis Package in section 6.1(b) – Analysis Package. The table shows that the plan will achieve the target texture of old and mature forest in the short term, with the exception of large patches, which will still be overrepresented after ten years. This is caused by considerable area in Provincial Parks and conservation reserves that will continue to age and exclude natural disturbance or management activities that would create enough young forest to affect it's proportional distribution.

Table 18 Texture of old and mature forest in 5000-hectare hexagons

Proportion of 5000 Hectare Hexagons	Target	Plan Start	Direction	10 Year
0.1-0.2	0.010	0.014	Maintain	0.01
0.21-0.4	0.160	0.027	Increase	0.06
0.41-0.6	0.320	0.203	Increase	0.20
0.61-0.8	0.370	0.460	Decrease	0.34
>0.8	0.140	0.297	Decrease	0.39

Table 18 shows a similar result to Table 17 with the main difference being Table 18 describes the texture of the forest at a larger scale (5000-hectare patches). The plan will achieve its targets in the short term in the majority of cases, however it will still fail to meet the targets in the largest of patches. Similar to the 500-hectare scale the forest continues

to age and management activities or natural disturbances cannot create young forest in reserve forest at levels that will affect the proportion distribution.

Objective 1.6 Texture of Young Forest

Table 19 Texture of young forest by patch size

Patch Size (Hectares)	Plan Start	Target	Direction	10 Year
1-100	0.586	0.610	Maintain	0.610
101-250	0.250	0.180	Decrease	0.222
251-500	0.100	0.090	Maintain	0.106
501-1,000	0.039	0.060	Increase	0.044
1,001-2,500	0.024	0.030	Maintain	0.015
2,501-5,000	0.001	0.010	Maintain	0.001
5,000-10,000	-	0.010	increase	0.003
10,000-20,000	-	0.010	increase	-
>20,000	-	-	Maintain	-

Table 19 describes the texture of young forest (classified by size class), similar to the previous tables that described the metrics for old and mature forest. The table shows that the plan will move in a direction that is consistent with the targets for the majority of patch size classes.

Management Objective 10

Provide for a maximum, continuous, predictable, even and cost-effective long-term wood supply.

Objective 10.1: Maintain current harvest area

Table 20 Projected annual available harvest area (ha/year) by forest unit

Forest Unit	Target	Plan Start area	10 Year (ha)	20 Year (ha)	100 Year (ha)
MCL	34	34	34	34	66
MWCC	867	867	867	693	314
MWUS	21	21	21	26	162
PO	280	280	280	262	370
BW	233	233	233	280	139
PR	10	10	10	12	18
PWUS	62	62	62	74	48
PWST	370	370	370	353	237
PJ1	115	115	115	91	336
PJ2	133	133	133	162	129
SP1	316	316	316	253	232
SF	224	224	224	283	394
PWUSC	64	64	64	76	197
SB	53	53	53	43	18
HDUS1	44	44	44	49	95
Total	2,825	2,825	2,825	2,691	2,753

Table 20 describes the projected AHA and compares them to the current level of harvest. The plan will meet its objectives for total annual harvest area for each forest unit in the short term. However, in the medium term, the AHA will dip slightly before increasing again

in the long term. These fluctuations are within the harvest area constrains which minimize fluctuation from term to term within a reasonable range. Stable harvest area (more so for volume) allow predictable and constant supply of wood over time, which is essential for maintaining industrial uses of the forest.

Objective 10.2: Maintain current harvest volumes

Table 21 Projected annual harvest volumes (m3/year) by species group

Species Group	Target	Plan Start	10 Year	20 Year	100 Year
Birch	46,280	46,280	46,280	46,529	32,916
Poplar	65,000	65,000	65,000	65,000	72,520
SPF	129,899	129,899	129,899	118,534	132,923
PWPR	80,000	80,000	80,000	80,000	80,000
Cedar	12,992	12,992	16,841	15,157	12,621
Tolerant Hardwood	6,351	6,351	6,351	6,151	7,117
Total	340,521	341,255	341,255	328,855	340,538

Table 21 describes the current and projected harvest volumes of each species group expected over the course of the plan. The plan will achieve its goal within each species group and as a whole in the short term. In the medium term, the volumes of spruce/pine/fir will dip slightly, pulling the total volume down below current levels. A similar decline will occur in Year 150.

The declines in hardwood and cedar were not weighed heavily by the planning team as these species groups reflect a very small portion of the total harvest and are under-utilized species. The long-term decline in birch volumes is influenced by the management objective to reduce the intolerant hardwood component on the landscape.

Overall, the plan achieves its available harvest volume goal, as the declines in harvest volumes are isolated and the overall direction of maintaining or increasing harvest volume is progressing and in the correct direction.

<u>Management Objective 26</u>

To provide an accessible and available wood supply so that Temagami First Nation can benefit from all forest management activities (harvest and renewal) on the Lands Set Aside (LSA).

Objective 26.1 Provide available harvest area in the LSA

Table 22 Projected annual available harvest area (hectares/year) by forest unit in the LSA

Forest Unit	Target	Plan Start area	10 Year (ha/yr)	20 Year ha/yr	100 Year ha/yr
MCL	7.4	7.4	7.4	6.4	5.4
MWCC	84.8	84.8	84.8	67.9	33.8
MWUS	12.7	12.7	12.7	15.3	18.7
PO	0.9	0.9	0.9	1.1	5.7
BW	28.3	28.3	28.3	33.9	12.3
PR	0.2	0.2	0.2	0.3	0.6
PWUS	4.7	4.7	4.7	5.7	5.9
PWST	12.0	12.0	12.0	14.3	14.0
PJ1	2.3	2.3	2.3	2.8	3.2
PJ2	5.0	5.0	5.0	4.0	5.8
SP1	23.1	23.1	23.1	18.5	16.0
SF	49.3	49.3	49.3	44.4	31.7
PWUSC	3.8	3.8	3.8	4.5	15.5
SB	1.4	1.4	1.4	1.1	0.4
HDUS1	5.3	5.3	5.3	6.1	11.0
Total	241.2	241.2	241.2	226.2	180.1

Table 22 shows the current and projected available harvest area within the Lands Set Aside by forest unit. The plan provides available area for harvest in all terms and among all forest units throughout the plan horizon. Although there are reductions in the overall harvest levels, these reductions are a result of achieving non-timber related goals determined by TFN without removing the option to harvest. Thus, the goal of providing available area to harvest has been achieved.

Objective 26.2 Provide harvest volumes in the LSA

Table 23 Projected annual harvest volume (m3/year) by species group in the LSA

Species Group	Target (m3/year)	Plan Start (m3/year)	Year 10 (m3/year)	Year 20 (m3/year)	Year 100 (m3/year)
Birch	4,031	4,031	4,031	3,723	2,201
Poplar	2,835	2,835	2,835	2,551	2,550
SPF	9,699	9,699	9,699	8,782	6,813
Tolerant Hardwood	769	769	769	701	706
PWPR	5,000	5,000	5,000	5,000	5,000
Cedar	1,659	1,659	1,659	1,493	1,153
Total	23,993	24,088	24,088	22,332	18,504

Table 23 shows the current and projected harvest volume within the Lands Set Aside by species group. The plan provides viable harvest volumes in all terms and among each species group. Small reductions in harvest volume occur in portions of the plan, however these are result of achieving TFN's non-timber related objectives. Further, harvest levels are maintained at viable levels, therefore the goal of providing harvest volumes from the Lands Set Aside has been achieved.

Summary of Objective Achievement

The majority of indicators of sustainability that were assessed and discussed above were within the targeted ranges. The indicators that did not meet the targets were a result of balancing the achievements of other objectives, such as favouring the creation of additional area within specific forest units to achieve management unit level objectives.

There are many objectives that cannot be assessed at this point of the FMP. These will be assessed as data becomes available and at the times specified in Table FMP-10: Assessment of Objective Achievement

3.7.4 Spatial Assessment of Projected Harvest Areas

Progress towards spatial assessment is documented in Table 17 Texture of old and mature forest in 500-hectare hexagons, Table 18 Texture of old and mature forest in 5000-hectare hexagons Table 19 Texture of young forest by patch size. In section 3.7.3 Assessment of Management Objective Achievement.

Residual forest requirements also have a spatial component and is discussed in section 8.3 of analysis package available in Supplementary Documentation Section 6.1(b) – Analysis Package.

The size of and distribution of planned harvest operations have an overall positive impacts towards meeting the desired levels for young forest patch size and texture of mature and old forest.

3.7.5 Social and Economic Impact Assessment (SEIA)

An additional assessment of implementing the LTMD is the evaluation of its provision for social and economic benefits. The comparison of positive and negative impacts is a basic element of the social economic assessment and can be attributed to two primary FMP components; the forecasted timber supply and the planned silviculture investments. Extraction and processing of forest resources as well as the renewal of the forest have direct and indirect benefits to the local communities identified in Section 2.2 Social and Economic Description. These benefits can be expressed in terms of employment, sales to the forest industry, tax and stumpage revenues and through indirect benefits to associated businesses. As described in the 2017 FMPM, this assessment will aid in the determination of the LTMD's provision for long-term sustainability of the Crown forest. The SEIA is informed by the demographic profiles found in Supplementary documentation 6.1(e) – Social and Economic Description and Demographic Profiles for context

The SEIA considers income, employment, taxes, and silvicultural investment. The 2019 proposed management strategy is estimated to create approximately 296 jobs per 1000m3/year compared to 2009, which was estimated to create approximately 220 jobs per 1000m3/year.

3.7.6 Risk Assessment

Any planning process as complex as the FMP process will have pre-determined issues that threaten the achievement of the plan objectives. A number of risks were identified during the development of this FMP. Others originated from the recent Independent Forest Audits (IFA) and from Annual Reports. This section aims to identify these risks and discuss how the plan may be impacted.

Wood Utilization

Historically, the average level of harvest in the TMU has consistently been less than half of the planned and available sustainable harvest area. The continued under-utilization has direct consequences to meeting management objectives related to forest health, forest structure and composition and local social-economic benefits. Harvesting is the primary tool that allows the FMP to create young forest, improve the health of damaged forest, reduce wildfire risk and conduct the silviculture required to move the forest towards it's preindustrial condition. The socioeconomic benefits from the forest industry that extend to the businesses that support it within local northern communities with limited economic diversity cannot be understated.

The systematic under-utilization of harvest opportunity and the associated underachievement of the potential socio-economic benefits from the TMU has been experienced for decades. The planning team considered management objectives and strategies specifically intended to improve harvest utilization and included these objectives in the plan. An emphasis on increasing the health of the forest was made to provide greater value and long-term viability.

Social Controversy

The 2011 IFA outcomes reflected the importance of the TMU as a highly valued recreational landscape. The forest has a long history of public concern, especially for the management of the old-growth red and white pine forests. Moreover, this management unit is used extensively by canoe and outdoor enthusiasts of all kinds. Not surprisingly, this forest has been the subject of much social controversy over the last many decades. This past controversy creates an elevated uncertainty for outcomes of the planning process. The polarized positions on forest management experienced in the past always have the potential to re-surface and disrupt the operational implementation of forest management activities.

The planning team addressed this risk directly by making additional efforts beyond the prescribed consultation processes to improve engagement with local citizens and First Nation/Metis groups. Several concerns put forth during these efforts have made their way into the plan, including increased public participation during the course of the FMP through research and job opportunities. As well, non-timber values will be given greater emphasis and trials intended to assess alternative silviculture practices are planned. These goals should contribute to advancing the knowledge of stakeholders on forest management within the TMU.

White Pine Regeneration Success

A risk identified in the 2011 IFA report was the importance of proper white pine regeneration success. White pine is particularly difficult to regenerate properly, and if the silvicultural prescriptions are not successful, the proportion of this species and forest types on the landscape could decline. Such a decline would place several management objectives under threat on under-achievement.

The planning team has made efforts to target white pine regeneration success directly in its management direction. Further, the plan will be implementing a more detailed silvicultural monitoring system designed to reduce silvicultural treatment failures by determining and addressing problems early.

Old Growth

One of the features that the Temagami area is associated with is the presence of old-growth forest, specifically red and white pine dominated forest ecosystems. The management of the old growth forest condition continues to attract attention from members of the public and interest groups who desire increased protection with no management intervention. Failure to address this issue satisfactorily reduces public confidence in the FMP and those who've developed and implemented it and increases the risk to maintaining these forest types on the land base over time.

The planning team considered the levels of old growth present on the TMU and confirmed that they are consistent with the direction of the Old Growth Policy and the Landscape Guide. The Landscape Guide provides directional millstones for the movement of the existing forest condition towards pre-European levels. Regardless of the public's perception, in many cases the current levels - of old growth area on the TMU exceeds the milestones set by the Landscape Guide.

Forest Health

Current forest condition resulting from previous insect and pest outbreaks may impact operations. Failure to plan for these impacted stands could cause delays for harvesters, which, in turn will impact the profitability of operations and therefore their ability to contribute to addressing the issues.

The known occurrence of spruce budworm and forest tent caterpillar outbreaks were considered by the planning team, have been incorporated into the strategic model and included in the LTMD analysis. This will allow the plan to more accurately reflect the conditions on the ground and create more certainty with the management projections that the planning team has written.

eFRI and Digital Layers

The TMU's new eFRI imagery was acquired in 2008 and 2009, and photo interpretation was started in 2011. Delivery of the new eFRI was expected prior to July 2016, but was delayed unit October 2017. The unexpected delay created challenges for the planning team's plan production schedule. Once the eFRI was received, a significant amount of time was required to verify and correct the inventory data prior to preparing it for use in the FMP process. The delays incurred from the eFRI resulted in postponing Stage 2 – Public Review of the LTMD from August 2017 to November 2017 however the planning team has been working towards putting the plan production back on a schedule consistent with the original eFRI delivery schedule date.

Phase-in Provisions of the new Forest Management Planning Manual

The 2009 Forest Management Planning Manual (FMPM) was used to initiate the planning process. The 2017 FMPM was released in July 2017 and the phase-in provisions of the 2017 FMPM were applied. This included the use of the 2009 manual for planning requirements up to Stage 3 – Operational Planning. However, components of the 2017 FMPM were considered by the planning team during the production of the LTMD. This included the completion of FMP tables for post-renewal transitions, silviculture ground rules, and the use of Strategic Management Zones during strategic modelling. The team was able to incorporate these elements into the final plan.

4.0 PLANNED OPERATIONS

4.1 Introduction

Section 4.0 describes the planned operations for the 10-year term. The following details the prescriptions for harvest, renewal and tending operations, the roads planning for primary, branch and operational roads, the road use management strategies, the revenues and expenditures related to operations, the monitoring and assessment of operations, and finally compares the proposed operations to the LTMD levels.

To assist in the implementation of the FMP, a document titled Implementation Toolkit for the Temagami Management Unit Forest Management Plan hereafter referred to as the Implementation Toolkit (IT) was prepared and is available in Section 6.4(a) of the Supplementary Documentation. The Implementation toolkit includes a series of modules that describe the operational procedures and conditions on implementing forest management activities so that operational outcomes are consistent with the FMP direction. The IT is to be used in conjunction with FMP-11 and FMP-18 to ensure the protection of values and the compliance with the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (2010). FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads, Landings, and Forestry Aggregate Pits and FMP-18: Road Construction and Use Management state what operations can be undertaken within an AOC, and the IT directs the operators how to comply with legislation based on what is prescribed within the AOC documentation.

4.2 Prescriptions for Operations

Prescriptions for operations have been prepared for those areas selected for harvest, renewal and tending operations during the ten-year term of this plan. Prescriptions were also prepared for areas selected for contingency areas so in the event that area is required during plan implementation; all AOC operational planning will have been completed and approved and can be scheduled for harvest once the area is re-categorized from Contingency to Normal harvest area via an amendment to the FMP.

4.2.1 Operational Prescriptions for Areas of Concern

Operational prescriptions for all areas of concern (AOC) are documented in table FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads, Landings, and Forestry Aggregate Pits and in Supplementary Documentation Section 6.1(j) – Documentation of the Planning of Operational Prescriptions for Areas Of C. The latter contains the description and the environmental analysis of alternatives for the proposed operational prescription as well as a summary of public comments for the selected prescription for each value. Resource values related to natural features such as bird nests, streams or lakes were developed consistent with specific direction in MNRF's Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (also known as the Stand and Site Guide and hereafter referred to as the SSG).

The impact of activities (High, Moderate, Low) is consistent with the description of impacts from the SSG contained in appendix 4.2 of the SSG and is used throughout all AOC prescriptions contained in FMP-11.

These operational prescription tables include the following information;

- AOC identifier
- Description of Natural Resource Feature, Land Use or Value
- Group AOC
- Operational Prescription
- Source supporting the development of the prescription
- Exception
- Road Crossings and Landings
- Primary or Branch Road Crossing / Landing Condition
- Operational Road / Landing Condition
- Conditions on Forest Aggregate Pits

The Implementation toolkit procedures are required to be described in detail since they are intended to be referenced during operations. These operational prescriptions describe the practices available to forestry operations personnel and play a vital role in the successful implementation of the forest management plan.

Supplementary Documentation section 6.1(j) – Documentation of the Planning of Operational Prescriptions for Areas Of C includes the required information for any operational prescriptions developed by the planning team where no existing science-based information is available and where an environmental analysis was conducted. These supplementary documents also include any comments received from the public or Aboriginal communities during the development of the FMP. Also, any objections and responses to those objections from the public and Aboriginal communities were documented.

There are no operational prescriptions for an area of concern that differs from the specific direction or recommendation (standards or guidelines) in a forest management guide in this FMP. Therefore, exceptions documentation is not required and not identified in Table FMP-11.

Information products associated with operational prescriptions for AOCs will include both the AOC identifier and the AOC type. See Section 6.1(j) – Documentation of the Planning

of Operational Prescriptions for Areas Of C of the Supplementary Documentation for a complete review of applied AOCs on the Areas Selected for Operations Maps.

4.2.2 Prescriptions for Harvest, Renewal and Tending Areas

4.2.2.1 Silvicultural Ground Rules

Table FMP-4: Silvicultural Ground Rules provides the Silviculture Ground Rules (SGR), which are prescriptions for the harvest, renewal, and tending operations developed for all forest unit–ecosite combinations present on the management unit.

The prescriptions found in table FMP-4: Silvicultural Ground Rules will serve to provide the specifications, standards and other instructions that direct harvesting, including the salvage of naturally depleted areas, for the ten-year period of the forest management plan.

The information contained in the SGR is directly linked to the inputs used in the Strategic Forest Management Model (SFMM). A good illustration of this relationship is visible if one compares the FMP-5: Post-harvest Renewal Transition Rules used in the development of the LTMD to those found in the SGRs. The values by forest unit / silvicultural intensity align.

The preferred SGR's shown in Table 24 serve as the preliminary prescription for harvest, renewal and tending operations since FMP-4 may have more than one preferred prescription per forest unit (e.g., for each silvicultural intensity). Prescriptions for all known possible site conditions have been documented and it is recognized that certain treatments will be rarely selected for use. Table FMP-4 presents the entire suite of acceptable silvicultural treatment combinations that are available for implementation. However, as indicated in table FMP-4: Silvicultural Ground Rules , the most common treatment package(s) in each SGR will represent the most likely treatment. This information represents the best estimate of proposed operations at the time of plan preparation, and will not limit the selection of any other acceptable alternative silviculture treatments in the SGRs at the time of implementation. The SGR's are consistent with the Silvicultural Guide recommendations (not recommended and conditionally recommended). Individual stands portrayed on the Areas Selected for Operation Maps found in Section 6.4(b) – Areas Selected for Operations Maps of the Supplementary Documentation identify the preferred SGR for that site at the time of plan preparation. The information products for harvest, renewal and tending operations will serve as the stand list. None of the proposed silvicultural treatment combinations proposed in table FMP-4: Silvicultural Ground Rules, present an exception to the applicable silvicultural guides.

1

2 Table 24 Preferred Silvicultural Ground Rules

Name	Plan Forest Unit	Analysis Unit	Preferred SGR in LSA	Default SGR
Hardwood uniform shelterwood	HDUS1	HDUS		HDUS-nat-HDUS-E
		HDSL1		HDSL1-nat-HDSL1-E
		BY		BY1-nat-BY1-E
		OAK		OAK-nat-OAK-E
Poplar clearcut	PO	PO		PO1-nat-PO1-E
Birch clearcut	BW	BW		BW-nat-PO1-E
White Pine seedtree	PWST	PWST		PWST-nat-PWST-E
White Pine uniform shelterwood	PWUS	PWUS4		PWUS4-nat-PWUS4-E
		PWOR		PWOR-nat-PWOR -E
		PWUSH		PWUSH- nat-PWUSH - E
White Pine uniform shelterwood conifer	PWUSC	PWUSC		PWUSC-nat-PWUSC-E
Red Pine seedtree	PR	PR	PR1-nat-PR1-E	PR1-plnt-PR1-1
Jackpine 1 clearcut	PJ1	PJ1	PJ1-nat-PJ1-E	PJ1-plnt-PJ1-I
Jackpine 2 clearcut	PJ2	PJ2	PJ2-nat-SP1-E	PJ2-plnt-PJ1-B
Spruce Pine clearcut	SP	SP	SP1-nat-SP1-E	SP1-nat-SP1-E
Spruce Fir clearcut	SF1	SF	SF1-nat-SF1-E	SF1-nat-SF1-E
Black Spruce clearcut	SB	SB	SB1-nat-SB1-E	SB1-nat-SB1-E
Mixedwood uniform shelterwood	MWUS	MWUS		MWUS-nat-MWUS-E
Mixed Conifer Low	MCL	CE1		CE1-nat-CE1-E
		LC1		LC1-nat-LC1-E
Mixedwood clearcut Mixedwood clearcut Mixedwood clearcut	MWCC	LWMW		LWMW-nat-LWMW-E
		MWD	MWD-nat-PO1-E	MWD-plnt-PJ1-1
		MWR	MWR-nat-PO1-E	MWR-plnt-PJ1-1

The SGR's are the basis for the development of silvicultural strategies. Each silvicultural treatment package for each forest unit and silvicultural intensity is represented by a yield curve that is used in the strategic modelling analysis to predict the development of the forest unit over time. Each combination of silvicultural treatments with a similar expected outcome is intended to direct forest development over time towards the desired future forest condition. An individual silvicultural treatment combination can therefore be considered as a unique silvicultural strategy. Each SGR and associated available silvicultural treatment combinations has development information corresponding to the relevant yield curve information used in SFMM.

For each forest unit managed under the clearcut silvicultural system, a range of silvicultural treatment packages have been developed that may be subdivided into the following four silvicultural intensities:

Extensive Treatments

These are lower-cost treatments that generally rely upon natural regeneration following harvest. The natural regeneration of a forest unit on selected sites will benefit from a treatment where the advanced conifer component will be maintained post-harvest. They also include modified clearcut techniques such as group seed trees for black spruce. Extensive treatments are most suitable for forest units whose major species possess the capacity to regenerate naturally (e.g. pure poplar stands) after harvesting or natural disturbance. Typically, they only require modified harvest practices and the completion of regeneration surveys after an appropriate period of time. Extensive treatment packages have been developed for all forest units.

Basic Treatments

These are treatments associated with natural regeneration that is assisted by aerial seeding, partial cutting and/or fill plant treatments. Basic treatments may also include site preparation or tending. They will be applied to those forest units where the likelihood of success realized by an additional investment in renewal effort is high.

Intensive 1 Treatment

These higher-cost artificial regeneration treatments characteristically include classical site preparation and planting techniques. They always involve planting nursery stock at normal to high densities and usually include some form of site preparation (e.g., mechanical, chemical, prescribed burning, or combinations) and tending. In some cases,

more than one tending application may be necessary to achieve free-growing status. Intensive treatments maybe applied to portions of previously treated areas that fail to respond adequately to extensive or basic treatment.

Intensive 2 Treatment

These highest-cost artificial regeneration treatments characteristically include classical site preparation and planting techniques with manual non-herbicide based tending techniques. They always involve planting nursery stock at normal to high densities and usually include some form of site preparation (e.g., mechanical, prescribed burning, or combinations) and tending. Often, more than one non-herbicide tending application may be necessary to achieve free-growing status (establishment and performance). Intensive 2 treatments maybe applied to portions of previously treated areas that fail to respond adequately to extensive or basic treatment.

4.2.2.2 Conditions on Regular Operations

Section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package
<MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit Module 9 of the Supplementary Documentation contains specific modules that document the conditions and procedures on regular operations that have been developed through the application of the SSG. As described, in some specific situations, operational prescriptions for AOC's are referenced in these Modules as they address the operational practices available to forestry operations personnel. Conditions on regular operations as well as any operational prescriptions for AOC's referenced in Table FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads,
Landings, and Forestry Aggregate Pits apply for the entire management unit and are defined in the Implementation Toolkit. The following modules are available in the Implementation Toolkit and are intended to be used as field implementation references/guides;

1) Roads and Water Crossing
2) Forest Aggregate Pits Conditions and Procedures
3) Water Crossing Planning, Design Installation
4) Road Monitoring
5) Road Transfer

6) Hazards
7) Decommissioning
8) Residual Forest Cover
9) Conditions on Regular Operations
10) Forest Operations Prescription
11) Salvage and Biomass
12) Soil and Water Conservation
13) Change to Values
14) Line Marking Procedures
15) Fire Prevention and Preparedness
16) Licensing and Wood Measurement
17) Marketability Key
18) Stream Permanency Operator Guide
19) Potential Impact Assessment Key
20) Glossary

The IT also includes an introduction and glossary which describes the intent of the IT and the terminology used for the purposes of plan implementation.

4.2.2.3. Silvicultural Treatments of Special Public Interest

There are no candidate areas for high complexity prescribed burns identified in this plan. Although an effective site preparation option, prescribed burning is currently cost prohibitive. However, if social-economic conditions do become favorable during plan implementation, the appropriate measures could be undertaken to pursue high complexity burns. If any substantial infestation is detected and deemed to have consequential impacts to the forest, then an insect pest management program will be initiated. Areas proposed for aerial application of herbicide and areas available for fuelwood are portrayed on the composite map available with the information products submitted with the FMP. This information represents the best estimate of proposed operations at the time of operational planning, and will not limit the selection of any other approved alternative silvicultural treatments in the silvicultural ground rules at the time of implementation of operations.

4.2.2.4 Slash Management Strategy

The management of conifer and hardwood roadside slash generated by harvest operations is carried out, where applicable, on harvest areas in order to minimize loss of productive forest areas available for regeneration (refer to Management Objective 4

There are a number of management options available for the treatment of roadside slash

including:

- Mechanical piling (most common method used to date) and/or burning
- Corridoring (alignment of slash into windrows parallel to roads
- Redistribution of slash across the harvest block,
- Roadside chipping; and
- Grinding of roadside slash for use as bio-fuel of other bio-fibre products.

Slash management will be carried out on 100% of the sites that will be regenerated using intensive treatments and on sites where basic silvicultural treatments include tree seedling planting or aerial seeding. There may be operational constraints or situations that preclude slash management on these sites, however this will be considered the exception and not the normal practice. Examples include early winter break-up and water crossing removal to name a few. For the sites being regenerated through extensive treatments (i.e. natural regeneration in hardwood or conifer forest units) a minimum target of 50% of the harvested area will receive direct slash management treatments.

Consideration for aesthetics and fuel loading reduction along primary access corridors will contribute to the selection of extensive renewal sites that receive slash management treatments. Slash management on intensive and select basic regeneration treatments will occur prior to regeneration activities. All slash management activities will normally be completed within three years of the completion of harvest activities summarized in the year 3 and 7 annual reports prior to the next independent forest audit. Sites from previous FMP's that were not subjected to slash management, but remain economically accessible, will remain eligible treatment areas.

The amount of slash management that is undertaken annually on the TMU will be reported within the Annual Report.

4.2.2.5 Silviculture operations within the LSA strategic management zone

TFN/TAA has identified during the FMP development process the preferred silviculture ground rules for the LSA. None of the silviculture ground rules or renewal treatment rely on the application of herbicide for site preparation or tending. Harvest operations and silviculture will rely on treatments that achieve silviculture success without the use of herbicide. Table 24 Preferred Silvicultural Ground Rules includes the alternatives to the preferred SGR for any silviculture within the LSA.

4.3 Harvest Operations

4.3.1 Harvest Areas

Table FMP-12: Planned Harvest Area in Section 8, describes the available harvest area and the planned harvest area for the ten-year period. These areas were selected based in part on public comments received on the preferred and optional harvest areas during the review of the LTMD and subsequent operational planning.

A ten-year total available harvest area of 30,660 hectares was calculated during the development of the LTMD. The subtotal of available harvest area within the LSA strategic management zone is 2,412 hectares and the subtotal of the available harvest area within all remaining strategic management zones (hereafter referred to as TEM) is 28,248 hectares.

For a breakdown of harvest area within the LSA refer to the FMP tables within the supplementary documentation section 6.2(d) – Lands Set Aside. For a breakdown of the harvest area for the TEM refer to the FMP tables within supplementary documentation section 6.2(e) - FMP Tables by SMZ.

During operational planning a separate licensee operational planning schedule was established. This scheduled identified requested input, actions and due dates for the licensees to review and provide input into all aspects of planned operations but with a focus on planned harvest area. A high-level review of the management unit was completed with each prospective FRL holder identifying areas of where eligible wood is concentrated on the landbase and likely to make up planned harvest area. This occurred to familiarise the licensee with the possible make up of harvest areas and to familiarize the plan author with any known inoperable areas, merchantable areas and any relevant previous operations.

A first iteration of the planned harvest areas was produced, and portrayed on 1:30,000 scale overview maps for internal review by all licensees, and the operational task team. Once the review was completed, a second iteration was produced which looked at the collective progress towards the achievement of management objectives such as the consistency with available harvest area, and effects on texture and young forest patch size. A combination of helicopter flights, ground truthing and on screen review was done by licensees individually. Refinements to planned operations were done as needed to addres specific operational issues. These refinements have also resulted in addressing

some public comments concerning some proposed harvest areas shown during Stage 3 – Information Centre: Review of Proposed Operations.

A ten-year total planned harvest area of 30,605 hectares or 99.8% of the available harvest area have been included in this FMP. The subtotal of planned harvest area within the LSA strategic management zone is 2,282 hectares or 95.9% of the subtotal available harvest area within the LSA. The subtotal of the planned harvest area within the TEM is 28,293 or 100.2% of the subtotal available harvest area.

The required area of stand level residual was determined using the direction and standards from the SSG. Implementation of residual planning is consistent with the achievement of biodiversity objectives. The operational maintenance of residual forest cover is defined explicitly in Module 8 of the Implementation toolkit. Analysis of residual forest cover requirements is provided in Section 8.3 of the Analysis Package found in Supplementary Documentation 6.1(b) – Analysis Package

The locations where fuelwood can be obtained will be identified in each annual works schedule and portrayed on operational maps.

<u>Wildfire</u>

During the summer months of 2018, increased wildfire activity on the TMU was reported. Some of the wildfire activity has the potential to impact harvest areas. Several wildfires were hundred hectares in size stretching in a south-westerly to north-easterly direction. Natural disturbance depletion mapping resulting from the wildfire activity fire was not available to during the preparation of the draft plan. Some preliminary natural depletion mapping was made available for a small number of wildfires in the fall of 2018. Based on this information the harvest block identified as Selby 121 was considerably reduced in size as much of the area was burned by fire NOR19. This area was replaced by some area identified as contingency and by area adjacent to or within other operating area. For the remaining area, where the impacts of wildfire is still unknow, contingency area may be needed to replace to regular harvest to account for any differences as encountered. Harvest Area's that may be affected include but are not limited to:

Acadia 121: NOR61 fire perimeter appear to affect portions of this harvest area.
Yates 125: NOR66 appears to fall within this harvest area
Law 129: NOR 37 appears to be within or very close to this harvest area
Strathcona 120: NOR69 appears to be within or very close to this harvest area

Riddell 120: NOR55 appears to be within or very close to this harvest area
Hartle 121 : NOR54 appears to be within or very close to this harvest area
Eldridge125: NOR22 appears to be within or very close to this harvest area

4.3.2 Completion of On-going Harvest Operations from Previous Plan

Harvest areas for bridging serve the purpose of allowing for operations from the 2009 FMP to be completed. Bridging areas do not contribute to the 2019-29 FMP AHA and are identified on separate operational maps.

The area for bridging was determined in conversations with the licensees to identify harvest areas unlikely to be completed by the end of the 2009 FMP, or those which are unviable on their own and the addition of planned harvest area from the 2019 FMP is helpful to the viability of both plan harvest areas. This results in a total area greater than the specified limit of three month of wood. Wood utilisation is noted as a key plan associated issue in the Terms of Reference available in 6.1(n) – Terms of Reference for the 2019 Temagami Management Unit Forest Management Plan. By exceeding the specific three months worth of wood improved utilisation is expected and will lead to a positive effect on all associated management plan objectives of the 2009- and 2019 FMP.

During the development of the 2019-29 FMP all planned harvest areas from the 2009 FMP are forecasted as depleted (ie forecast layer) and therefore they are already considered to be harvested in the strategic model. For which management decisions are made. Bridging areas do not affect the 2019-29 FMP AHA and volume projection. They can, however, improve the viability all operations combined.

The following blocks or portions of blocks have been identified for bridging.

Gillies Limit 45, Lorraine 45, Milne 85, Belfast 70, Burnaby 78, Cassels 67 and Cassels 68, Hudson-21 and Strathy-65.

These harvest blocks will be scheduled in the 2019-20 AWS only and must be completed by March 31 of the first year of the FMP.

Gillies Limit 45: This block is comprised of the POCC forest unit of the 2009 FMP. It is accessed via It is accessed via a corridor which also provide access to planned regular harvest in the 2019 FMP that are also poplar dominated forest units (PO). It is not expected to be completed or near completed by April 1st 2019.

Lorrain 45: This block is primarily comprised of BWCC forest unit from the 2009 FMP. It is accessed via a corridor which also provide access to planned regular harvest in the 2019 FMP that are also Birch dominated forest units (BW). It is not expected to be completed or near completed by April 1st 2019.

Milne 85: This block is comprised of the PJSB forest unit from the 2009 FMP. It is surrounded by planned regular harvest operations in the 2019 FMP and are also spruce

and pine dominated forest units (SP1). It is not expected to be completed or near completed by April 1st 2019.

Cassels 67 and 68: This block is comprised PWUS, MWUS, MWCC, BWCC forest unit from the 2009 FMP and is sparsely arranged along the existing blueberry road. It is surrounded by planned regular harvest operations in the 2019 FMP, this block is expected to be nearly completed by April 1st 2019.

Belfast 70: The stands included for bridging within this block are comprised of PWUS forest units from the 2009 FMP. There is no adjacent planned regular harvest operations near this harvest block. It is not expected to be completed or near completed by April 1st 2019.

Burnaby 78: This block is comprised PWUS, and PWST forest unit from the 2009 FMP and is located near planned regular harvest operations. It is not expected to be completed or near completed by April 1st 2019.

Strathy-65: This block is comprised of MWCC, MWHD, SFCC, MCL, and POCC forest units from the 2009 FMP. This block is expected to be almost nearly complete by April 1st 2019. Tree marking and road infrastructure is in place.

Hudson - 21 this block is comprised on MWCC and MWHD forest units form the 2009 FMP and is expected to be almost entirely complete by April 1st 2019. Road infrastructure is in place and timing restriction within the harvest block limit the opportunity for prior harvest.

4.3.3 Harvest Volume

FMP-13: Planned Harvest Volume by Species is located in Section 8 and describes the available harvest volume, an estimate of the planned net merchantable volume and undersize and defect that may be available for bioproducts for the planned harvest area for the ten-year period. The method used to estimate the volume for the planned harvest area is based on information supported in the Modelling Inventory Support Tool (MIST) which uses the Northeast Region pure-species yield curves to calculate and aggregate individual stand volumes by species. These volumes are then used to generate a total volume by species for each stand selected during the allocation process. The volumes are then netted down to reflect what is planned for harvest based on the silviculture system, and stage of management. The Analysis Package Section 8.1 available in the Supplementary Documentation 6.1(b) – Analysis Package describes the process further. These achievements are well within the expected variation of harvest volume that will be encountered as a result of forest resource inventory error. Common inventory errors

expected to be encountered at the stand level that have to potential to impact volume include species, stocking variation and site classes. These variations to the inventoried productivity of a site, the occupied growing space and the leading species within the stand can have impacts at the stand level but across the management unit are expected to average out.

A ten-year total projected available harvest volume by species of 3,674,762 m^3 was calculated during the development of the LTMD. The subtotal of projected available harvest volume by species within the LSA is 242,422 m^3. The subtotal of projected available harvest volume by species group within the TEM is 3,432,340 m^3.

The planned harvest volume includes undersized and defect volumes which also known as unmerchantable volume represents all of the volume that is not merchantable by the minimum utilization standards defined in the Scaling Manual. In general, this includes components of the tree that have not traditionally been utilized (i.e. stem tops (below minimum diameter limit), defect or cull, branches, leaves, twigs and bark).

A ten-year total volume of 3,016,269 m^3 is planned for harvest or 82% of the available harvest volume. The subtotal of harvest volume within the LSA is 211,360 m^3 or 87% of the subtotal available harvest volume. The subtotal of harvest volume within the TEM is 2,804,909 m^3 or 82% of the available harvest volume. The planned harvest volume within the TEM SMZ and represents the volume for the area allocated to FRL holders and is shown in Table 25

Table 25 Total Available and planned harvest volume by species group

Species Group	Available m^3	Planned m^3	Percent
Management Unit Total			
SPF	1,395,975	1,276,089	91%
Pw/Pr	850,000	569,092	67%
Po/Bw	1,181,458	976,139	83%
CE/OC	154,791	112,507	73%
OH	91,896	82,441	90%
TEM Subtotal			
SPF	1,298,990	1,186,620	91%
Pw/Pr	800,000	519,914	65%
Po/Bw	1,112,798	916,780	82%
CE/OC	137,249	107,427	78
OH	82,691	74,169	90%

For a breakdown of harvest volume within the LSA refer to the FMP tables within the supplementary documentation section 6.2(d) – Lands Set Aside. For a breakdown of the harvest volume for the TEM refer to the FMP tables within supplementary documentation section 6.2(e) - FMP Tables by SMZ.

4.3.4 Wood Utilization

Table FMP-14: Planned Harvest Volume and Wood Utilization summarizes the utilized and unutilized planned harvest volume by species and product.

For a breakdown of wood utilisation within the LSA refer to the FMP tables within the supplementary documentation section 6.2(d) – Lands Set Aside. For a breakdown of the wood utilisation for the TEM refer to the FMP tables within supplementary documentation section 6.2(e) - FMP Tables by SMZ.

The historic utilization on the TMU has generally fluctuated at around 30% of planned harvest area and volume. This trend has been well documented in the approved year 7 annual report and trend analysis. Based on the historically low utilisation, it is appropriate to base the projections of utilisation by reducing the proportion of planned harvest volume

using reduction factors that consider both historical utilisations, and any gains made possible by improvements.

To project utilisation appropriately in FMP-14 two analysis were completed. The first analysis investigated past harvest trends using annual report data, and the second analysis focused on future harvesting trends based on the average M^3/ha of commercial species the results were combined and applied to planned harvest volumes using reduction factors to project utilized harvest in volume in FMP-14. These are both described below.

The following assumptions were used to reduce the projected harvest volume shown in applied FMP-14.

Annual Report Data

Harvest area trends by forest unit from the year 7 and year 8 annual report were used to determine total the actual harvest area by year. At this time, the year 9 and year 10 annual reports have not been prepared. To ensure the annualization of actual harvest by forest unit used in this analysis accounts for 10 years worth of harvest, the harvest from the year 8 annual report was applied to year 9 and 10 as a minimum (142 hectares each).

These data will provide a benchmark to base future harvest expectation for the 2019 FMP by forest unit. There are no harvest trends reported for the LSA and so the same harvest proportions for the rest of the management unit have been applied for consistency. Table 26 provides the planed and actual harvest area by forest unit used to create a % reduction to be applied.

Table 26 Analysis of referenced utilisation based on 2009 FMP harvest trends

Forest Unit	Planned Annual harvest area (ha/yr)	Benchmark Annual Harvest based on approved AR (ha/yr)	Percent Harvested
BW+PO	849	259	0.30
HDUS1	147	1	0.01
MCL	41	9	0.21
MWCC	375	71	0.19
MWUS	30	9	0.30
PJ1	149	103	0.69
PJ2 +SP	590	164	0.28
PR	5	4	0.85
PWST	234	7	0.03

M^3/HA Data

Anticipated future harvest trends resulting from more up to date inventories that can identify inoperable areas based on slope, canopy height, percent softwood/hardwood basal area, access planning, market trends or equipment/operator efficiencies. The planning team has taken considerable efforts to improve the viability of operations but is still constrained by the current forest condition. To assess any anticipated improvements to utilization the following analysis was completed with the following general assumptions;

- All harvest blocks with a planned harvest volume of SPF per hectare greater than 65m^3/ha are anticipated for harvest.
- All harvest blocks with a planned harvest volume of PWR per hectare greater than 50m^3/ha are anticipated for harvest.
- All harvest blocks with a planned harvest volume of PO+BW per hectare greater than 85m^3/ha are anticipated for harvest.

Table 27 compares the results of both analyses. A ratio of the combined average utilization is used in FMP 14 and FMP 15 to reflect projected utilisation in the 2019-2029 TMU FMP.

Table 27 Benchmark and anticipated harvest utilization analysis results

Species Group	AR Data Utilisation	M^3/HA Utilisation
SPF	35,534 m^3/yr	53,125 m^3/yr
PWR	12,254 m^3/yr	28,986 m^3/yr
PO / BW	23,092 m^3/yr	26,699 m^3/yr
OC / OH	3,746 m^3/yr	5,020 m^3/yr
Total	74,627 m^3/yr	113,831 m^3/yr

A total combined conifer and hardwood volume of 916,731 m^3 is projected for utilization during the ten-year term based on the analyses above. It is projected that 2,099,537 m^3 from the area of planned harvest volume will not be utilized based on the assumptions above. It is projected that approximately 30 % of the 10-year planned harvest volume of merchantable undersize and defect volume will be utilized during the 10-year term of the FMP.

Note that projected unutilized harvest volumes remain available for utilization to support industrial proposals. Approval of the FMP is not an agreement to make areas available

for harvest to a particular licensee, or an agreement to make planned harvest volume available to a particular mill.

FMP-15: Projected Wood Utilization by Mill in Section 8.0 shows the projection of wood utilization by mill for the ten-year term of the plan. FMP-15 forecasts the TMU contribution towards meeting the wood supply requirements of the various companies. It also identifies any wood supply commitments applicable to the forest. Based on current and recent history, net merchantable volume types reported in FMP-14 are use to distribute the projected wood utilization by mill. Wood utilization is anticipated to be slightly increased based on capital investments to some processing facilities identified in Table FMP-15: Projected Wood Utilization by Mill.

All of the Planned harvest areas are assigned a licensee and the process of assigning allocations is administered by the MNRF North Bay District.

A total of 2,170,080 m^3 is committed or offered on the TMU. The total planned volume derived from the planned harvest areas (including undersized and defect) is 3,016,269 m^3 however total projected utilized harvest volume is 916,731 m^3. As noted earlier in this section, the projected utilisation is based historical harvesting trends. It represents the amount volume expected to be un-utilized by the commitment holders notwithstanding the opportunity to do so. Table 9 Wood supply obligation on the TMUTable 9 provides the wood commitments on the TMU. Note that RYAM inc. formally a supply commitment, however It not anticipated to receive volume from the TMU at this time. For the purposes of this analysis and in FMP-15 Any volume committed this facility will show a 0m^3 for projected utilisation by mill.

A birch volume of 283,000 m^3 has been committed by supply agreement and an additional 70,000 m^3 designated to a wood supply commitment purchase offer (WSCP offer) for a combined total of 353,000 m^3 for all products. Total planned harvest volume for birch is 334,257 m^3 which indicates that meeting commitment levels for BW volume will be constrained by a net shortage of 1,874 m^3/year assuming full utilization of planned harvest volume.

A poplar volume of 629,080 m^3 for all products has been committed by supply agreement. The total planned harvest volume for poplar is 582,522 m^3 which indicates that meeting commitment levels for volume will be constrained by a net shortage of 4,655 m3/year assuming full utilization of planned harvest volume.

A cedar volume of 30,000 m^3 has been committed by supply agreement. The total planned harvest volume for cedar is 93,096 m^3 which indicates that supply commitment levels and not constrained assuming full utilisation.

An SPF volume of 810,000 m^3 has been committed by other mechanism. The total planned harvest volume for SPF is 1,186,620 which indicates that supply commitment levels are not constrained, assuming full utilisation.

A PWR volume of 292,000 m^3 has been committed by other mechanism and by WSCP offer. The total planned harvest volume for white and red pine is 519,914 m^3 which indicates that supply commitment levels are not constrained, assuming full utilisation.

A tolerant hardwood volume of 56,000 m^3 has been committed by other mechanism and by WSCP offer. The total planned harvest volume for tolerant hardwood is 74,169 m^3 indicating that supply commitment levels are not constrained, assuming full utilisation.

Overall the SPF and birch/poplar volumes are constrained whereas the PWR, CE and tolerant hardwood volumes are not. when considering the projected utilisation by species, most volumes are harvested well below their supply commitment levels leaving a considerable amount of the planned volume not utilized.

This will impact the ability to progress towards structure and compositions objectives described in FMP-10 at the pace described in the short, medium and long term (desired forest and benefits). In addition, objectives which rely on the creation of future forest types by harvest will suffer (creation of tolerant hardwood, intolerant hardwood, mixed pine landscape class). Objectives which rely on the removal of a current forest conditions will continue to persist (reduction in spruce-fir- cedar and mixedwood landscape class). Other objectives such as the improvement of texture for mature and old and the young forest indicators and MEA structure and composition will also be difficult achieve. Objectives which are more based on communication and involvement with LCC or first nations should not be affected by lower utilisation.

4.3.6.1 Marketability

The Ministry of Natural Resources & Forestry (MNRF) has proposed the following marketability procedure in the FMP in response to significant changes in hardwood and conifer pulp markets. Recent developments in the demand for pulp required that the MNRF implement a temporary strategy on the TMU that will allow for modified harvesting and silviculture to take place on the forest when conifer pulp markets are greatly reduced. Conifer pulp includes all softwood species commonly found on the TMU, e.g., spruces, pines, balsam fir, cedar, and larch.

The Northeast Region Operations Guide for Marketability Issues (NEROGMI; 2013) is the document that provides direction for utilization and marketability strategy supporting in this FMP. A new strategy is expected to be approved following the approval of this FMP. The framework, principals and details provided within the 2013 NEROGMI are applied and found within this section and in supplementary documentation The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit, Module 17 as an interim solution only. These sections are based on existing applications of the NEROGMI on other units within the North East MNRF Region. In the case of any discrepancies that may arise or circumstances that are not presently accounted for within this section refer to the 2013 NEROGMI for guidance until the approval of the new strategy. Once the new strategy is approved, this section and module 17 of the implementation toolkit will require an amendment to reflect the new strategy and its guidance.

Domtar has eliminated its demand for conifer round-wood to the Espanola facility, in part due to the availability of softwood chips from surrounding sawmills which are currently more cost effective to purchase, coupled with Domtar's current oversupply of softwood round-wood. This loss of an economically feasible market destination for softwood pulp affects planned harvest operations and is expected to continue for an undetermined length of time.

The Ministry of Natural Resources & Forestry Northeast Region Forest Industry Division confirms that markets for conifer pulp from the Temagami Management Unit are currently extremely limited. Depending on the location of harvest blocks, licensees may occasionally find spot markets for small volumes.

Four (4) separate strategies have been developed to deal with potential market fluctuations associated with harvesting of Crown timber on the Temagami Management Unit. They include:

1. Modified Utilization Strategy for Unmarketable Conifer Pulp
2. Modified Utilization Strategy for Unmarketable Conifer Sawlogs (Incidental Pw and Pr Stems as part of 2nd Harvest)
3. Procedure for Hardwood Products with Limited or No Markets
4. SPF Utilization Standards for Topping and Butting Practices on the Temagami Management Unit

The general direction of the strategy has been described in Module 17 of the Implementation Toolkit for the Forest Management Plan.

- Revised merchantability specifications (log dimensions as specified by mill requirements) will be updated regularly and provided to MNRF by Consumer Mill Licensees on request.
- Communication of the marketability direction to on-site workers will occur at regularly scheduled Block Start-up Meetings.
- Occurrences of the modified utilization strategies will be documented in the Forest Operations Information Program (FOIP), and the Annual Report text will identify stands where modified utilization strategies were applied, estimates of unutilized harvest volumes, and strategies to find alternative markets.
- The requirement to implement this interim procedure will be re-affirmed, if necessary, during the development and approval of each Annual Work Schedule.

Licencees will be required to declare their intent to implement the The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

- 6.4(a) – Implementation Toolkit Module 17 Procedure to Implement Interim Marketability Strategy at the pre-operation meeting prior to start-up of operations

4.3.6.2 Marketability and Merchantable trees

The MNRF's Scaling Manual (2017) provides regulations for the utilization of merchantable trees, and prohibits wasteful practices:

> *Merchantable trees and/or wood fibre may be left at a harvest site in order to satisfy silviculture and habitat requirements or because of market related issues associated with a certain species or product.*
>
> *Leaving merchantable trees at the harvest site because of market related issues must not jeopardize the silviculture or habitat objectives of that harvest site.*

The Scaling Manual and the Forest Operations and Silviculture Manual prohibit wasteful practices and state that the minimum utilization standards must be followed on all forest resource operations unless otherwise described in the approved Forest Management Plan. Deviation from these minimum utilization standards and the leaving of merchantable

trees and/or wood fibre are often incorporated in the FMP in order to satisfy silviculture objectives (e.g. seed trees) or habitat requirements (e.g. downed woody debris (DWD) or residual forest cover). A third and much more variable reason for leaving merchantable timber is a result of market related issues associated with a certain species or product. As such, merchantable trees and/or wood may be left at a harvest site, or road construction right-of-way, because of market related issues associated with a certain species or product, as long as the silviculture or habitat objectives of that harvest site are not jeopardized and the reasons for leaving merchantable trees and/or wood fibre in specific areas are described in the approved FMP. This marketability procedure is therefore proposed to make provisions to allow merchantable wood to be left at specified harvest sites or road construction areas.

There are currently a number of tree species found growing on the Temagami Management Unit that are considered merchantable under the Scaling Manual. When there are few or no processing facilities capable of using products from these species and consequently there are limited, or no markets for this wood fibre the modified utilization strategy may be applied. Markets dictate whether a tree species will be utilized and this is recognized by the Scaling Manual. The FMP describes the expected utilization for the plan period based on current market conditions for tree species with limited or no markets from the Temagami Management Unit.

4.3.6.3 Utilization

Utilization is affected by the recovery of merchantable trees and marketability of species or products. The Scaling Manual (2017) defines merchantable trees. Marketability refers to the existence of an economic market in which a tree species or product is bought and sold. The number of unmarketable trees felled will not exceed 100 trees per hectare.

<u>Loss of Existing Markets</u>

Depending on the location of processing facilities in relation to the operating area, harvest and trucking costs, timber dimensions/quality and available volume, the economic demand for a particular species or product may vary considerably. Consequently, timber may be merchantable but not be marketable. These market influences are the real determinant of whether a species/product can be fully utilized. Locally, the management unit has seen the number of resource processing facilities and associated markets decrease. Local impacts have been related to the closure of the Grant Forest Products OSB mill (Timmins), Tembec sawmill (Timmins), Tembec pulp mill (Smooth Rock Falls) and most recently the Resolute FP pulp mill (Iroquois Falls). Temporary closures of the Cheminis Lumber sawmill and the Domtar pulp mill wood room in Espanola have also

impacted market options. The loss of markets has been significant and has had a progressive impact to operations.

The proof of the existence of a market is the mutual agreement between willing sellers and willing buyers; it is necessary to demonstrate the occurrence of wasteful practice. When no market exists for certain species, or products, leaving trees with the consent of the District Manager is not considered a wasteful practice as long as renewal is not impeded.

Conifer Pulp

Currently, however, there are limited viable market destinations for conifer pulp that would normally go to Espanola, i.e., markets within an economically feasible hauling distance relative to mill gate price.

A review of on-site work practices related to utilization has been ongoing during the term of the previous FMP. As market conditions change, work practices and standards need to be tailored to adapt to new harvest systems and equipment on the forest in order to remain competitive. Introduction of cut-to-length processing in the woodlands is one field level response to changes in markets. The fixed-length harvesting heads are a common application currently in use across the province. It has been introduced to maintain the economic viability at resource processing facilities as pulp markets diminish or are eliminated. Locally, the transition from treelength to cut-to-length systems for the Elk Lake facility has been progressively introduced since 2006 and is now the primary method of round wood delivery to the sawmill. Operators have invested significantly in new equipment and training during this period. During this transition, field assessments have been conducted and indicate that the interim standards would not substantially increase the amount of fibre left in cutover.

Efforts have still been made to explore as many options as possible to utilize the full tree.

- All methods of harvest will leave a portion of the stem following processing, however, utilization of these residual pieces from the cutover is not operationally feasible at this time (i.e. tops and short defect pieces). It is recognized that organic matter that is not part of a harvested tree (including boles, branches, roots, bark, leaves, needles, debris, soil carbon, etc) will remain on site and contributes to the strategic landscape objectives (e.g. downed woody debris).

- Use of grinders to process roadside slash has not been an economical option given the haul distances to the co-generation facilities in Kirkland Lake Power cogeneration facilities.

- Deliveries of biomass to GP North Woods LP will continue but is limited based on proximity to the facilities as well as market demands for biomass.

- Use of in-bush chippers has been attempted but requires use of the full tree stem rather than residual portions of stems which limits its application. As well, the wood chips currently generated from sawmills greatly exceed market requirements and makes this option both economically and operationally impractical.

- Use of lower quality stems including dry wood (i.e. chicots) have been utilized for fuelwood. This has increased significantly in recent years and is expected to be the norm.

- Impacts to silvicultural operations are not expected as any increase in residual stems can be effectively dealt with by current mechanical site preparation and treeplanting techniques. Existing silvicultural ground rules currently include deferral of mechanical site preparation for up to three (3) years to allow for deterioration of woody debris. An existing seed source is derived from cones left as a result of processing at the stump and provides for natural ingress. This allows for an area-based planting option which has proven successfully in meeting regeneration standards on these sites. Routine post-harvest assessments of these sites will be used to assess and determine which of the silvicultural treatment package options is most effective. These treatment options will be adapted as required to ensure that regeneration efforts remain effective.

In addition, underutilized conifer species such as larch have not been utilized much in the past and there are currently no markets for this species. As there are currently no markets for larch, this volume is planned to be unutilized as indicated in FMP-14: Planned Harvest Volume and Wood Utilization

Hardwood Fibre

Historically merchantable hardwoods such as birch, balsam poplar and occasionally aspen poplar, were underutilized on the Temagami Management Unit. There is still the uncertainty that all of the hardwoods will be utilized in the future and therefore a procedure has been developed to facilitate the harvest of stands containing a high percentage of these species.

Balsam poplar, although included in the poplar planned volume to be utilized, is rarely encountered on this forest and is not expected to be utilized, as there are currently no markets for this species. This unutilized volume, for the most part, will be left standing in the cutovers. Some unutilized species may be felled as incidentals to improve stand conditions for renewal purposes, or to facilitate harvesting operations, and will have no negative effect on the sustainability of this plan.

There are limited to no markets for rarely encountered species such as black ash, soft maple, white and red pine. As a result, these species are not expected to be fully utilized over the course of this plan.

Key Principles for Marketability Strategy

Some of the key principles in the following approach to deal with marketability concerns:

- The goal is to get as much of the merchantable stem to the road as possible. It was recognized by industry staff that a large part of the issue could be addressed by improved merchandizing of the stem.
  - The goal is to get as much of the merchantable stem to the road as possible without impacts to silvicultural treatments. It was recognized by industry staff that a large part of the issue could be addressed by improved merchandizing of the stem.
  - Operators will normally identify potential issues with utilization within the first week of operations. Operators cannot wait until operations are completed
  - MNRF has re-iterated that the scaling manual is clear on what constitutes a merchantable piece and any deviation must be approved in the FMP.
  - MNRF recognized the difficulties associated with local markets (i.e. particularly chip and biofibre markets). Previous methods of dealing with merchantable pieces of any length were costly and ineffective and more so in these economic times.
  - It is the expectation of all parties that the volumes of non-specification wood will be minimal. Any reoccurrences of operational issues could result in stepped and incremental compliance response
  - Monitoring for additional markets or a change in market condition by the Licensees will be ongoing, with updates provided to the District MNRF annually.
  - If during operations there is a change in markets, the Licensee will notify the MNRF. The decision to return to normal operations or continue modified operations will be made in consultation with the District.

- The Licensee and MNRF will review the available markets prior to issuance of Annual Harvest Approvals and the decision to proceed with continued modified operations will be documented annually in the AWS.

Development of Alternate Markets

The MNRF District Manager decides whether a market exists or not based on available evidence. The proponent of the position that no market exists should provide evidence. The evidence suggested by the Joint Industry/MNR Utilization Task Team (1999) should include the volume, species and product quality of the unutilized fibre; a description of the social and economic impacts; wood supply commitments and why they are not being used; the investigation of the markets (e.g., demonstration to the MNRF District Manager that reasonable effort was made by the hardwood-user industry to find markets for unutilized species, provide a list of traditional customers or markets); advertisements pertaining to the availability of the fibre; all conditions of offer, dates, times, responses; other feasible options (e.g., modification of existing allocations to shift operations to areas containing less of the unutilized fibre, solution to address lack of market, etc.).

The first step in addressing this issue is to continue to seek out or develop alternative markets, and this will be an ongoing process between the companies and MNRF.

MNRF may request that FRL Holders contact a specific list of mills in order to determine the availability of conifer pulp markets. Past efforts that have been made to develop alternate round wood alternatives markets include the following mills:

1. Primary – FRL Holder Related Consumer Mills & Companies
   - **GP North Woods LP** continues to accept OSB volumes to their facility in Englehart. Biomass is also accept in limited quantities
   - **EACOM Timber Corporation (Elk Lake)** continues to accept SPF volumes to their facility in Elk Lake and has increased their top size for most deliveries to 10 cm (which utilizes additional volume that would normally have been pulp)
   - **Goulard Lumber (1971) Limited** continues to accept PW and PR saw logs

2. Secondary – Other Facilities in Ontario
   - EACOM Timber Corporation at Nairn Center accepts SPF saw logs and has reduced their top size for most deliveries to 11 cm (which utilizes additional volume that would normally have been pulp)
   - EACOM Timber Corporation, Ostrom has been approached by licensees to further reduce pulp volumes by milling studs but hauling distance makes

deliveries uneconomical in many cases

- Gervais Forest Products Limited (Falconbridge), Portelance Lumber (Capreol) Limited and Rosko Logging and Lumber (Kirkland Lake) accept SPF volumes to their facility but haul distance make this option limited
- Columbia Forest Products accepts hardwood veneer logs.
- Fryer R Forest Products can accept both softwood and hardwood sawlogs in a limited supply
- Limited amounts of SPF pulp are being sold as discounted firewood by some licensees.

3. Tertiary – Out of Province Facilities Who Traditionally Buy Open Market Wood
    - Rayonier Advanced Materials, Bearn Québec can accept some tree-length spruce volume that would normally be pulp but they are not accepting Bf saw logs
    - Rayonier Advanced Materials in Temiscaming Québec have accepted SPF pulp
    - Scierie Landrienne, Landrienne Québec have also been contacted but are not accepting Bf saw logs and hauling distance makes any deliveries uneconomical for operators

Each of these facilities may need to be contacted and informed that there is potential volume available. Documentation on conversations and information sent to each facility above should be available on request at the FRL Holders Office.

<u>Efforts to Improve Utilization at the Resource Processing Facilities</u>

Efforts have also been made to improve utilization at the resource processing facilities. The intent is to reduce rather than eliminate the amount of by-products that are produced during the processing of round wood into dimension lumber at sawmills. Sawmills have continued to develop and expand markets for by-products were possible. For example, EACOM Timber Corporation, Elk Lake facility has developed new markets that include but are not limited to:

- Gro-Bark, Kenabeek -the sale of bark for landscape mulch and soil amendment products
- Unibord, Val D'or and Panolam, Huntsville - sawdust for press board
- Leis Wood Products, Cobalt and G. McFeeter's, Burlington- shavings for packaged wholesale garden products
- KLFP, Kenogami and GP North Woods LP - Englehart - trim-ends for finger-joint lumber products and biomass
- RayonierAM –Témiscaming- planner chips for biomass, and
- Domtar, Espanola and RayonierAM, Témiscaming- wood chips for

groundwood mills

In addition, EACOM sawmill facilities in Elk Lake, Ostrum and Timmins have made significant upgrades to improve recovery rates for sawlog products to ensure economic viability of their facilities.

Stockpiling options are also limited as there are no expectations of market developments. Until alternative markets are available MNRF is, therefore, proposing an interim strategy to be implemented that will allow harvest operations to continue while also minimizing impacts on forest renewal. The duration of this strategy would be for the remainder of the FMP or less if market conditions are resolved. The following direction for modified utilization will be followed where harvesting is to proceed in the absence of a market for conifer pulp (Table 1). During this time, harvest will be deferred in stands with abundant conifer pulp (white and red pine) as much as possible.

The utilization of available fibre will also continue to optimize recovery of saw-logs, veneer, hardwood pulp, composite material, and fuelwood, regardless of market fluctuations. Personal use fuelwood opportunities will also continue to be explored and encouraged.

4.3.6.4 Incidentals

This section defines the concept of incidental trees and provides a discussion of how these trees are managed to provide access to marketable fibre, while meeting silvicultural objectives. Direction is also provided on how to operate stands with a high percentage of poplar and birch species where markets are either limited or nonexistent to ensure that silvicultural objectives are not jeopardized.

An "incidental" is a tree of one species felled to gain access to harvest another species. Incidentals may be unmerchantable or merchantable, but of species or product that is not marketable. Marketable trees are not considered incidentals and will be utilized. Non-marketable incidental species can be felled and left at the felling site, as needed to access the marketable species/products. The latter practice is not wasteful because it provides Downed Woody Material for ecological function rather than skidding and piling at roadside in the absence of a market while not jeopardizing the silviculture or habitat objectives of that harvest site. This practice may improve regeneration by controlling canopy closure and controlling the number of less desirable seed trees. The practice of managing incidentals is not intended to fell all unmarketable trees. Rare species such as black ash, balsam poplar, hard and soft maple and red pine will not be felled as incidentals unless no alternative exists. Provincial forest management guidelines for stand structure apply,

and too many felled trees left on site can hinder site preparation and planting. As a result, the number of unmarketable trees felled that are not skidded to the roadside will not exceed 25 trees per hectare so as to not impede silviculture. Any deviation from this direction must be approved by the District Manager.

Conversely, loss of markets while operations are in progress also remains a possibility. In these cases, wood previously harvested and brought to roadside will not be considered a wasteful practice if efforts to secure a new market are unsuccessful.

4.3.5 Salvage

The DAMNG1 silviculture intensity identifies forest area affected by spruce budworm infestation requiring some form of clearing treatment to access the remaining merchantable wood treatment. Should potential salvage opportunities arise during the implementation of this FMP, (due to wildfires, blowdown or insect infestation) amendments will be prepared to address salvage operations.

4.3.6 Contingency Area and Volume

FMP-16: Contingency Harvest Area and Volume available in Section 8 provides the contingency harvest area and volume and represents approximately two-years of harvest operations. Unforeseen circumstances such as blowdown, wildfire, insect damage, disease or unforeseen access issues may cause some of the planned harvest area to become unavailable for harvest during the ten-year period of the FMP. In order to accommodate such circumstances, contingency areas for harvest have been identified. The contingency area is intended as replacement area for lost harvest opportunities planned for in the FMP. Often contingency areas are later proposed as regular allocation harvest areas in the following FMP. The contingency areas are identified and portrayed on the Areas Selected for Operations Maps in Supplementary Documentation 6.4(b) – Areas Selected for Operations Maps. A total of 5,299.9 hectares has been selected for contingency with an associated total volume of 543,033.3 m^3. In general, contingency areas were selected for the proximity to existing roads, adjacency to other allocations and from areas considered to be non-contentious in order to provide operational flexibility and a relatively expeditated amendment process should the allocations be required.

It should be noted that AOC operational planning, and corridor planning for contingency

blocks was completed during the development of this FMP to facilitate an amendment to the FMP, if required. Residual planning and any remaining AOC planning will be confirmed during the preparation of an amendment to the FMP to reclassify the approved contingency area to normal allocations

4.4 Renewal and Tending Operations

4.4.1 Renewal and Tending Areas

The types and levels of planned renewal and tending operations for the ten-year period and the proposed levels for the ten-year term of this plan are summarized in FMP-17: Planned Renewal and Tending Operations. The levels are projected based on the long-term management direction as determined from the forest modelling and are then modified to include projected silvicultural activities required to renew pre-2019 harvest areas to free-growing status. Table 28 shows total estimate of outstanding silviculture required for area not yet free-to-grow (FTG) or awaiting treatment.

Table 28 Estimate of outstanding renewal treatments on the TMU

Treatment required	Hectares
Planting	1,037
Mechanical Site Preparation	1,362
Chemical Site Preparation	709
Seeding	503
Tending	2,250

Renewal and tending levels have been determined in part by using the clearcut area renewed by forest unit and silvicultural intensity results from the long-term management direction (LTMD). The proportion of area renewed by forest unit and silvicultural intensity resulting from the LTMD was applied to the area planned for harvest for each forest unit, and is the basis for the planned ten-year period of renewal and tending operations. These figures were then adjusted by projecting the planned silvicultural program for the 2017 and 2018 operating years, based on proposed operations in the existing plan and any outstanding treatments from previous FMP's as determined from the recent survey results.

4.4.2. Renewal Support

Renewal support includes activities such as tree seed collection, planting stock production and tree improvement operations, which will be carried out on the management unit. The majority of cones will be collected on harvested trees during scheduled harvested operations identified in the AWS. Seed collection for white spruce, white pine and red pine will be targeted for a bumper crop year that can be expected to occur during the planning period. Should an acceptable cone crop of white and red pine occur, selected trees will be actively located and harvested in order to secure seed for use in the renewal program. The number of white and red pine trees harvested for cones will be based on the seed requirement and reasonable attempts will be made to utilize the trees. Tree seedlings for planting on the TMU are generally grown and procured from local nurseries. Depending on the requirements for a particular year, stock type will primarily be white spruce, black spruce, jack pine, white and red pine grown as overwinter container stock with spring and fall stock produced when necessary.

4.5. Roads

4.5.1. Primary and Branch Roads

Primary and branch roads that are required to provide access to and within the areas selected for harvest, renewal and tending operations for the ten-year period are detailed on the Areas Selected for Operations maps available in 6.4(b) – Areas Selected for Operations Maps Documentation of the environmental analysis of the alternative corridors for each new primary road corridor, the rationale for the selected corridor and associated use management strategy is documented in Supplementary Documentation 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors

Table FMP-18: Road Construction and Use Management shows the forecast (10-year) road construction and use management for each new primary and branch road, and network of operational roads. These roads may be winter (i.e. organic), un-surfaced or thinly surfaced. Planned construction, maintenance, monitoring, access control and future use management are recorded in the table.

Six primary road corridors were identified by the planning team. The selected road infrastructure is intended to significantly reduce hauling distances for volumes harvested from the forest while still meeting the FMP objective related to road densities on the landscape.

The planning team considered many options in order to minimize any negative impacts of the planned or existing road infrastructure. Selected primary road corridors, rationale and associated use management strategies have been included in this FMP in Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors of the Supplementary Documentation.

FMP-18: Road Construction and Use Management documents all planned new primary and branch road construction and references the use management strategies for each road or associated road network. A total of 90.34 km of primary road and 329.63 km of branch road is planned for construction (40.16 km of branch road corridor within the LSA) during the ten-year term of this FMP.

For branch corridors, the selected corridors will normally assume the existing use management strategy from the associated road or road network unless otherwise

indicated in Supplementary Documentation Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors, which includes the 72 proposed branch road corridors, the rationale for the selected corridor and reference to the associated network for details on the use management strategy.

4.5.2. Operational Roads

Operational roads are roads within operational road boundaries (ORB), other than primary or branch roads that provide short-term access for harvest, renewal and tending operations. Operational roads are normally not maintained after they are no longer required for forest management purposes, and are often decommissioned. Operational roads may occasionally be site prepared and regenerated as required and consistent with the FMP objectives and use management strategies. These roads may be winter (i.e. organic), un-surfaced or thinly surfaced. Culverts and/or bridges will be removed following operations.

For each harvest block identified on the Areas Selected for Operations Maps found in 6.4(b) – Areas Selected for Operations Maps, an ORB has been established for accessing this area. Each use management strategy for an individual ORB is recorded in Table FMP-18 and is consistent with the harvest block identifier. If necessary as a result of unforeseen circumstances and in recognition of the data used for the establishment of ORB's, the configuration and refinement of ORB's will be updated for the AWS via an FMP amendment.

Similar to branch road corridors, use management strategies for ORB's inherit the use management strategies of the associated road or road network, unless otherwise specified in the road use management strategy. Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors of the Supplementary Documentation describes the proposed use management strategies for ORBs and also provides a summary of the public comments. In situations where the use management strategy restricts public access, the rationale for the restriction is provided in this Supplementary Documentation.

4.5.3. Area of Concern Crossings – Primary and Branch Roads

Where a primary or branch road is proposed to cross an AOC, the detailed documentation

of the determination of the preliminary crossing location and the acceptable variation for the crossing location is described in the Supplementary Documentation6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors. Table FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads,

Landings, and Forestry Aggregate Pits identifies any conditions that may exist on a Primary or branch road crossing of an AOC, or landings within an AOC.

During public consultation, comments received indicated displeasure of roads on the management unit. During stage 4 several comments were received with specific roads corridors issues. These issues ranged and requesting the complete removal of specific existing roads on the landscape, to decommission sections of operational roads to providing alternative locations for primary road corridor locations. Each comment is listed in the Supplementary Documentation6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors. With the respondent number listed in 6.1(k) – Summary of Public Consultation

For each new primary or branch road water crossing to be constructed, the location, crossing structure and conditions on construction will be finalized in the applicable annual work schedules in accordance with the Ministry of Natural Resources and Forestry/Fisheries and Oceans Canada Protocol for the Review and Approval of Forestry Water Crossings.

The review and approval of the construction and decommissioning of water crossings will be in accordance with direction in the Ministry of Natural Resources and Forestry/Fisheries and Oceans Canada Protocol for the Review and Approval of Forestry Water Crossings (the Protocol). For each new primary and branch road water crossing to be constructed, the location, crossing structure and conditions on construction will be finalized in the applicable AWS (Part D, Section 3.2.5) in accordance with the Protocol. The exception to this Protocol is that there still remains a requirement to identify a 100 m wide crossing location, not 200 m wide location as identified in the Protocol appendices, for the duration of this FMP.

The decision framework in the Protocol will be used to assist in determining crossings that require an MNRF, and if necessary, a Department of Fisheries and Oceans (DFO) review. The approved water crossing standards from this Protocol that will be used during forest operations are described in the in the AWS in the Implementation Toolkit Module 3 In addition to the applicable construction conditions, all applicable water crossing

standards will be documented in AWS-1 by their water crossing standard identifier. In instances where a water crossing standard does not exist, an approved water crossing standard cannot be met in its entirety, or where an operational management zone related to fisheries has identified a need for MNRF review and approval, an MNRF review is required.

As per the Protocol, an operational management zone(s) for fisheries has been established in the Temagami Management Unit (MU). Rationale and documentation for the implementation of the operational management zone(s), as well as a map, can be found in supplementary documentation section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit Appendix I – Operational Management Zones within the TMU. Water crossings within the operational management zone(s) require review and approval by the MNRF and DFO (if necessary) and a water crossing standard cannot be applied.

The purpose for the Operational Management Zones (OMZ) is to protect specific fisheries habitat associated with brook trout. Brook trout are known to have an affinity for and in many cases rely on small tributary streams for spawning and rearing of early life stages. Water crossings on these streams may not be appropriate, depending on the nature of the stream in question and the location of the crossing relative to site specific habitat features. MNRF review of all crossings is required within the identified Operational Management Zones identified in the Supplementary Documentation 16 – Map of Operational Management Zones. The Operational Management Zone map may be updated periodically by the MNRF North Bay District as improved data becomes available, and included with each Annual Work Schedule.

The water crossing standards represent additional measures to the specific conditions on the construction, use, and decommissioning of water crossings in Table FMP-19 as per the water crossing standards and guidelines in the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales and MNRF’s Crown Land Bridge Manual.

4.5.4. Area of Concern Crossings – Operational Roads

Table FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads,

Landings, and Forestry Aggregate Pits identifies any conditions that may exist on operational road crossings of an AOC, or landings within an AOC. FMP-18: Road Construction and Use Management details the conditions on operational road crossings of areas of concern, conditions on the location(s) or construction of the crossing(s) for an individual AOC, or groups of areas of concern.

During public consultation, no public comments were received regarding the location of operational road boundaries.

For each new operational road water crossing to be constructed, the location, crossing structure and conditions on construction will be finalized in the applicable annual work schedules in accordance with the Ministry of Natural Resources and Forestry/Fisheries and Oceans Canada Protocol for the Review and Approval of Forestry Water Crossing.

The review and approval of the construction and decommissioning of water crossings will follow the Ministry of Natural Resources and Forestry/Fisheries and Oceans Canada Protocol for the Review and Approval of Forestry Water Crossings (the Protocol). For each new operational road water crossing to be constructed, the location, crossing structure and conditions on construction will be finalized in the applicable AWS (Part D, Section 3.2.5) in accordance with the Protocol.

4.5.5 Existing Roads

All roads are the responsibility of the MNRF and are detailed in the Supplementary Documentation and/or the *Existing Road Use Management Strategy* GIS coverage as this is a Crown management unit. The Supplementary Documentation Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors details use management strategies and the rationale for existing roads.

Approaches identified in the individual road use management strategy define the Licensee's responsibility during periods of active use for the monitoring and maintenance of designated road segments and are consistent with the existing infrastructure condition description (see Existing Infrastructure Condition description in individual road UMS).

The following are general principles that apply to any existing roads or road segments or road networks that are the responsibility of the Licensee. For detailed information regarding an existing road or road network, refer to individual use management strategies

available in Supplementary Documentation Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors.

Maintenance

The Forest Industry will regularly maintain assigned roads within the road network during periods of active harvesting. At other times, roads will not be maintained except as to not place the public at undue risk and/or to minimize the potential for environmental damage. In the event of failing infrastructure on roads or road networks that are the responsibility of the Crown during active operations, the Licensee will complete the necessary improvements required in order to continue operations.

Monitoring

Road infrastructure (road and water crossings deemed eligible for transfer) are to be monitored at a level deemed acceptable by the Licensees (i.e. at their discretion to meet 'duty of care'). Generally, these operations will be limited to monitoring and risk reduction. The Licensee will periodically monitor its assigned roads and water crossings using its own inspection program to ensure the potential for environmental damage is minimized and the public are not placed at undue risk. It is recognized that if a road or water crossing is not used for industrial use for a prolonged period, its condition will gradually decline and it may require significant upgrading in order to re-establish safe operating conditions for industrial traffic. The Licensee would undertake this reconstruction at its expense in order to facilitate its operational requirements.

When a Licensee representative travels an unassigned portion of a drivable segment of a road network, any deficiencies or hazards will be reported to the appropriate MNRF District. Similarly, when MNRF staff travel roads or road networks that are the Licensee's responsibility as indicated in Table FMP-18, and any deficiencies or hazards are noted, these would be communicated to the Licensee holder.

Access Provision / Restrictions

There are access restrictions or provisions specifically identified in each UMS. It should be recognized that if a road or water crossing is not used for industrial purposes for a prolonged period, its condition will gradually decline and it may require significant

upgrading in order to re-establish safe operating conditions for industrial traffic. Refer to 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors

Decommissioning

Directions for all proposed roads are described in the use management strategy in Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors of the Supplementary Documentation. Further details on the decommissioning of roads can be found in Module 7 of the Implementation Toolkit, and is found in Section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit of the Supplementary Documentation. Road transfer requirements from the FRL holder to the MNRF are described in module 4 of the implementation toolkit found in The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit.

All access decommissioning provisions have been specifically identified in each UMS, where applicable. Crossings will be physically removed prior to transfer if subsequent access beyond the crossing is not required. Crossings that are the responsibility of the Licensee may be replaced at the discretion of the Licensee if required to access future allocations. Roads and water crossings may not be restored in a timely manner if damaged or destroyed by unplanned events (e.g. major storm). There is no obligation on the Crown or the Licensee to undertake this repair work on behalf of other users who may not have the resources to replace failed infrastructure and they must recognize that access to their business or property could be disrupted at any time.

Table FMP-11 documents if there are conditions on the roads and/or landings that are planned to be used for forest management purposes during the period of the FMP where the roads and/or landings intersect an area of concern. FMP-18 lists those conditions on roads and/or landings. Any conditions on regular operations for existing roads and/or landings are detailed in Module 9 of Section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit of the Supplementary Documentation.

Four Moose Emphasis Areas (MEA) are located across the unit. It is the intent to restrict access to within the MEA upon the completion of operations. The standards, timing and location of decommissioning are specified in the applicable road use management

strategies entering an MEA.

4.5.6 Road Water Crossings

The roads and water crossings associated with each road or road network that are the responsibility of the Licensee will be monitored consistent with the conditions described in Module 3 of Supplementary Documentation Section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit to ensure no environmental and/or safety risks are present at any time. A detailed description on the methodology used to inspect the physical condition of roads and water crossings when determining if there are environmental or public safety concerns is also available in Module 3 which is consistent with the from the Ministry of Natural Resources and Forestry/Fisheries and Oceans Canada Protocol for the Review and Approval of Forestry Water Crossings.

4.5.7 Forestry Aggregate Pits

Forestry aggregate pits (FAPs) are exempt from the requirement for an aggregate permit under the Aggregate Resources Act. FAPs may be utilized for a ten-year period starting from the initial aggregate extraction from the pit. Forestry aggregate pits must remain within the primary and branch road corridor, the area of operations, the operational road boundary or the aggregate extraction area that is identified in the FMP, and shown in the AWS, which may be revised from time to time.

The extraction of aggregate from forestry aggregate pits for use on forest access roads will comply with the exemption criteria as outlined in Module 2 of the TMU Implementation Toolkit located in Section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit of the Supplementary Documentation. This section also details the operational standards and conditions of forestry aggregate pits. Conditions on FAPs that intersect an AOC are identified in Table FMP-11. Appropriate FAP conditions on operations are documented in Table FMP-18. Conditions of FAPs not intersecting an AOC, including operating standards and guidelines are detailed in Module 3 of the TMU Implementation Toolkit available in Section The following Supplementary Documents

(including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit of the Supplementary Documentation. Existing FAPs will be identified in each AWS.

Aggregate extraction areas (AEA) are areas within which a FAP will be established and are located within 500 meters of an existing forest access road. AEA's are identified on the Areas Selected for Operations Maps 6.4(b) – Areas Selected for Operations Maps

4.6 Expenditures

Table FMP-19: Planned Expenditures summarizes the forecast expenditures by activity and funding source for the ten-year term of the plan. These rates reflect the long-term funding required to carrying out the FMP as well as activities scheduled to be carried out on harvest areas from previous plans, and may not reflect actual expenditures spent during the course of this FMP. An estimated annual expenditure of $1,139,068 is required to carry out renewal and tending activates on the management unit. Artificial regeneration followed by site preparation and tending on the TEM subunit group is the highest contributor to renewal and treatment expenditure, There is some tree marking and survey related expenditure although it is minimal.

These rates are also consistent with the renewal rates modelled in SFMM. The planned expenditures reflect the need to implement the planned renewal and tending activities detailed in FMP-17: Planned Renewal and Tending Operations

Renewal rates are recalculated annually to reflect both the current silvicultural program requirements and the projected program on a five-year basis. This approach assures that adequate funding is available to complete the planned treatments.

4.7 Monitoring and Assessment

4.7.1 Forest Operations Inspections

The goal of the Licensees is "to encourage and ensure compliance, with legislative and regulatory requirements, which contribute to the sustainable management of Ontario's forests" (Source: A Forest Compliance Strategy, 1997). All references to the License holders below are understood to also include the "Management Company" performing work on behalf of the FRL holders.

4.7.1.1 Forest Operation Inspections

A comprehensive compliance program is regarded as an important tool to ensure the sustainability of the forest resource. Preventing damage to the Crown forest and ensuring remedial action is a primary focus of a compliance program. Monitoring the management and use of the forest resources in the Temagami Management Unit (TMU) is a critical component of a successful compliance program.

The Crown carries out forest management on the TMU. The MNRF has prepared a Compliance Plan that will guide forest licensees' and contractors' activities on the Unit. *The Guideline for Forest Industry Compliance Planning 2005*, *The Forest Compliance Handbook*, and *The North Bay District Compliance Strategy Report* provide direction on the production of the Compliance Plan.

MNRF remains responsible for the monitoring, inspecting and reporting of forest operations, however, in December 2014, an FMP amendment was processed that recognizes a change as to how the compliance program is delivered. A contract between MNRF and a third party Service Provider was signed in which a major component of the forest operations field inspections and reporting functions will be performed under this arrangement.

The Compliance Plan is made up of two parts; the 10-Year Strategic Plan component and the Annual Compliance Schedule of Action.

- The 10-Year Strategic portion forms part of the FMP and outlines the objectives and strategies for compliance monitoring in the TMU.
- The Annual Compliance Schedule of Action is prepared in conjunction with the AWS and outlines the forest operations inspection program that will be carried out during the year. Compliance priorities for the year are set using a risk-assessment approach, where the planned forest operations are evaluated using to a set of criteria that includes the sensitivity of values that may be impacted, the complexity of the operation, the history of the operator, the compliance staff available (MNRF and/or certified inspectors directed by MNRF under the service agreement) and the size of the operation.

One large aspect of the TMU compliance plan is to ensure adherence to the Temagami Land Use Plan. The Temagami Land Use Plan (TLUP) /CLUPA is a very comprehensive and detailed land use plan and unique in the province. Fifty-nine management areas were created and provide site-specific guidance on land uses to prevent and mitigate user

conflicts. The Temagami FMP follows the management strategies set out in the TLUP/CLUPA. Two of the highest priority issues dealt with in the TLUP/CLUPA are recreational use and access. Consequently, forest compliance monitoring strategies place a high priority on these two issues. Ensuring that recreational AOC prescriptions (e.g. viewscape protection) and road use strategies are implemented properly are challenges in the TMU.

MNRF is responsible for the monitoring, inspecting and reporting of forestry operations on the TMU. However, a service provider will assist in the monitoring as needed. For example.

- Commencing in the 2014-15 operating season a non-consulting service agreement was funded through forest management service fee agreements that are in place with the six licensees on the Unit.
- Commencing in the 2016-17 operating season MNRF initiated two contracts four year contracts for a) a 'Supplier of Forest Operations Compliance Monitoring, Administration and Silviculture Services' and b) a 'Forest Management Planning and Related Services' for the TMU.

The agreements outline tasks that will be carried out by MNRF or contracted out, including compliance monitoring, forest management plan amendments and annual planning (AWS) and reporting (AR). The licensees pay a fee to the Crown to have these tasks completed, similar to the management fees paid by overlapping licensees to an SFL company for similar services.

All inspection staff responsible for carrying out forest compliance monitoring for MNRF on the TMU are required to have a valid Forest Operations Compliance Inspection Certificate.

MNRF will continue to implement focused monitoring and compliance efforts on water crossing construction and decommissioning projects as per this FMP and associated AWSs, the requirements of the MNRF Forest Compliance Handbook, and the Ministry of Natural Resources and Forestry/Fisheries and Oceans Canada Protocol for the Review and Approval of Forestry Water Crossings.
Compliance and monitoring efforts for water crossings using a water crossing standard should focus on compliance with the requirements set out in the applicable water crossing standard and determining if the selected water crossing standards were appropriate for the actual site conditions at the crossing.

4.7.1.2 Goals, Objectives and Strategies

The goal for forest compliance is, “to encourage and ensure adherence to rules and requirements which contribute to the sustainable management of Ontario’s forests.” (A Forest Compliance Strategy, 1997)

Within the framework of this goal, we have identified achievable goals with measurable objectives and strategies that will fulfill the provincial mandate.

<u>Goal #1: To protect natural resources in the course of undertaking forest management activities.</u>

Objectives:

- Ensure that all known values are protected when planning and implementing harvest, access, renewal, maintenance and protection activities
- Ensure that unique values identified in the *Temagami Land Use* plan are protected
- Continually evaluate the impact of forest operations on the natural environment.
- Protect the forest against fire, insects and diseases
- To ensure that bridges are maintained sufficiently to prevent material from entering the watercourse.

Resource Protection Strategies: To ensure that compliance activities are delivered efficiently, effectively and in a timely manner, the following actions will be carried out.

MNRF Actions:

- Place special emphasis on monitoring compliance with area of concern prescriptions, silvicultural prescriptions, logging damage standards, road use strategies and water crossing installation and maintenance conditions.
- The frequency of inspections will depend on the type of silviculture activity, the sensitivity of the values on site and the compliance history of the licensee carrying out the activity.
- Area of concern prescriptions associated with recreational values and roads in Special Management Areas will receive a high level of monitoring.
- The remedies and enforcement provisions will be applied more vigorously where non-compliance effects the sustainability of the forest or other significant natural resource (i.e. trespass into a conservation reserve).
- MNRF staff will monitor forests for signs of insect and/or disease problems.
- MNRF will continue to monitor water crossings and take appropriate corrective action to prevent sediment from entering rivers and streams. A high priority will be placed on monitoring water crossings maintenance as stated in the strategies associated with Goal #1.

Service Supplier Actions:

- Annual Work Schedules will be prepared in accordance with the FMPM, and will be consistent with the FMP
- Compliance monitoring will be carried out in accordance with the Annual Compliance Schedule of Action (ACSA) in the Annual Work Schedule and incidents of non-compliance with the applicable legislation, guidelines, the FMP and AWS will be reported and actioned.
- Reports on the effectiveness of value protection prescriptions will be incorporated into FOIP reports and on Temagami Access Control Inspection Reports.
- A fire prevention plan will be prepared annually and will form part of the AWS. It will outline on-site fire equipment requirements and guidelines for operation during the fire season.
- Provide information to Licensee's and their contractors to review and update them with current, new or modified prescriptions and associated values present in the AWS's and FMP.
- Prepare and transfer approved FMP and AWS information including amendments and revisions to MNRF
- Use a web site to provide current forest management information and updates to operators on the TMU

Licencees and Contractor Actions

- The Licensee Holder and their contractors will fully cooperate with MNRF in fire prevention and fire suppression activities.
- Ensure all AOC prescription boundaries are located and marked in the field by trained personnel familiar with the FMP, AWS and various guidelines used to prepare AOC prescriptions.
- Ensure any new value identified in the field during operations will be identified, communicated, protected and reported to the MNRF as per the Forest Information Manual (FIM) protocol.
- Ensure that operating personnel accurately document and review located boundaries within operating areas and ensure they are familiar with the location and any special conditions that may apply.
- Ensure that the marketability and utilization standards prescribed in the FMP are understood and followed.
- Ensure that the prescribed water crossing structures are installed properly and that diligent records are kept for bridges and that maintenance and monitoring occurs on crossings.

Goal #2: To educate MNRF, Service Providers and local forest industry staff in sound forest management practices.

Objectives:

- Ensure MNRF, Service Provider and industry staff are knowledgeable of provincial legislation, policies and procedures and guidelines related to forest management practices.
- Provide training opportunities to MNRF, Service Provider and industry staff on topics that will ensure silvicultural and operational standards in the FMP and AWS are met or surpassed.
- Ensure MNRF, Service Provider and industry staff are aware of the concerns of other resource users and the associated values.

Education and Communications Strategies: To educate and train Licencees in order to maximize compliance with the FMP and CFSA and to communicate and report all instances of operational issues in a timely fashion to ensure that environmental protection and worker and public safety are not compromised, the following actions will be carried out

MNRF Actions:

- Identify training needs and opportunities for MNRF, Service Provider and forest industry representatives based on review of past compliance performance.
- Distribute copies of existing and updated applicable legislation, policies and guidelines to appropriate staff.
- Conduct joint MNRF, forest industry and other resource user field trips to discuss forest management practices.
- Use the internet to get new training messages out and to encourage training session participation by forest industry representatives.
- Service Supplier will be trained on proper compliance/inspection reporting procedures as well as proper operating procedures to ensure compliance with all government laws and regulations. Any changes in government regulations, and/or company standards will be communicated in a timely fashion to appropriate personnel.

Service Supplier Actions:

- Provide copies of relevant documents to forest industry staff including maps, conditions and prescriptions from the AWS when a harvest approval is issued.
- Personnel conducting formal reports to be submitted to the Forest Operations Information Program (FOIP) will have attended and maintained the Ministry of Natural Resources Forest Compliance Inspection certification.

- The Ministry's most recent version of its Forest Operations Inspection Program (FOIP) on the MNRF Internet website (www.forest.mnr.gov.on.ca/foip/) will be used for reporting all compliance and operational issues as per the annual compliance plan schedule.

Licencees and Contractor Actions

- All identified instances of operational issues will be investigated and reviewed with the appropriate operating personnel and MNRF with the goal of continuous improvement.
- Forest Operators will be trained in proper work techniques through internal training opportunities relating to specific forest management activities (i.e. water crossings, bridge inspections etc).

<u>Goal #3: Maximize efficiency of compliance activities</u>

Objectives:

- Ensure trained, experienced MNRF and Service Provider staff carry out compliance monitoring inspections.
- MNRF and Service Provider staff and forest industry field representatives to stay current with legislation, policies and guidelines.
- Focus compliance efforts on the activities which pose the highest risk to forest and non-forest values.
- Ensure good lines of communication between MNRF, Service Provider and forest industry representatives.
- The Service Provider provides weekly reports of planned activities by means of a web based notification tracking system to enable OMNRF staff to better schedule compliance inspection activities.

MNRF Actions:

- Ensure all MNRF and Service Providers forest compliance inspectors are certified to carry out inspections.
- Schedule joint MNRF, Service Provider and forest industry inspections on a regular basis to ensure consistent approaches to forest management.
- Use the report function in FOIP to analyze frequency and the results of compliance monitoring efforts and adjust monitoring efforts where required.

Service Supplier Actions:

- Develop and follow a comprehensive Annual Compliance Schedule of Action that includes a schedule of compliance monitoring requirements by block based on the level of risk of impact on the forest and non-forest values.
- Enter results of forest compliance inspections in the provincial database using the Forest Operations Inspection Program software within 20 days for harvest, renewal and maintenance report, 10 days for an access report and 5 days where a non-compliance occurrence has been reported.
- Contact forest industry verbally within 24 hours where a significant non-compliance has been discovered.
- The Annual Compliance Schedule of Action that forms part of the Annual Work Schedule will contain a schedule of operations and risk assessment rating for every harvest block. The frequency of inspections will be determined based on the risk assessment rating.

Licencees and Contractor Actions

- Operational issues will be reviewed with the appropriate operating personnel and assessed for trends by the Licensee Holder representatives with the goal of continuous improvement.
- Attend information sessions which will be held regularly with the Licensees and contractors to review the AWS, operating standards and their compliance roles and responsibilities and provides the opportunity to train or refresh forest workers on requirements associated with recurring problems.
- Provide training opportunities for forest industry field staff to attend Forest Compliance Inspection Training and other relevant training.

<u>Goal #4: Overcome Historical Compliance Problems</u>

Objectives:

- To actively monitor operations, analyze and evaluate the results of inspections and take appropriate remedial action where required.
- Be pro-active in dealing with potential compliance problems.
- Ensure that FMPM requirements for compliance planning are met.

Overcoming Historical Compliance Problem Strategies: To monitor forest operations on a regular basis with the intent of identifying potential compliance problems before they occur and to identify any recurring compliance problems and to implement a strategy to improve compliance in these areas, the following actions will be carried out.

MNRF Actions:

- Schedule more intensive compliance monitoring efforts where the licensee or operator/contractor has a history of non-compliance.
- Provide training opportunities in areas where operators have had problems in the past.
- Take immediate corrective action appropriate to the significance of the infraction when non-compliance is discovered.

Service Supplier Actions:

- Ensure that detailed compliance activity planning is conducted at a level necessary to meet FMPM requirements.
- FOIP will be used to record compliance inspections. This database can then be analyzed to determine compliance trends. Should recurring problems be identified, specific action plans will be developed to prevent the operational issues from reoccurring. Alternatively, where trends confirm that operations routinely have met or exceeded; monitoring and reporting requirements and audits of operations confirm continuous improvement in work practices, then a decrease in reporting frequency would also be considered. Either condition could result in revisions to the Annual Compliance Schedule.

Licencees and Contractor Actions

- Prior to the preparation of the annual compliance plan and the Annual Report, the Service Supplier, MNRF and possibly the Licensees as necessary will meet to identify and discuss improvements, and recurring or newly identified compliance challenges. These recurring compliance challenges may be highlighted as priorities for the Forest Operation Inspection Program in the annual compliance plan with associated action plans.

<u>Goal #5: Achieve overall improvement of compliance record</u>

Objectives:

- Be pro-active in identifying potential compliance problem areas and the means to avoid non-compliance in those areas.
- Develop an action plan to remedy recurring forest compliance problems.
- Monitor forest compliance trends to measure improvement in performance.

Continuous Improvement Strategies: To develop an action plan designed to remedy recurring operational issues and complete all requirements of compliance activities in a cost effective manner, while ensuring the cooperation and therefore the best use of Licencee, Service Suppliers and Ministry staff, the following actions will be carried out.

MNRF Actions:

- Ensure the Forest Management Plan and Annual Work Schedule clearly and comprehensively outline operating standards that reflect legislated requirements, and applicable guidelines.
- The Annual Compliance Schedule of Action will identify stepped, incremental remedies and enforcement actions in situations of re-occurring non-compliance.
- FOIP will be used to monitor compliance trends based on the types of operation, the licensees' compliance history, the types and number of values requiring protection and the types of infractions. The focus of subsequent compliance efforts will reflect the findings of this analysis.

Service Supplier Actions:

- Reflect the importance of compliance in all communications with MNRF, Service Provider and forest industry representatives.
- Encourage licensees to conduct operations at or above existing standards.
- Initiate meaningful dialogue between MNRF, Service Provider and forest industry in the first stages of problem identification and resolution.
- All instances where potential operational issues have occurred will be reported to MNRF by means of FOIP.
- The use of the FOIP will reduce the administration associated with compliance monitoring.

Licencees and Contractor Actions

- Licensees and Contractors monitoring will be performed on operations as part of their daily tasks. Staff will monitor, make aware, communicate, report and train personnel on the importance of the forest compliance program on the Temagami Management Unit.
- Through the use of efficient communication between Operations Service Supplier staff, Licensees and Contractors will increase the efficiency of operations in terms of compliance.
- Joint MNR/ Licensee/ Operations Service Supplier field meetings will be conducted to assist in the calibration of new and existing plan prescriptions as required.
- The use of joint inspections between industry and MNRF inspectors when and where appropriate will improve communication, reduce conflicts, and facilitate a better understanding of local operating conditions.

<u>Goal #6: To effectively monitor silvicultural prescriptions and treatments</u>

Objectives:

- To continue to monitor silvicultural treatments to determine if they are consistent with the Forest Operations Prescriptions (FOP) and AWS conditions.
- To continue to evaluate the effectiveness of treatments to determine if they are achieving FMP objectives.
- Be prepared to alter prescriptions when required based on the analysis of silvicultural monitoring results.
- To stay current with results of science and technology research on silvicultural techniques
- To ensure silvicultural treatments are carried out in an economically sustainable manner.
- To ensure that District slash piling standards are adhered to.

Strategies to Effectively Monitor Silvicultural Prescriptions and Treatments: To ensure that all requirements of compliance activities associated with silvicultural program in a cost effective manner, while ensuring the cooperation and therefore the best use of Service Suppliers and Ministry staff, the following actions will be carried out.

MNRF Actions:

- MNRF will continue to monitor activities during harvest and other periods when slash piling occurs to ensure compliance with standards. If standards are not met, appropriate action will be taken. The Annual Work Schedule conditions dealing with slash piling standards were reviewed and revised to ensure they are clear and attainable. Illustrating slash piling objectives and best practices will be addressed at MNRF/Forest Industry meetings. Education of forest industry representatives is addressed in Goal #2 and associated objectives and strategies.

Service Supplier Actions:

- Silvicultural treatments will be recorded and tracked using GIS technology. The GIS database will be used to assist with identifying assessment and follow-up treatment needs.
- An annual program of assessments will be carried out to document regeneration success and failures and determine areas that meet the “free-to-grow” standards.
- Consult with adjacent units with similar forest types to investigate other viable silvicultural treatments.
- Attend silvicultural workshops sponsored by science and technology units.
- Compare silvicultural treatment costs with renewal fund (SPA) balances to ensure a sustainable silvicultural program.

4.7.1.3 Remedial Action

When an Operational Issue (OI) is documented, it may be discovered by an Operations Service Supplier lead compliance inspector during a routine inspection or by MNRF staff. It is the responsibility of MNRF to assign corrective actions.

If the OI poses a high risk to a sensitive value, the licensee must cease operations immediately and report the occurrence to MNRF as per the Forest Compliance Handbook (2010).

If there is no threat to the environment and no violation of legislation of the FMP has occurred, the licensee will take the necessary corrective action to remedy the undesirable activity.

Recurring incidents of non-compliance by a licensee will result in progressively severe remedies and penalties being applied as per the Forest Compliance Handbook (2010).

4.7.1.4 Roles and Responsibilities

The Plan Author will prepare the 10-year compliance strategy with input from MNRF District staff and forest industry representatives. This document is located in Section 21 of the Supplementary Documentation.

The Annual Compliance Operations Plans (ACOP) will outline planned MNRF compliance operations for the forest management program on the TMU. The intent of this summary is to capture some of the highlights of the program, and to outline some of the challenges. The frequency of inspections and reporting will be determined using a risk assessment process for each operation. The following formula represents a guide to determine risk ratings for each environmental, social and economic_value that may be negatively impacted by an action or decision.

The Annual Compliance Schedule of Action will be prepared by the Operations Service Supplier as part of the AWS for approval by the District Manager.

<u>Monitoring and Inspections</u>

North Bay District MNRF will act as the lead on compliance and will be responsible for all decision-making with respect to operational issues

The Operations Service Supplier will assign a lead to work with the MNRF to assure ongoing communications. The Operations Manager is the primary contact and will deal directly with MNRF for all notifications and information requests and when interpretation of the FMP is required. They will manage their inspectors and co-ordinate all work with them.

Responsibility for carrying out compliance monitoring for harvest and access activities as per the Annual Compliance Schedule of Action lies with certified inspectors.

1. MNRF compliance inspectors will perform spot checks and audits as well as operational issue verifications duties.

2. The Operations Service Supplier will be responsible for completing a forest operation inspection when advised by the Licensee of the completion of operations.

3. Compliance inspections for harvest, access, renewal, and tending reports and for provincial road funded projects will be carried out by the Operations Service Supplier. This individual will be qualified to Ministry compliance standards
    a. The Operations Service Supplier will communicate directly with the Licensee's representative for the operation to obtain relevant background information when determining a compliance status for the operation. In most cases, this will be a direct employee of the Licensee.
    b. All inspections carried out by the Service Provider or MNRF will be reported in the Forest Operations Inspection Program (FOIP).

The FOIP report will be approved and available for review online by the licensees within the timelines set out in the Forest Compliance Handbook (FOR 07 03 04 and FOR 07 03 05) on all operations; namely

- When each forest Harvest *Compliance Reporting Area (CRA)* operation is completed with no operational issue, a report will be submitted within 20 working days of the completion of the operation or activity. This will form part of a "Completed Harvest" FOIP report that also includes hauling activities and operational roads construction inside the CRA block or the associated *Operating Road Boundaries* (ORB).

- When each Operational Road access operation is completed with no operational issue, a report will be submitted within 20 working days of completion of the operation or activity. This will form part of a "Completed Access" FOIP report that

includes all water installations and aggregate activities, however, ongoing maintenance will continue as required after the initial construction is complete and any physical removal work shall be documented in the final harvest FOIP under Operational Road activity.

- When each forest Primary and Branch Road access operation is completed with no operational issue, a report will be submitted within 20 working days of completion of an operation or activity. This will form part of the "Completed Access" FOIP that includes all operations associated with the construction of any Primary or Branch roads identified within the FMP. It is understood that access reports will be filed as soon as all road construction, aggregate and/or all water crossing activity is completed in the corridor.

- 24-hour verbal notification for significant non-compliance findings followed by a written report within 5 days.

- A hard copy of all inspection reports for Sawdust City Sam will be sent to the Licensee, as he does not have access to the internet.

- A summary of compliance trends will be presented annually to keep the LCC apprised of compliance performance on the management unit.

Sign-off Responsibility on Inspection Reports

Licensees do not have the approval to complete or submit directly to the FOIP system. The sign-off on Operations Service Supplier FOIP Inspection Reports will be completed by the Ministry of Natural Resources& Forestry (North Bay).

For reports submitted to the FOIP database directly by the Operations Service Supplier:

- FOIP reports will be signed-off by North Bay District Resources Management Supervisor
- The approval is based on the information provided by the Operations Service Supplier staff certified inspector.
- The MNRF has not necessarily audited specific reports in the field but is relying on the professionalism and ethics of the Operations Service Suppliers Certified Inspector to conduct the inspection and report in an accurate and unbiased manner.

For reports (i.e. spots checks and audits) submitted to the FOIP database directly by the MNRF inspectors:

- The IRM Technical Specialist will review MNRF inspections and may make comments and recommendations on all reports before passing it on to the Resources Management Supervisor for sign off.
- The Fire Management Supervisor may review reports carried out between April 1st and October 31st during the fire season,

Notification of the Status of an Operation

The Compliance Handbook provides opportunities to improve efficiencies in the inspecting and reporting of forest operations. In order to better coordinate the delivery of inspections of forest operations, each licensee will provide notifications to the Operations Service Supplier. A status report of forest operations will be prepared and used by the Operations Service Supplier to document operations. A web-based notification system will be used. Notices will be available to download by applicable MNRF staff, which is designed to meet the requirements to notify. In those cases where operations have been suspended from the previous year and carried forward to the current operating season, notification details can also be downloaded. The following operation types will be used when providing notification on the status of an operation and is intended to keep MNRF informed of progress of operations on the forest.

Required notices are as follows:

- Startup of Forest Operations (harvest, access, renewal and maintenance) and submitted to MNRF as soon as activity commences.

- Modification, Suspension and/or subsequent Startup of forest operations to reduce the risk of igniting a wildfire as directed by the `Modifying Industrial Operations Protocol`

- Completed Access (i.e. primary, branch, operational road boundaries). Notice of the start-up and completion of each crossing installation associated with the CRA will be considered to have been reported as part of the start-up notice for Primary, Branch and Operational Road. Final condition status of road and crossings will be aggregated and reported as part of the “Completed Access” FOIP.

- Completed Harvest Activities as the operations progress in the CRA(i.e. tree marking, felling and skidding, hauling, slash piling)

- Suspended Operations – Notice provided if suspension of operations is expected to exceed 20 working days (e.g. wood harvested but left in cutover and there are no plans to skid in current year). Operators will provide reason for suspension (e.g. mill has suspended deliveries, breakup, no market etc) and include estimated date of restart of operations (e.g. Nov 2015 or winter 2016). No FOIP report is required on suspended area and no submission is required at fiscal year-end. Operators will have the balance of the current AWS and one further AWS period to complete operations; however, operations cannot be suspended beyond this period.

  In those cases where a notice is provided for the suspension of 'Access' operations, operators will still adhere to the timeframes and conditions specified in the AWS for removal of temporary crossings. Operators will provide notice of start-up when they commence operations again and submit FOIP report when operations are completed. If time period exceeds one further AWS period,

  a. An inspection and FOIP report must be completed once the allowable suspension timeframe is reached
  b. The area will be considered as 'released' and a FOIP report will be required. MNRF may conduct follow-up inspections.

- Released Operations - Notice provided if suspension of operations is expected to exceed:

  a. 10 days and new operations are expected to start on released area such as mechanical site preparation or slash pile burning.

  or

  b. 20 working days where operators wishes to release area to MNRF for compliance audit (e.g. wood has been harvested and skidded to roadside but there are no plans to haul in current year)

Licencees will describe what is being 'released' (e.g. block is released but excludes access road and wood at roadside). No FOIP report is required on released area as described under the suspended notice, however, the declaration means that the operational activity described for the area released is now complete and MNRF is free to go in and assess for audit purposes (e.g. checking for utilization in cutover). Operators provide notice of start-up when operations are commenced again and submit FOIP report when the balance of operations is completed.

<u>Tasks Operations Service Supplier Will Perform</u>

- Conduct formal on-the-ground forest operations inspections, and submit a FOIP report to the provincial FOIP database for the appropriate MNRF Supervisor to approve.
- For operations that are in compliance, the compliance inspector will submit a report through the FOIP system.
- Ensure FOIP reporting on forest operations is completed as per the current AWS schedule.
- Use the FOIP report information to determine whether there are compliance trends (such as an increase or decrease in operational issues, an increased frequency of water crossing issues, etc.) on the forest.
- Ensure that a consistent approach is taken when identifying, reporting, and managing issues by having regular joint and collaborative field visits between MNRF and Operations Service Supplier.
- If an OI is discovered, Operations Service Supplier will action it accordingly and will communicate with the MNRF North Bay office Compliance Lead prior to a final decision.
- Ensure the inspections are in accordance with the following procedures in the Forest Compliance Handbook:
    FOR 07 03 04-Forest Operations Inspections and Reporting
    FOR 07 03 05-Forest Operations Inspections and Reporting Procedures
    FOR 07 03 04-Documenting Suspected Infractions
- Ensure the inspections are in accordance with the timelines identified in the Forest Compliance Handbook
- Maintain records and make available documentation supporting notifications, compliance inspections and FOIP reports.
- Inspectors will submit draft FOIP reports to the Operations Service Supplier lead prior to submission to MNRF for approval. Inspections will be reviewed for consistency with FMP and AWS requirements. Any inconsistencies will be reviewed with the inspector to confirm compliance with FMP standards prior to submission.
- If an OI is encountered during the course of an inspection, the Operations Service Supplier inspector will complete a FOIP Inspection using the process outlined in FOR 07 03 05. MNRF will be contacted by Operations Service Supplier lead to arrange for a verification of the OI in the field within the timelines outlined in FOR 07 03 05. MNRF will be responsible for recording results of the verification in the FOIP report originally initiated by the contract inspector.

<u>Operational Issue Verification Protocol</u>

The MNRF Resource Management Technician assigned to a block will be the primary MNRF contact for compliance matters on that block. The IRM Technical Specialist will provide advice and direction where required to ensure consistent application of compliance monitoring techniques. They will seek input from other specialists as required.

In the event that any field staff (i.e. MNRF or Operations Service Suppliers personnel) identifies a possible OI during ongoing monitoring of operations, the person will undertake one of the following actions to meet legislative requirements:

a. In the event that the OI is in violation of an approved plan or a threat to the environment, the person will immediately stop the activity and take the necessary steps to stop further operational issues. The field inspector will conduct a formal compliance inspection with the foreman of the operation. The occurrence will be immediately reported to the IRM Technical Specialist and Operations Service Suppliers Manager. MNRF and MOECP (as required) will be notified within 24 hours of the incident;
b. In the event that the OI is not in violation of an approved plan or a threat to the environment the Licencee foreman will be advised to take the necessary preventive action to remedy the operational issues and report to the Operations Service Suppliers Manager.
c. Prior to conducting any remedial action within areas of concern, water bodies, water crossings etc., the IRM Technical Specialist will be contacted for advice, assistance and approval of remedial action.
d. The MNRF will verify the identified OI, while ensuring that action occurs will be the responsibility of the Licensee. In those cases where the OI has been created by the Operations Service Suppliers Inspector they will participate in the verification site visit with the MNRF Resource Management Technician assigned to a block
e. Once an OI has been verified by MNRF, MNRF will be responsible for managing, with the Licensee, any remedial actions arising from any OI or non-compliance occurrence. North Bay District MNRF will have its own Compliance Review Team.
f. In the event of a disagreement on the state of compliance of forest operations, Operations Service Supplier lead will participate in a joint field inspection and have available any documentation supporting industry compliance inspections.

<u>Corrective Action Protocol</u>

In all cases the OI function, which forms part of the FOIP report system, will document decisions related to the remedial plans and subsequent work related to the occurrence.

MNRF may then determine and assign Corrective Action as appropriate.

Note: In instances where the Operations Service Suppliers inspector determines a situation to be clearly non-compliant, the direction will be that work will stop on that part of the operation and the inspector will submit a report of an Operational Issue.

Incidents of non-compliance require remedial action and will be discussed by staff involved in compliance including the Resource Management Technician responsible for the operation, the IRM Technical Specialist and the Resources Management Supervisor. Advice from the Management Forester, Forestry Technical Specialist and Wood Measurement Officer may be sought depending on the nature of the non-compliance. A recommendation involving orders or penalties will be presented to the District Manager for concurrence.

The IRM Technical Specialist will monitor the compliance inspection results and will make recommendations to the Resources Management Supervisor and Management Forester regarding changes to the compliance inspection program. For example, additional monitoring, training, or joint MNRF/Service Provider/forest industry in-office or field meetings may be required.

The MNRF Resources Management Supervisor, with input from the Management Forester and IRM Technical Specialist, will assess training needs for both MNRF, Operations Service Supplier lead and forest industry representatives. MNRF regional and provincial specialists in science and operational aspects of forest management will conduct the training.

4.7.2 Exceptions

There are no monitoring exceptions developed in this FMP therefore this section is intentionally left blank.

4.7.3 Assessment of Regeneration Success

A summary of the area, which has not been yet declared free to grow or has not been assessed for its for the success of the intended treatment, has been provided in Table FMP-20, discussed below, and is available in Section 8.0. Since the assessment of renewal success for the 2019-2029 FMP is mostly carried out following the completion of the FMP (assessment after 7 years) only three years' worth of assessment can be carried out during the FMP term. It is projected that a total of 9,122 hectares will be assessed

during the ten-year period, the remaining area will be assessed for regeneration success after the term of the FMP.

Refer to 6.1(h) – Monitoring Program for Success of Silvicultural Activities for a description of assessment methods.

There are 17,083 hectares which have not been assessed from previous terms. 14,169 hectares do not have any treatments scheduled and of this total, 4,896 hectares are regenerating naturally, 4,973 hectares are plantations, 4,289 hectares have unknown treatment histories and 11 hectares are seeded.

This forecast is an estimation of the area to be assessed by forest unit based on the following criteria;

- All areas currently treated and scheduled to be assessed within the course of plan implementation (actual)
- All areas remaining in the previous FMP that will be treated and eligible (forecast)
- All areas scheduled to be harvested during plan implementation and expected to be eligible to be assessed within the course of plan implementation (forecast)

This forecast also includes the assessment of natural disturbance areas originating from various events such as recent infestations, blowdown and/or fire.

Effectiveness monitoring is used to determine if management activities are producing the expected results. Effectiveness monitoring enables the forester to determine whether the current forest units are consistent with the desired forest units in the proportions described in the FMP. Monitoring also permits the forest managers to examine whether certain treatments are meeting planned outcomes and, if they are not, to investigate why they were not successful and then make appropriate modifications in the future.

Regeneration will be considered a silvicultural success when all the standards contained in the SGR applied to that stand have been met. A developing stand will be assessed as a regeneration success when regeneration meets all standards of an SGR other than the one originally associated with that stand. If standards are not met, and the treatments are deemed to be a failure, and the forest manager will determine what, if any, re-treatment is required.

Section 6.1(h) – Monitoring Program for Success of Silvicultural Activities of the Supplementary Documentation includes a detailed monitoring plan for assessment of regeneration success. It includes the overall program objectives, the methodologies used for assessment, a description of the timing and duration of assessments, documentation and reporting requirements and LCC roles and opportunities with the silvicultural effectiveness monitoring program. A silvicultural exception monitoring program is not required for this FMP, as none of the proposed silvicultural treatments are exceptions to the recommendations identified in the silvicultural guides.

4.7.4 Roads and Water Crossings

The roads and water crossings associated with each road or road network will be monitored consistent with the conditions described in Module 6 of the Implementation Toolkit available in Section The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit of the Supplementary Documentation to ensure no environmental and/or safety risks are present at the time. Detailed descriptions of the methodology used to inspect the physical condition of roads and water crossings to determine if there are environmental or public safety concerns is also available in Module 6 if the Implementation Toolkit.

4.7.5 Species at Risk

There are no monitoring programs developed for species at risk in the FMP. None of the Forest Operations and Silviculture treatments are exceptions to the direction contained in the applicable forest management guides used in the development of the FMP, therefore methodologies, timing, duration, documentation, reporting and opportunity for LCC participation is not applicable.

4.8 Fire Prevention and Preparedness

The MNRF recognizes the wealth of resources and expertise available in the forest industry. It is hoped that through the preparation of this fire plan, effective and efficient use of these resources may be realized. This will be of mutual benefit to industry and the government when fire threatens the forest.

A copy of this plan will be distributed to all licensees prior to implementation of the Annual Work Schedule. Therefore, the companies/licensees and/or contractors agree to the following:

- To immediately report all wildfires to the Ministry of Natural Resources and Forestry (see Fire Reporting),
- To initial attack fires on or threatening the company limits, to their capabilities as long as it can be done safely.
- Industry will target their prevention, detection and training efforts towards their staff and immediate operations.
- Industry will regulate themselves according to the Modifying Industrial Operations Protocol (MIOP) in response to fire danger.

Licencees on the TMU will implement the following Fire Prevention and Preparedness Measures Plan for the ten-year period. It describes how MNRF intends on preventing the start of wildfires, and how forest workers will be prepared to take immediate action to suppress small fires. The measures also include details regarding business practices and guidelines for modifying industrial operations; developed for fire prevention, preparedness and suppression purposes.

Described in the Fire Prevention and Preparedness Plan is;

a. a description of communication plans, equipment standards and inspections, monitoring compliance and how prevention efforts will increase during periods of high fire danger;
b. a description of how forest workers will be made aware of fire prevention plans and initiatives;
c. a description of how forest workers will be trained to take part in fire suppression

4.8.1 Promoting Fire Prevention

Promoting Fire Prevention efforts during Periods of High Fires on the Temagami Management Unit

The Fire Prevention and Preparedness Measures will be governed by the general principles outlined in the Aviation Forest Fire and Emergency Services (AFFES) Policy FM 2.15, Forest Operations by Forest Industry Business Practices. This protocol has

been developed with the understanding that the Forest Industry is a partner in forest fire management with a vested interest in fire prevention and effective fire suppression. The Licencees will work closely with the MNRF and its Contractors to facilitate a comprehensive and effective Forest Fire Prevention and Preparedness Plan. Licencees will be encouraged to continue building upon their existing fire prevention measures to minimize risks and increase efficiencies. A comprehensive fire plan including the minimum standards for fire equipment and 25% trained personnel will enable Licencees and their contractors to modify their harvesting operations during times of high to extreme fire danger ratings. Licencees will ensure that training opportunities will be offered on a regular basis. Equipment and trained personnel lists will be maintained by Licencees and provided as required.

Fire Prevention Rules and Regulations for forest operators on the TMU have been prepared and will be available to forest workers as part of the IT. These rules and regulations will be in place during the fire season.

Communication

MNRF is notified of completion of operations through the submission of the weekly status report prepared by the Operations Service Supplier as described in the Annual Compliance Plan AWS requirements. Operations Service Supplier can provide fire staff with access to maps that can be utilized in the event of a wildfire. These maps are posted on the TMU website at www.temagamiforest.com and include details that would support overall protection of the resources in a fire situation. Insets provided on the map include; field ready GPS maps with grid overlay, harvest block size and available water sources locations, proposed road locations, stand listing with estimated volumes by species, closest primary road location in relation to the block, known values requiring additional protection and/or consideration and a relief map of area indicating terrain in and around the block. This web-based information is part of the MNRF's response to providing other resources users and partners on the TMU with operations information.

An updated list of emergency contacts for fire hazard reporting is also developed and submitted to AFFES prior to the commencement of each fire season as part of the Annual Work Schedule submission. In addition, Licencees are capable of communicating in the field with 2-way FM frequency radios, usually monitoring the common logging radio channels. Further to this capability, cellular coverage occurs on a large portion of TMU land base. Many contractors also now provide satellite phones to front line supervisors when operations take place in remote locations.

Equipment Standards

As a minimum Licencees will maintain the required suppression equipment required by operations as specified in Table 1 of the Modifying Industrial Operations Protocol (MIOP). Vehicles normally licensed for highway travel are not considered heavy equipment (e.g. pickup, haul or gravel trucks) when determining the required suppression equipment on the operation.

Inspections

As a minimum, Licencee operators will remain responsible for assessing the fire hazard situation on a daily basis for each site as operations progress, contacting North Bay or Timmins Fire Indices Hotline for Fire Intensity Codes, determining level of response to fire hazard and notifying Licencees of fire status of operations for each harvest block on Areas Selected for Operations maps. Contractor fire-ready capabilities continue to improve over time. Although the reporting arrangements may adjust to meet an ever-changing business environment, both the Licencee and primary forestry contractor capabilities related to the forest fire prevention and preparedness are updated and provided as required during the term of the plan.

MNRF personnel, Resources/Fire Technicians and the Operation Services Supplier will conduct compliance audits. Audit information will be forwarded to the licensee In the event of a serious compliance concern, the Licensee contact as listed in AWS will be notified immediately.

When possible, audits will be carried out with the Licensee representative to assist them in moving towards self-compliance.

The Operation Service Supplier's silvicultural operations are generally deemed as low fire risk. Similarly, silvicultural contractors are responsible for assessing fire hazard situation on each site based on equipment and use, contacting the Hotline for Fire Intensity Codes, determining level of response to fire hazard and notifying company of current operating conditions.

Licensees will ensure sufficient staff and equipment is available on site for each particular harvest block in order to meet or exceed limits specified in the MIOP*I*. Certified inspectors will ensure that Forest Operations Inspection Program (FOIP) reports are used to document the final compliance status of fire prevention and preparedness on operations during the fire season.

Monitoring Compliance with the Forest Fires Prevention Act

Refer to the 'Fire Prevention Rules and Regulations' of the act available in for forest operators on the TMU. These rules and regulations will be in place during the fire season with operational modifications made as specified in the MIOP which details operating and patrol requirements in response to site and equipment risk as well as fire intensity. Licencees will ensure that forest operations adhere to fire prevention measures as part of conditions on normal operations;

- Training to determine operational risk and fire danger under MIOP will be carried out periodically to ensure forest worker competency in the use of decision tables provided.

- In addition, the Licencees and its Contractor employees may patrol work areas on weekends. If tourists are encountered, they will be advised of the extremely hazardous conditions. Refer to 'Fire Prevention Rules and Regulations' for fire suppression measures to be carried out by the Licencees and their contractors.

- In the event of high fire hazards, Licencees will ensure that operators are aware of rising hazards and remind them to check that all fire suppression equipment is in working order and on site. Once the fire hazard has reached the high hazard designation then additional precautions will be put in place consistent with the MIOP. During high hazard each Licencee or their Contractor will be required to patrol the work area after all workers have left the site.

- In the event of extreme fire hazards each Licencee or their Contractor will be required to patrol the work area for at least one (1) hour after all workers have left the site. In addition, the Licencees and its company employees may patrol work areas on weekends. If tourists are encountered they will be advised of the extremely hazardous conditions. Fire suppression measures to be carried out by the Licencees and their contractors are detailed in the 'Fire Prevention Rules and Regulations'.

Fire Prevention Efforts during Periods of High Fire Danger

During periods of high fire danger all operations on the TMU will follow the MIOP. These guidelines allow for forest operators to become "trained and capable" with respect to fire suppression. With this designation an operator can continue to operate under slightly higher fire danger conditions.

The Licencees will be the primary contact for the MNRF and its contractor companies. All situations and inquiries will be handled out of the Licencees offices. In the event of a fire or a high fire danger rating the Licencees will facilitate these conditions between the MNRF and its contractor companies as required to ensure an effective safety and response package. During preparation of the AWS a list of Licencees and contractor primary contacts will be provided.

Forest Workers Awareness of Fire Prevention Plans and Initiatives

The AWS will indicate which companies have sufficient staff and fire suppression equipment available to be deemed "Trained and Capable" as well as provide an itemized list of fire suppression equipment that will be available and maintained on areas where operations are occurring. As well, this document provides specific direction to forest workers on the fire prevention rules and regulations for operations on the TMU. These conditions and procedures will be posted on the TMU website www.temagamiforest.com and will include details that will support overall protection of the resources in a fire situation.

Forest Workers Fire Suppression Training Initiatives

Licencees are encouraged prior to commencement of operations to train their contractors according to MNRF forest fire, prevention and suppression policies. During periods of high fire danger all operations on the TMU will follow the *Modifying Industrial Operations Protocol*.

- In order to be certified as "trained and capable", at least 25% of the workers on a particular site must have completed the MNRF SP-102 training course. Re-certification of the forest industry employee competency will be carried out every three years.

- Additionally, many Licencees have participated in the train-the-trainer session related to implementation of the decision keys related to the MIOP. Licencees have actively delivered training to forest workers on determination of operational risk and fire danger and will continue to do so on an as needed basis over the term of the FMP.

4.8.2 Forest Prevention and Preparedness Procedures

Procedures

The following procedures will be utilized by Licencees during the fire season:

1. All Licencee companies will contact the MNRF Fire office (i.e. Fire Indices Hotline) on a daily basis in order to monitor the 'Fire Intensity Codes'. Refer to MNRF Weather Zones for the TMU to determine the closest station to be used on their particular block. Only the late afternoon (i.e. approximately 1600 hr) MIOP codes are to be used to determine the next day's fire intensity codes with any required modification to operations determined using the 'Operations Modification Table' as specified in the MIOP

2. Licencee companies will modify operations as required and note these changes on their In Progress Operations Maps as part of the forest operations inspection program reporting (i.e. suspend, modify or reinstate forest operations).

3. Licencees' offices will maintain a fire status report of all operations as part of their block files.

4. The Operation Services Supplier will provide notification of start-up of forest operations to MNRF as part of its weekly Forest Operations Inspection Program (FOIP).

5. In those cases where more than one contractor wishes to aggregate and collectively come together to share equipment across multi harvest blocks (I.e. within 10 km radius), then these grouped blocks will be identified in the AWS. For the group of blocks a single contractor will be identified as the lead with the responsibility to ensure availability of minimum resources and equipment as well as the responsibility for coordinating efforts to ensure required monitoring is completed and documented (e.g. dedicated patrols).

Response to a Fire

Each Licencee and/or their contractors are required to initiate an initial attack on any fire started in and around their operating area and these initial attack procedures are to follow:

1. Immediate suppression using all available personnel and equipment as long as safe to do so.

2. Immediate notification of the actions being taken to the MNRF fire office and Licencees office. A detection report will be submitted to the MNRF as soon as possible and will include the following details

a. Date and time
b. Location and size of fire (Ontario Base Map NAD 83 UTM Coordinates)
c. Values threatened (i.e. human life, equipment, processed timber , buildings etc)
d. Access to fire (i.e. road or aircraft)
e. Fire Condition (i.e. behaviour , fuel type)
f. Distance to water source
g. Action taken (i.e. list of equipment and number of company fire suppression staff on site)
h. Company representative name

3. Continual suppression effort by company until MNRF fire crews arrives on site to assume suppression responsibilities.

4. Once MNRF has assumed responsibility for fire suppression, company personnel and equipment will be available as required upon MNRF request. On request for this equipment by the MNRF, the Licencee and their contractor will continue to provide for direct on-site supervision of their staff and equipment until released from these responsibilities.

5. In the event that a request is made to other Licencee companies or contractors to assist in providing additional equipment or personnel for initial fire suppression, than compensation will be consistent with MNRF rates and conditions provided for in the MNRF Fire Compliance Guidelines –Forest Fire Operations Business Practices By Forest Industry.

6. On request of MNRF, the FRL Holder, will complete a follow-up report which shall include a list of all forest staff on the operation and their associated qualifications (i.e. SP-102 certification).

4.8.3 Fire Prevention Rules and Regulations for Licencees

<u>General</u>

- Fire season is in effect from April 1 to October 31.

- Refer to the Forest Fire Prevention Act (FFPA) and the Ontario Regulation 207/96 Outdoor Fires.

- Lunch fires are not permitted during the fire season; use a thermos bottle.

- Burning refuse and debris is forbidden on FRL licence areas.

- Use a lighter, not matches. The use of tailor-made cigarettes is not recommended. No person shall throw or drop, in or within 300 meters of a forest of woodland a) a lighted match, cigarette, cigar, or other smoking material, b) live coals; or c) hot ashes.

- Do not smoke while walking or working in the bush or while operating your machine. If you must smoke, sit down to do so at roadside or in your lunch shack. During extreme fire hazards there may be further smoking restrictions as prescribed by the on-site supervisor.

- Be careful with fire at all times.

- Licencee compliance inspectors will conduct routine monitoring during fire season and report general findings in FOIP (Forest Operations Inspection Program).

- In those instances where an existing water delivery system is not available on heavy equipment or where it is not practical to mount back pumps (i.e. susceptible to damage) it is permitted to position back packs strategically at the roadside to ensure immediate use in the event of a fire. This option may only be used if a serviceable fire extinguisher is available on the equipment at the work site to provide an initial response on discovery of a fire. It is the operator's responsibility to reposition the back packs as required to ensure that they remain available as operations progress within the harvest block.

<u>Inspections</u>

- Licencees will ensure installation of spark-arresters on all building chimneys and machine exhausts (Refer to Article 33 of the FFPA).

- During periods of high fire danger, foreman will attempt to group the workmen as closely as possible.

- Licencees may stagger the working hours during periods of high fire danger, in order to reduce fire risk.

- During periods of high fire danger, Licencees and/or their contractors will patrol the roads in the harvest area after the workers have left to reduce the risk of fire.

- Licencees and/or their contractors will check fire equipment to ensure it is in working order, at the following schedule:
    a. Hoses - start of season
    b. Pumps - monthly
    c. Pack pumps and misc. – daily

d. Fire equipment - weekly

- Inspections will be carried out when requested by Ministry officials designated under the Ontario Regulation 207/96 Outdoor Fires.

Power saws

- Refuelling will be done in an area free from flammable material.
- Store fuel in containers that are designed for this purpose.
- Power saws are to be equipped with mufflers equipped with spark arrestors.
- Each power saw operator must have a suitable fire extinguisher.
- Refer to Reg. 10(1) of the Ontario Regulation 207/96 Outdoor Fires

Skidders and Other Machinery

- All skidders and other machinery will be equipped with spark-arrestors on the exhaust pipe and must not be altered or modified FFPA Reg. 12
- Radiators, skidpans, and around the sides of motors will be cleaned regularly to prevent a build-up of leaves, twigs, branches, etc., which may be ignited from motor heat. Refer to Reg 11.(1)(2)(3) of the Ontario Regulation 207/96 Outdoor Fires
- If welding must be performed away from the garage, the machine will be parked on the gravel road or turnout. Following the welding, the area will be inspected to ensure there is no risk of fire.
- When welding, a fire extinguisher will be available for immediate action at the site where welding is carried out.
- Each machine will be equipped with a functional approved fire extinguisher (6A 80BC minimum rating) and checked periodically Reg. 9(1)(2)(3) of Ontario Regulation 207/96 Outdoor Fires.
- All heavy equipment that is not being operated will be placed or left in an area free from flammable material Reg. 11 (3) of Ontario Regulation 207/96 Outdoor Fires

4.8.4 Fire Suppression Measures to Be Carried Out by Company Contractors In The Event Of a Fire

General

- Copies of the Fire Plan will be posted on website for Licencees by the Planning Services Supplier. Furthermore, copies will be posted in the Licencee offices and be available at each job site.

- The MNRF will compensate forest companies for any initial action resulting in expenditures as per the general principles outlined in the MNRF AFFES Policy FM 2.15, Forest Operations by Forest Industry- Business Practices

- MNRF will compensate the company for employees working directly as fire fighters if they are certified SP-100 fire fighters (i.e. includes additional training for work around aircraft, initial attack duties etc.) as per the protocol (Refer to AFFES Policy FM 2.15, Forest Operations by Forest Industry- Business Practices). Staff trained to the SP-102 Training Standard for the purposes of fire prevention and initial action are not trained for the purposes of extended fire suppression duties during "Escalated Fire Operations".

- Fire crews will be organized in the following manner:
    a. Pump person
    b. Nozzle person
    c. Hose handler
    d. Hose layers

Procedure

- Immediate suppression action by all available resources (personnel and equipment) on fires originating on the operating area as long as safe to do so.

- Immediate notification of action being taken to the MNRF by dialing 310-FIRE and Licencees emergency contact.

- Immediate suppression action on all fires in the general area if possible, even though not on the operating area.

- Make up an invoice entitled Ministry of Natural Resources and Forestry Fire Fighting Payroll, recording names of all personnel involved as well as equipment used on fire. This will be given to the Ministry by our Licencees. The format for the invoice will be in accordance with the "Forest Operations by Forest Industry –

Business Practices, AFFES Policy FM 2.15" which governs the Industry/MNRF relationship in fire matters.

- Rates of pay will be those allowed by the Ministry of Natural Resources and Forestry.

- Immediately upon arrival of the Ministry official (i.e. as designated under the FFPA), the Licensee will investigate the cause of the fire with him/her as requested under the direction of the Ministry official.

4.9 Comparison of Proposed Operations to the Long-Term Management Direction

Once the proposed management strategy was finalized during the development of the LTMD, a non-spatial projection of harvest area by forest unit, age class and silviculture intensity was identified for the TMUI. This is also referred to as the planned harvest area (PHA) or planned operations. The planning team received the preliminary endorsement of the LTMD from the MNRF Regional Director on March 2nd 2018 and proceeded with refining planned harvest areas to support the achieved the short, medium and long term objectives set forth in the LTMD while considering topography, configuration of harvest area, and impact to values. A preliminary comparison of the planned operations against the strategic direction in the LTMD (i.e. the available harvest area (AHA)) was performed at that time.

After consultation with the public and First Nation communities, the planned harvest areas were finalized and refined to meet a balance of social, economic and environmental considerations. Two separate modelling exercises similar to the forest modelling completed during the development of the LTMD were completed to assess the achievement of progress towards the LTMD. The two analysis are:

- An a spatial assessment of any impact on short (10 year), medium (20 year) and long (100 year) term objective achievement using the SFMM. Refer to section 4.9.1.1 Area outside the operability range, 4.9.1.2 Area within the operable range
- A spatial assessment of the achievement of texture based in indicators relative to a control scenario using the Ontario Landscape Tool (OLT). Refer to section 4.9.2 Sensitivity to texture change

These comparisons provide an analysis of the differences between the LTMD and the planned operations detailed in Table FMP-12: Planned Harvest Area, and include the rationale explaining the differences.

Section 8.2 of the Analysis Package is available in Supplementary Documentation Section 6.1(b) – Analysis Package. Provides the technical notes supporting the two analyses and the steps used to develop the results for the comparison of the proposed operations to the LTMD.

4.9.1 Sensitivity of Variances of the LTMD to the planned operations

Continual updates to the SFMM versions during the development of the LTMD and the completion of the FMP created issues with solving an identical model for the aspatial assessment. This issue is not uncommon and was identified during the LTMD development process. Once issues related to the different versions with SFMM were understood (see Analysis Package section 8.2.1 for a complete description of the issue) an analysis of the planned operation to the LTMD was completed by incorporating the revised allocations into the approved SFMM model.

The analysis evaluated the relative impacts to achieving the numerous management objectives, such as the non-spatial projections of the landscape forest structure and composition when planned harvest allocations are made and attempt to increase the economic viability of operations.

The level of impact of the planned harvest area against the available harvest area was evaluated. The differences between the planned harvest area and the LTMD where identified, measured and evaluated accordingly for their significance in impacting the achievement of forest structure and composition in the future.

4.9.1.1 Area outside the operability range

There was a total of 4,435 hectare of area outside the operability ranges specified in the SFMM (see Table 29). This includes upper and lower limits in shelterwood forest unit. he Analysis Package describes in detail how this area was included in the analysis. The area is immaterial in the evaluation of comparison of proposed operations to the LTMD as it represents 14% of the available harvest area and 1% of the available landbase and therefore would have little limited influence in the achievement of LTMD levels. The harvest of theses areas, despite being outside of the operability ages specified in the LTMD, will have a positive influence on forest sustainability. The areas outside the operability ranges were allocated to improve the configuration and economic operability of harvest blocks. This was done to increase the likelihood of harvesting a block, or reduce the occurrence of leaving behind a remnant forest stand that could not form a future harvest block (due to size, configuration and limited proximity to future operation),

and the configuration would include this stand within the allocation. This is often caused where areas outside operability ranges would become “blocked off” by peninsulas or topography or in many cases, the silviculture system and stage of management of adjacent forest types. Minimizing this occurrence, and configuring harvest blocks that include area outside the operability range (or within the operability range, but outside the age classes specified in the LTMD) will result in harvest blocks that have a higher likelihood of supporting FMP objectives (including biodiversity), due to their economic viability today and in the future. The alternative to this approach would cause a reduction in the present and future economic viability of forest management activities which will impact to the ability of the FMP to meet forest structure and composition objectives.

Table 29 Total Planned harvest area outside the operability Range

PLANFU	AU	Age Class	Area (Hectares
BW	BW	A55	47
	BW	A65	123
MWCC	MWD	A55	54
	MWD	A65	109
	MWD	A75	451
	MWR	A55	173
	MWR	A65	462
	MWR	A75	873
	LWMW	A55	100
	LWMW	A65	59
PO	PO	A45	1
	PO	A55	514
	PO	A65	626
PWST	PWST	A75	22
	PWST	A85	2
PWUS	PWUS4	A135	5
	PWUS4	A155	170
	PWUS4	A165	19
	PWUS4	A205	0
	PWUS4	A5	191
	PWUSH	A135	51
	PWUSH	A155	89
MWUS	MWUS	A135	19
	MWUS	A145	17
PWUSC	PWUSC	A155	16
PJ1	PJ1	A55	36

PLANFU	AU	Age Class	Area (Hectares
	PJ1	A65	30
PJ2	PJ2	A55	3
	PJ2	A65	79
MCL	CE1	A85	1
	SF	A75	451
	SP1	A55	15
	SP1	A65	35
Total			*4,435*

The present and future economic viability of forest management activities (i.e. forest harvesting, renewal and tending operations) is supported by combining the review of recent and updated satellite imagery, aerial reconnaissance surveys and satellite imagery analysis from SkyForest^{TM}. The Analysis Package describes in detail why this area was not included in the analysis and the significance of this area on assessing forest sustainability.

4.9.1.2 Area within the operable range

Many of the existing operable age classes occur in a spatial configuration that make them unviable for harvest operation thereby limiting the pool of operable age class areas available to create viable proposed operations that provide benefits based on their positive impacts to objectives like mature and old texture and young forest.

The SFMM model was used to compare the proposed operations to the LTMD. A total of 1,282 ha/yr. (including the LSA strategic management zone (SMZ)) in T1 or 52% of the annual allocated area is inconsistent with the AHA proposed in the LTMD. The following table provides insight on the area outside the AHA which were inconsistent with the LTMD available harvest area Table 30 below.

Table 30 Total planned harvest area outside the available harvest area specified age classes and forest units

Forest Unit	Analysis Unit (AU)	Hectares Outside
BW	BW	1,573
HDUS1	BY1	18
	HDSL1	188
	HDUS	33
MCL	CE1	82
	LC1	122

Forest Unit	Analysis Unit (AU)	Hectares Outside
MWCC	LWMW	633
	MWD	1,306
	MWR	2,697
MWUS	MWUS	299
PJ1	PJ1	574
PJ2	PJ2	287
PO	PO	1,257
PR	PR	46
PWST	PWST	582
PWUS	PWUS4	978
	PWUSH	527
PWUSC	PWUSC	643
SB	SB	236
SF1	SF1	2,058
SP	SP	1,852
Total		15,991

Differences between the LTMD available harvest area and the planned harvest area are acceptable as long as the objectives for the FMP are demonstrated as achieved. Despite the difference between the AHA and the PHA as shown in the Table 30 the variance, this does not have an impact on the forest structure and composition objective achievement until the long term. This is confirmed by an additional analysis which investigated the peak area harvested by age class. The peak age class harvested in the available harvest area in the LTMD occurs in the A105 age class with a total of 25% of the harvest area is scheduled to be harvested at this time. In comparison, 22% of the planned harvest area occurs in age class A105 indicating that although age class substitution is present, the peak age of harvest is consistent between the available harvest area and planned harvest area.

Additionally, Analysis Units (AU) were used in modelling to better represent stand dynamics, succession, growth and yield and align with the science and information package of the Landscape Guide in the SFMM LTMD model. For this reason, the available harvest area that makes up the LTMD relies on the harvest of AU by age class, rather than by PLANFU and age class. Harvest allocations were selected based on the PLANFU and age class criteria. The makeup of planned harvest areas is consistent with the area by PLANFU and reasonable effort has been made to achieve the proportions of each AU that contributes to the plan forest unit. However, this approach will inherently create differences in age class between the LTMD and the planned harvest area.

Furthermore, the age class differences proposed between the AHA and PHA amounts to 68 ha or 4% over the entire landbase. This means that the PHA, although different by 52% from the AHA, is inconsequential to sustainability, based on the indicators of sustainability and their achievement. The difference is largely due to the modelling exercise that used 23 analysis units and five strategic management zones to describe and manipulate the forest condition. This increases in precision creates a very specific solution in the model. These minor deviations from the LTMD are insignificant in the achievement levels of the forest structure and composition at the management unit level. Table 31 below shows a consistent trend toward to the various forest structure and composition targets specified as minimum and maximum targets by forest structure and composition, despite minor deviations from the LTMD modelling results. Note that the target values specified in SFMM does not necessarily corelate to the desired level or target of an FMP objective in the short (10 year) medium (20 year) and long-term (100 year) projections. Violation of a specified target can occur and still allow the desired level to be reach at the management unit level. There are no target violations in the short or medium term and the considerable majority of the violations are found to constrain a subunit grouping and not the management unit as a whole.

Table 31 LTMD SFMM target violation in 100 years

Target specified in SFMM	100-year Achievement (%)
Minimum 12,000 hectares of INTOL landscape class in the TEM sub-unit grouping.	71%
Minimum 7,500 hectares of HDUS1 forest unit in old growth in the TEM sub unit grouping.	54%
Minimum 300 hectares of PJ1 forest unit in old growth in the TEM sub unit grouping.	25%
Minimum 1,400 hectares of PJ2 forest unit in old growth in the TEM sub unit grouping.	16%
Minimum 700 hectares of PO forest unit in old growth in the TEM sub unit grouping.	96%
Minimum 400 hectares of SB forest unit in old growth in the TEM sub unit grouping.	42%
Minimum 500 hectares of SB forest unit in old growth in the TEM sub unit grouping	60%
Maximum of 86,237 hectares SFC landscape class on the management unit	102%

Target specified in SFMM	100-year Achievement (%)
Minimum 12,000 hectares of INTOL landscape class in the TEM sub-unit grouping.	71%
Maximum of 65,679 hectares MIXED landscape class on the management unit	110 %

Since the majority of the planned harvest occurs in the mature and over mature stage of development, age class substitution will not affect the ability to meet the short term (10 years) landscape class targets since all harvest will cause movement that will reduce the total area of a landscape class as intended in LTMD by the start of Term 2. The impact of age class substitution following the first term can only have an influence in the medium and long terms since succession and the resulting age class structure plays a role in the achievement of future structure and composition targets (landscape classes). There is no significance to this deviation in available harvest area to the achievement of the forest structure and composition objectives by utilizing the PHA. The violation to the constraints in the SFMM for the first 16 terms of the LTMD are shown in Figure 78 and indicate the change in area (hectares) by term and indicators. This figure shows similarities between the SFMM simulation and the LTMD targets.

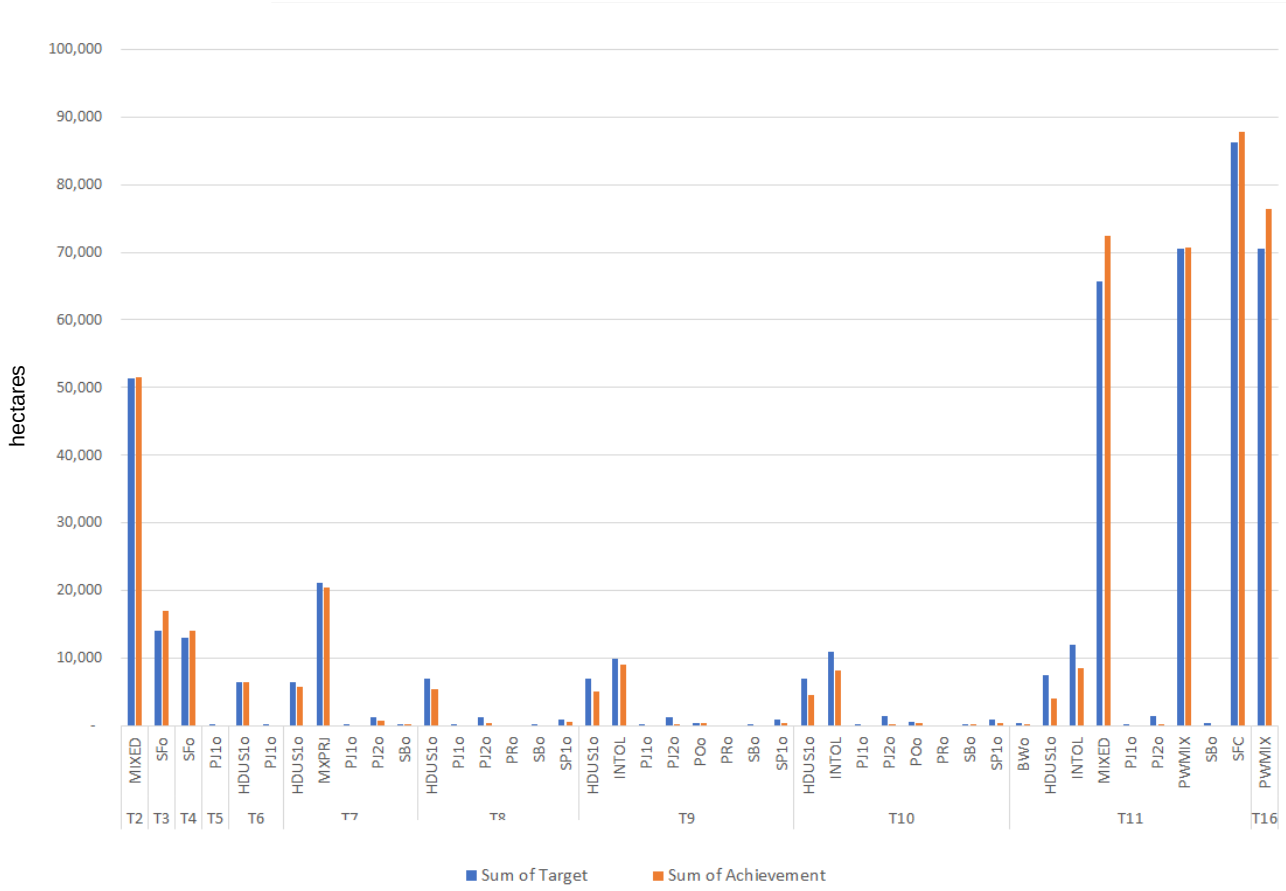


Figure 78 SFMM target violations over 150 years

The planning team decided that a good approach would be to utilize the planned harvest areas to improve the likelihood of increasing the utilization on the unit (a chronic challenge that the planning team had recognized and committed to addressing at the outset of this FMP process), and at the same time demonstrate that non-timber objectives would not be negatively impacted by this approach, then it would be viewed as a measurable achievement, although some age class substitution may occur across the forest.

The smaller forest units and those that see little to no disturbance most often have an increase in the relative proportion of age-class substitution (see Table 30). For those historic and economically favorable FU's (i.e. PJ1, PJ2, SF1, SP1, MWD, MWR, MWUS), the percentage of age class substitution weighted-averages at 24% annually. The higher proportion of substitution relates to those smaller forest unit that are often difficult to configure into economically feasible allocations.

4.9.2 Sensitivity to texture change

To assess the effectiveness of planned operations in achieving the texture indicators an analysis was conducted. This analysis applied a few assumptions to create a harvest scenario where there is no area outside the operable range, or outside the makeup of the LTMD and it was it was compared to the texture outcomes from the planned harvest operations.

A full description of the assumptions and methods used is described in the Analysis Package section 8.2.2 found in 6.1(b) – Analysis Package

The purpose of evaluating the sensitivity to texture change is to substantiate how the proposed operations, which consider multiple aspects related to delivering benefits from the forest, make improvements towards the desired level and also to compare the improvements relative to a scenario where no consideration is given to operating outside the age classes intended for harvest in the LTMD.

Generally, the ability to cluster harvest operations is limited in the age class control scenario with the results showing smaller sized operations that are more dispersed across the landbase. Table 32 shows the results of the analysis comparing the desired level, current level, the areas selected for operation and the control scenario.

Table 32 Texture comparison analysis

Texture indicator	Desired Level	Current level	Areas selected for operations	Age class Control
Texture of Mature and Old at the 500-hectare scale				
.01-.20	0.110	0.024	0.027	0.025
.21-.40	0.160	0.081	0.100	0.100
.41-.60	0.190	0.199	0.187	0.187
.61-.80	0.250	0.291	0.224	0.236
>.80	0.300	0.405	0.462	0.452
Texture of Mature and Old at the 5000-hectare scale				
.01-.20	0.010	0.014	0.012	0.012
.21-.40	0.160	0.027	0.056	0.051
.41-.60	0.320	0.203	0.201	0.205
.61-.80	0.370	0.460	0.337	0.348
>.80	0.140	0.297	0.394	0.384
Proportions of young forest patch size (ha)				
1-100	0.610	0.586	0.610	0.615
101-250	0.180	0.250	0.222	0.243
251-500	0.090	0.100	0.106	0.086
501-1000	0.060	0.039	0.044	0.038
1001-2500	0.030	0.024	0.015	0.015
2501-5000	0.010	0.001	0.001	0.002
5k-10k	0.010	0.000	0.003	0.000
10K-20K	0.010	0.000	-	.000

When compared to the plan start, neither the Areas Selected for Operations or the Age Class Control scenario was able to make improvements between each scenario in all proportion classes at the 500 and 5000 hectares scales. This indicates that the performance of these indicators is heavily influenced by the aging forest condition rather than the configuration of harvest operations. Therefore, operations that are able to provide more certainty around the viability of allocations will provide a greater and overall benefit in achieving the objective levels.

Relative to the plan start, planned operations do a considerably better job in achieving the desired levels for the young forest patch size. With the exception of the 251-500-hectare patch size the planned operations have achieved the same or better outcome in causing movement towards the desired level of young forest patch sizes. This indicates

that the planned harvest operation in the FMP provides more overall benefit and the deviation from AHA age classes of the LTMD are required to achieve more overall benefit.

4.9.3 Analysis conclusion

The planning team was interested in understanding the implications on achieving the non-timber objectives (such as future forest condition and texture) using a planned harvest area that varied from the LTMD. As described above, the implications are very minor and acceptable and movement towards the forest structure and composition achievement levels is evident. Some acceptable variation is expected in the volume projection results, depending on the specific site and stand conditions of the allocations. What is more important to consider is the ecological targets set in the management strategy and what the impact of the planned harvest will have on achievement of those targets.

5.0 DETERMINATION OF SUSTAINABILITY

The determination of sustainability considers the collective assessment of objective achievement, the spatial assessment, the social and economic assessment and prescriptions for the protection of values. The determination of sustainability aims to conclude whether the forest management plan provides for the sustainability of the Crown forest, specifically the long-term Crown forest health that provides for ecosystem complexity while providing for the needs of the people of Ontario. It also assesses whether, on balance, the objectives are being achieved and progress is being made towards the desired forest and benefits.

The assessment also describes where the desired level is not achieved but, progress towards the desired level is maintained. Where progress towards the desired level is not achieved a discussion on the cause and potential effects is provided. The causes often are associated with balancing multiple and sometimes competing objectives or with the inability of the forest management plan to provide the desired benefits, based on the size and configuration of the existing forest conditions.

The assessment objective achievement concludes that the majority of the objectives assessed were within and/or moving towards the desirable levels and targets. In those cases where the target levels were not achieved, the deviation was mainly due to limitations resulting from the current forest age-class imbalance, in combination with conflicting achievement levels with other objectives; mainly with the non-spatial objectives. The desirable levels and targets not achieved were as a result of the planning team’s responsibility to balance multiple objectives in the context of the legacy forest

condition. The existing age class imbalance on the forest and the spatial distribution (location and size of forest stands) of Crown forest within the land ownership, topography and road infrastructure has the most significant impacts to applying the spatial objectives on the landbase.

In order for the long-term management direction to be implemented, areas must be selected for harvest for the ten-year term. Areas are selected for harvest based on defined selection criteria described in 3.7.2 Selection of Areas for Harvest

The planning team allocated areas based on meeting as close as possible the available harvest area by forest unit age-class combinations, as concluded in the development of the long-term management direction.

Some criteria factored more prominently than others depending on the circumstance. The ten-year allocations do not exceed the available harvest area. There are many factors, or combinations of factors that limit the selection of areas for harvest. For example, the geographic location of the required forest unit/age class area on the land base, the distribution and configuration of non-harvest reserves (AOC's) and the forested/non-forested lands that are not available for harvest also limited the planning team's flexibility to allocate the AHA. Non-forested land and private land are not available for harvest, yet the spatial distribution of this area affects the assemblage of disturbances across the TMU landscape.

Finally, public input influences the allocation process in particular when proposed allocations are in the proximity of their value. Consultation with Aboriginal communities, local cottage associations, resource-based tourism operators, affected towns and communities and individual landowners have all resulted in adjustments to the allocations.

During Stage Three – Information Centre: review of Proposed Operations, eligibility criteria for selecting harvest areas was presented at public information centers along with maps displaying the resulting eligible areas for the 10-year period. The proposed and optional areas for harvest were chosen from the eligible area and displayed along with proposed contingency areas for the public's consideration and comment.

During stage Four – Information Center: review of Draft Plan, all planned harvest operations were shown included refinements based on public comments.

The planning team reviewed 19 spatial indicators with associated desirable levels and targets affected either by the configuration of harvest areas or by the frequency distribution of forest disturbances. These indicators are used as measures of spatial objective assessment. The likelihood of making progress towards spatial indicators through the implementation of the FMP is heavily influenced by the operational viability of planned harvest areas. Each associated indicator and associated desirable level was assessed as the configuration of harvest areas was refined at each stage of public consultation.

Overall, the planned harvest blocks and resulting disturbance perimeters have demonstrated movement towards a frequency in each disturbance size class that progresses towards the disturbance template. The challenge in achieving movement in all size classes is largely due to the spatial arrangement of land use policy zones across the unit. This, in concert with forest unit and age class requirements, creates challenges that results in tradeoffs, most notably in concentrating forest operations.

The young forest patch size is a structure-based indicator used to characterize landscape pattern. Although young forest patch size is related to the texture of the mature and older forest in both structure (the amount and perimeter of young forest patches can affect the texture of the forest matrix) and function (e.g. wildlife species preferring interior vs. wildlife species preferring edge). Managing pattern involves the distribution (concentration or dispersal) of young and mature forest across the landscape. Improvement in each individual size class was not achieved due to the temporal-spatial configuration (i.e. age, size and distribution) of all forest younger than 36 years of age (again the result of the implementation of previous forest management policies). As described in Section 3.7.3 there is an overall progress towards the prescribed template as the majority of the size classes moved towards the desired levels.

A social and economic assessment was prepared for the development of the LTMD. It identified the expected social and economic impacts of implementing the LTMD. The assessment examined how the quantity of timber supplied to wood-processing facilities, and the silvicultural investment requirements for the LTMD may have consequences to the communities identified, including Aboriginal communities. The social and economic assessment concluded that there is a projected wood supply which could have impacts to employment levels assuming resource facilities continue to operate at full capacity.

A qualitative assessment of the impacts that the LTMD may have on non-timber activities concluded that all appropriate measures have been taken to minimize negative impacts.

These measures include area of concern prescriptions designed to address concerns related to non-timber values.

On balance, the plan objectives are being met and progress is being made towards the desired forest and benefits. The determination of sustainability for the forest management plan has been achieved as confirmed by the results of the assessment of objective achievement, the spatial assessment, the social and economic assessment and the presence of prescriptions for the protection of values. The forest management plan continues to have regard for plant life, animal life, water, soil, air, and social and economic values, including recreational values and heritage values.

6.0 SUPPLEMENTARY DOCUMENTATION

6.1. FMPM Supplementary Documentation

As part of the forest management plan a series of supplementary documents are included as a separate file in the main directory of the electronic FMP as per the Forest Information Manual, 2017. These documents summarize the information used, and the documentation and analyses made in the planning process.

The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.1(a) – Summary of the Historic Forest Condition

6.1(b) – Analysis Package

6.1(c) – First Nation and Métis Background Information Report(s)

6.1(d) – Summary of First Nation and Métis Involvement

6.1(e) – Social and Economic Description and Demographic Profiles

6.1(f) – Monitoring Programs for Exceptions

6.1(g) – Monitoring Programs for Species at Risk

6.1(h) – Monitoring Program for Success of Silvicultural Activities

6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors

6.1(j) – Documentation of the Planning of Operational Prescriptions for Areas Of Concern

6.1(k) – Summary of Public Consultation

6.1(l) – Local Citizens Committee Report

6.1(m) – List of required alterations to the Forest Management Plan

6.1(n) – Terms of Reference for the 2019 Temagami Management Unit Forest Management Plan

6.1(o) – MNRF Statement of Environmental Values

6.2. Other Documentation

Other documentation of information which, because of its sensitive nature, will not be incorporated in the plan, includes the public correspondence related to the development of the plan, the Report on the Protection of Identified Aboriginal Values, planning and task team meeting minutes are retained at the North Bay District office.

The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.2(a) – Northeast Region Utilization Strategy (2013)

6.2(b) – Values Maps

6.2(c) – Summary Map of the Forest Management Plan

6.2(d) – Lands Set Aside

6.2(e) - FMP Tables by SMZ

6.2(f) – List of Major Changes to the Draft FMP

6.3FMP Development Documentation

The following supplementary documents (including maps) are included in the forest management plan and are also in the forest management plan supplementary documentation submitted as a separate information file.

The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.3(a) – Desired Forest and Benefits Meeting Summary Results

6.3(b) – Summary of Rationale for Desired Levels and Target

6.3(c) – Long Term Management Direction Summary and Summary Map

6.3(d) – List of Required Modification to the Long Term Management Direction

6.3(e) – Climate Change

6.3(f) – Areas Eligible for Renewal and Tending Operations

6.3(g) – Ontario Landscape Tool Export Reports

6.3(h) – Moose Emphasis Area Documentation

6.4 FMP Implementation Documentation

The following Supplementary Documents are also in the forest management plan supplementary documentation submitted as a separate information file.

The following Supplementary Documents (including maps) are submitted as a separate information product as a complete package <MU898_2019_FMP_TXT_supdoc.pdf>

6.4(a) – Implementation Toolkit

6.4(b) – Areas Selected for Operations Maps

7.0 FOREST MANAGEMENT PLAN SUMMARY

7.1 Description of the Management Responsibilities

The Temagami Management Unit (TMU) is a Crown managed unit with the responsibility of forest management remaining with the Ministry of Natural Resources and Forestry (MNRF). No Sustainable Forest License (SFL) has been issued for this forest. The administration of forest management planning activities is the responsibility of The North Bay District MNRF office. The 2019-2029 Forest Management Plan (FMP) for the TMU has been prepared by First Resource Management Group Inc. (FRMG) under a service level agreement with MNRF. FRMG has offices located in North Bay and in New Liskeard. The administration of operations such as compliance and silviculture is also under a service level agreement for the first year of the 2019-2029 FMP. The harvesting is carried out through forest resource licenses, via operators who, under these permits, have a responsibility to implement the FMP as approved and under the conditions of their licence. More details about the administration of the forest can be found in Section 1.0 and 2.1 of the 2019 FMP text. The 2019-2029 FMP for the TMU includes the lands set aside (LSA) for the Temagami First Nation/Teme-Augama Anishnabai (TFN/TAA) Land Claim. TFN and TAA posted a band council resolution allowing the Ministry to include the LSA area in the 2019-2029 FMP and identify these lands available for economic benefits. The FMP text, tables and figures contain subtotals and sections district from the rest of the management unit.

7.2 FMP Contacts

The public contacts for the plan are:

Etienne Green, R.P.F. Plan Author (FRMG)	(705) 680-033 ext 244
Mitch Baldwin, North Bay District Manager (MNRF)	(705) 475-5599
Lorne Hillcoat, Temagami LCC representative	(705) 568-7055

7.3 Summary of the report prepared by the LCC

A member of the Temagami Local Citizen's Committee (LCC) has participated in the preparation of the forest management plan as a planning team member and has attended all of the information sessions. The draft planned operations were presented to the

committee and input was requested on these products as well as the background information.

The LCC has prepared a brief statement of agreement with the draft FMP. This statement and the full LCC report is found in Supplementary Documentation Section 6.1(l) – Local Citizens Committee Report

7.4 Summary of the Objectives and Indicators

As required by the *Crown Forest Sustainability Act*, management objectives for the Temagami Management Unit must be compatible with the sustainability of the Crown forest, and indicators of objective achievement must be identified. In addition, the *Crown Forest Sustainability Act* requires that each FMP contain management objectives relating to:

(a) Crown forest diversity, including consideration for the conservation of natural landscape patterns, forest structure and composition, habitat for animal life and the abundance and distribution of forest ecosystems;

(b) Social and economic factors, including harvest levels and a recognition that healthy forest ecosystems are vital to the well-being of Ontario communities;

(c) The provision of forest cover for those values that are dependent on the Crown forest; and

(d) Silviculture for the harvest, ensuring renewal and maintenance of the Crown forest.

Management objectives are developed through a collaborative process that begins with understanding the current state of the forest as of April 1, 2019. The planning composite inventory, which contains forest stand level data, is classified according to direction contained within the *Forest Management Guide for Great Lakes-St. Lawrence Landscapes* (2010). This information (current state) was used to build discussion at locally held desired forest and benefits meetings, which stimulated discussion that lead to input around what the representatives who attended these meetings valued from the forest.

A management objective was developed for each desired forest and benefit value identified at these meetings, and within the FMP each of these objectives is related to one of the Crown Forest Sustainability Act (CFSA) objective categories. For each

management objective, at least one indicator of sustainability was developed, along with an associated desired level. These indicators of achievement are established for each objective and is what is analyzed to assess and determine plan sustainability. Through the implementation of the FMP, these objectives and indicators will be assessed to ensure that the FMP is functioning as it was meant to. With this analysis being done on an ongoing basis, and to make the results meaningful, only indicators that could be quantified were selected for the management plan. A target and a timeframe for achievement was also developed for each indicator of sustainability. A total of 30 management objectives were developed for this FMP.

Each management objective and indicators are summarized in Section 3.6 of the FMP text. The assessment of managing objectives, plan start, desired levels, and targets is available in table FMP-10: Assessment of Objective Achievement. A summary of these objectives and indicators are provided below:

Forest Diversity Objective Category Grouping (see section 3.6.1)

Management objectives 1 to 9 focus on the improvement or maintenance of the existing forest condition towards a desired future forest condition associated with the structure and composition of long-term forest health by directing and implementing forest management activities.

Objectives within this category grouping include targets and indicators for landscape classes, old growth, red and white pine forest, young forest area, texture of mature and older forest, young forest patch size, moose carrying capacity, browse producing habitat, mature conifer dominated habitat, and hardwood mixedwood dominated habitat. All of the above contribute to the maintenance of a forest resilient and adaptive to climate change.

Other objectives within this category grouping related the protection of values while carrying out operations; maintaining area of productive forest and conducting effective silviculture and to regenerate and improve forest stand marketability. Also included in this objective category is the evaluation of alternative to herbicide silviculture to regenerate forest stands.

Socio-economic Objective Category (see section 3.6.2)

Management objectives 10 to 22 focus on the available wood supply and the engagement with other users that derive benefits related to forest management activities such as the harvest of wood, the construction of roads, non-timber forest products, local citizen committee engagement, First Nation and Metis economic opportunities, personal use fuelwood, research opportunities, and the communications tools used for disseminating information.

Lands Set Aside Objective Category (section 3.6.3)

Management objectives 23 to 30 were developed by TFN/TAA and focuses on capacity development, making a contribution to the forest diversity objective category, providing a wood supply, implement demonstration project for non-herbicide renewal techniques and the communication and branding of forestry.

The rationale used in setting desirable levels and targets is available in Section 6.1(b) – Analysis Package of the Supplementary Documentation. Modeling with the Strategic Forest Management Model (SFMM) assisted in quantitative scoping investigations and the development of the long-term management direction (LTMD) based on these objectives.

7.5 Summary of Harvest, Renewal and Road Construction

Results of the long-term management direction were used to plan operations for the ten-year term of this plan. The following Table 33 summarizes the available and planned harvest areas for the 2019-2029 FMP. 99 % of the available harvest area has been planned for harvest.

Table 33 Summary of FMP Harvest Area (ha)

Forest Unit	Available	Planned
BW	2,612	2,606
HDUS1	490	490
MCL	410	408
MWCC	9,516	9,506
MWUS	341	340
PJ1	1,178	1,177
PJ2	1,384	1,384
PO	2,804	2,803
PR	103	98
PWST	3,816	2,842
PWUS	666	1,619
PWUSC	674	668
SB	546	545
SF	2,728	2,729
SP1	3,392	3,390
Management Unit Total	**30,660**	**30,605**

The available and planned volume is derived by the planned and available harvest area shown in Table 34. The forest unit, age and inventory statistics of are used to calculate

volume harvested and are summarized in Table 34, below. Overall, 84% of the available volume has been planned forest harvest in this FMP.

Table 34 Summary of Available volume

Species Group	Available	Planned
SPF	1,395,975	1,276,089
Pw/Pr	850,000	569,092
Po/Bw	1,181,458	976,139
CE/OC	154,791	112,507
OH	91,896	82,441
Management unit Total	**3,674,120**	**3,016,268**

The road use management strategies for each primary road are located within Supplementary Documentation Section 6.1(i) – Documentation of the Planning of Primary and Branch Road Corridors. The management strategies for each road are consistent with direction indicated in the Crown Land Use Policy Atlas (CLUPA). The proposed primary road locations associated with the 2019 Temagami Management Unit FMP are also indicated on the composite map. The forecast (10 year) road construction for primary and branch roads are shown in Table 35. Roads are needed to access all harvest and renewal operations over the 10-year term. The future use management strategy for each road is described in table FMP-18: Road Construction and Use Management and lists all the primary, branch and operational roads to be constructed or that are already existing on the forest.

Table 35 Summary table of road construction

Road Classification	Forecast Road Construction (km)
Primary	89.77
Branch	311.72
Total	**401.49**

The forecast (10 year) renewal and maintenance activities that are required to meet the plan objectives are listed below in Table 36 by renewal activity type. These renewal activities will be carried out on the current planned harvest areas, as well as areas harvested during past plan terms. Artificial regeneration refers to the renewal of a forest by seeding or planting seedlings or cuttings. Natural regeneration refers to the renewal of a forest by natural seeding, sprouting, suckering or layering. Tending refers to forest operations which are carried out to improve the growth or quality of a forest, which may include cleaning (i.e. the removal of undesirable or competing vegetation through the use of herbicides or manual treatments), thinning, stand improvement or pruning. See

Section 3.3.2 Analysis of Past Silvicultural Performance within the FMP text for more details.

Renewal and tending activities are forecasted based on the preferred silviculture ground rule and treatments are applied to the associated planned harvest areas, as well as those remaining from the existing FMP.

Table 36 Summary of Renewal and Tending

Renewal Activities	Forecast Treatment Area (ha)
Natural Regeneration	18,870
Artificial Regeneration	11,735
Tending	9,997

7.6 Summary map

The summary map is available in Supplementary Documentation Section 6.2(c) – Summary Map of the Forest Management Plan.

7.7 Summary of the major issues encountered and addressed in the FMP

The following key plan deliverables and challenges and were identified by the planning team as being relevant the development of the FMP. These challenges were/continue to be addressed throughout the FMP process by the planning team, the appropriate task teams, and the plan advisors. They include Enhanced Forest Resource Inventory (eFRI) and digital layers, wood utilization, the phase-in provisions of the updated *Forest Management Planning Manual* (2017), existing old growth levels on the forest, overall forest health, and direction provided in the *Forest Management Guide for Great Lakes-St. Lawrence Landscapes* (2010).

<u>eFRI and Digital Layers</u>

The TMU's new eFRI imagery was acquired in 2008 and 2009, and photo interpretation was started in 2011. Delivery of the new eFRI was expected prior to July 2016, but was received in October 2017. The unexpected delays experienced with the eFRI delivery created challenges in the planning team's plan production. Once the eFRI was received, a lot of time was required to verify and correct the data prior to use. The delays incurred

from the eFRI resulted in postponing Stage 2 – Public Review of the LTMD from August 2017 to November 2017.

Wood Utilization

Historically, the average level of harvest on the TMU has consistently been less than half of the planned sustainable harvest area. The continued under-utilization has direct consequences to meeting management objectives related to forest health, forest structure and composition, and local social-economic benefits. The systematic under-utilization has been experienced for decades. It should be noted that the social and economic benefits, local or otherwise, represents the maximum potential benefits that is achievable with the expectation full utilisation. It is acknowledged that utilisation on the TMU must improve considerably for the social and economic benefits and environmental benefits to materialise, and for many management objectives to perform as projected in the FMP. The planning team considered management objectives and strategies specially to improve utilization.

Phase-in Provisions of the new Forest Management Planning Manual (2017)

The 2009 *Forest Management Planning Manual* (FMPM) was used to initiate the planning process. The updated FMPM was released in July 2017 and the phase-in provisions of the 2017 FMPM were applied. This included the use of the 2009 manual for planning requirements up to Stage 3 – Operational Planning. However, components of the 2017 FMPM were considered by the planning team during the production of the LTMD. This included the completion of FMP tables for post-renewal transitions, silviculture ground rules, and the use of strategic management zones during strategic modeling.

Old Growth

One of the features of the Temagami area is the presence of old-growth forest, specifically red and white pine forest ecosystems. The management of this old growth forest condition continues to attract attention from members of the public and interest groups who desire increased protection. The planning team considered levels of old growth present on the TMU consistent with the direction of the *Old Growth Policy for Ontario's Crown Forests* (2014) and the *Forest Management Guide for Great Lakes-St. Lawrence Landscapes* (2010). The *Forest Management Guide for Great Lakes-St. Lawrence Landscapes* (2010) provides directional milestones for the movement of the existing

forest condition towards the simulated range of natural variation, or how we would expect the forest to cycle without human interference.

Forest Health

Current forest condition resulting from previous insect and pest outbreaks may impact operations. The known occurrence of spruce budworm and forest tent caterpillar outbreaks were considered by the planning team and were incorporated into the strategic model.

Forest Management Guide for Great Lakes-St. Lawrence Landscapes (2010)

The *Forest Management Guide for Great Lakes-St. Lawrence Landscapes* was released in 2010 with the objective of directing forest management activities to maintain or enhance natural landscape structure, composition, and patterns. The *Forest Management Guide for Great Lakes-St. Lawrence Landscapes* (2010) has been applied across Ontario for several years; however, this is the first FMP on the TMU to implement this direction. This will be the first time that the indicators from this Guide are being measured and assessed using the Ontario Landscape Tool, and that these results will be communicated to the general public. The planning team understands that the level of expertise required to assess the sustainability of the FMP requires considerable understanding of the *Forest Management Guide for Great Lakes-St. Lawrence Landscapes (2010)*, and how the desired levels and targets for each indicator work together to create the desired future forest.

7.8 Endangered Species Act Statement

On June 30th, 2008 the Endangered Species Act (2007) came into effect. Currently forest operations in this plan are undertaken under an exemption to the Endangered Species Act (2007) that is in effect until June 2020. As such this plan presently has not been designated as an Overall Benefit under Section 18 of the Endangered Species Act.

7.9 Review Opportunity

There is an opportunity during the 60-day review period of the draft FMP to seek resolution of issues with the North Bay MNRF District Manager or during the 30 days following the completion of the 60-day review period with the Northeast Region MNRF Regional Director (in accordance with the issue resolution process described in Part A, Section 2.4.1) of the 2017 FMPM.

8.0 FOREST MANAGEMENT PLAN TABLES

Forest Management Plan tables are included as a separate file in the main directory of the electronic FMP. The following section describes each FMP tables and their relationship to each other as per the Forest Information Manual, 2017.

FMP-1: Management Unit Crown Land Summary

This table summarizes the area of different Crown land types for the management unit at the start of the plan period. The source of information for this table is the updated planning inventory for the management unit. Planning inventory updates for lands other than Crown managed land should be reflected in this inventory, where information is available, and particularly where large areas of these lands within the management unit have implications on the development of the FMP.

FMP-2: Description of Forest Units

This table describes the forest units used to classify all forest stands of the management unit, including the stands that are not available for forest management activities. Forest units are used as the basis for summarizing data for many FMP, annual work schedule and management unit annual report tables.

FMP-3: Summary of Managed Crown Productive Forest by Forest Unit

This table summarizes the area of managed productive Crown forest (as shown in Table FMP-1) by forest unit and age class. The source of information for this table is the planning inventory with forest units as defined in FMP-2.

FMP-4: Silvicultural Ground Rules

This table describes the silvicultural systems and types of treatments that may be used to manage a specific current forest condition to achieve a desired future forest condition. The sources of information for the table are the applicable silvicultural guide(s) and the knowledge and experience of the plan author and planning team.

FMP-5: Post-harvest Renewal Transition Rules

This table describes the post-harvest renewal rules used in the development of the LTMD. The source of information for this table is the analysis of past silvicultural performance

FMP-6: Projected Forest Condition for the Crown Productive Forest

This table summarizes the area of Crown productive forest by forest type (e.g., forest unit or provincial forest type) and age (e.g., age class or seral stage) by 20-year projections for the LTMD. The purpose of the table is to provide a tabular comparison of the future forest conditions over time resulting from the LTMD.

FMP-7: Projected Habitat for Selected Wildlife Species

This table summarizes the area of habitat for selected wildlife species by 20-year projections for the LTMD. The purpose of the table is to provide a tabular comparison of the habitat availability over time resulting from the LTMD.

FMP-8: Projected Available Harvest Area by Forest Unit

This table summarizes the available harvest area (i.e., for a 10-year period) by 20-year projections for the LTMD. The purpose of the table is to provide a tabular comparison of the projected harvest area over time resulting from the LTMD.

FMP-9: Projected Available Harvest Volume by Species Group and Broad Size or Product Group

This table summarizes the estimated available harvest volume (i.e., for a 10-year period) by 20-year projections for the LTMD. The purpose of the table is to provide a tabular comparison of the available harvest volume by broad size or product group over time resulting from the LTMD.

FMP-10: Assessment of Objective Achievement

This table summarizes management objectives, indicators and target information and includes an assessment of achievement for each objective.

FMP-11: Operational Prescriptions for Areas of Concern and Conditions on Roads, Landings, and Forestry Aggregate Pits This table outlines the prescriptions and conditions for areas identified as areas of concern (AOC). Each table entry represents either a group of areas of concern with a common prescription, or an individual area of concern with a unique prescription.

FMP-12: Planned Harvest Area

This table summarizes the available harvest area, and the planned harvest area, by forest unit for comparison. The source of information for this table is the LTMD and the results of the harvest selection process.

FMP-13: Planned Harvest Volume by Species

This table summarizes the available harvest volume and compares the available harvest volume to the planned harvest volume by conifer and hardwood. The source of information for this table is the LTMD and the result of the harvest selection process.

FMP-14: Planned Harvest Volume and Wood Utilization

This table summarizes projected utilization of the planned harvest volumes that are available for harvest from the planned harvest areas by species, product and volume type. Planning teams have the option of summarizing the planned harvest area by licensee or grouping. The table will summarize volume that is projected to be utilized and the volume that is currently anticipated to be unutilized but remains available for industrial uses.

FMP-15: Projected Wood Utilization by Mill

This table lists the mills and the anticipated volumes each will utilize from the planned harvest area for the 10-year period. Volumes are summarized by volume type, product type and species. This table also summarizes the wood supply mechanisms through which the volumes were made available to each mill. The source of information for this table is FMP-13 and FMP-14 and information regarding industrial wood requirements for mills supplied from the management unit.

FMP-16: Contingency Harvest Area and Volume

This table summarizes the contingency harvest area and associated volume. The sources of information for this table are the LTMD and the results of the harvest selection process.

FMP-17: Planned Renewal and Tending Operations

This table summarizes the area of renewal (regeneration and site preparation) and tending operations that are planned by disturbance (i.e., harvest or natural) and by treatment method. The source of information for this table is the LTMD, the selection of silviculture operations and the current FMP.

FMP-18: Road Construction and Use Management

This table summarizes planned road construction, use management, and responsibility for all primary, branch, and operational roads or operational road networks, for the 10-year period of the FMP. Existing roads that are the responsibility of the licensee, and other existing roads that will be used for forest management purposes, are also identified.

FMP-19: Planned Expenditures

This table summarizes the planned expenditures to be made by activity and funding source for the 10-year period. The source of information for this table is the forecast of operations summarized in FMP-17.

FMP-20: Planned Assessment of Establishment

This table summarizes the area (hectares) to be assessed for establishment during the 10-year period of the FMP by forest unit and SGR. The source of information for this table is a record of applicable SGRs (current and past FMPs), harvest and silvicultural treatments. The amount of area planned to be assessed for establishment should be consistent with the level of regeneration success required to meet FMP objectives and the LTMD as well as levels of past disturbance (i.e., harvest and natural).