

REVIEW OF THE SOUTH PANUKE FOREST HARVEST

**A report submitted to the
Nova Scotia Department of Natural Resources**

by the

Mersey Woodlands Advisory Committee



January, 2015

ACKNOWLEDGEMENTS

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In particular, we would like to thank DNR District Forrester Jillian Weldon-Genge, who provided significant support to the MWAC Sub-Committee in arranging a field visit to the harvest site, meetings with DNR staff, and assistance in gaining access to documentation on policies and procedures. It was very evident that all of the individuals with whom discussions were held, whether representing the views of government, industry, the NGO community, or the general public, are in agreement that Crown lands should be sustainability managed to ensure a long-term equitable balance among commercial, biodiversity and social values. It is hoped that the results of this review will contribute to achieving that goal.

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Background.....	1
1.2	The South Panuke Forest Harvest.....	1
1.3	The Mersey Woodlands Advisory Committee.....	1
1.4	Request from DNR.....	2
2.0	OBJECTIVE OF THE REVIEW.....	3
3.0	METHODOLOGY.....	3
3.1	General Approach.....	3
3.2	Audit of the South Panuke Harvest.....	3
3.3	Sub-Committee.....	4
4.0	THE CONCEPTUAL PLAN FOR CROWN LAND MANAGEMENT.....	6
5.0	BACKGROUND TO THE HARVEST.....	7
5.1	Pre-Harvest Conditions.....	7
5.2	Management of the Harvest.....	9
6.0	PUBLIC REACTION AND MEDIA COVERAGE.....	10
7.0	THE MAIN ISSUES.....	13
7.1	The Planning Process.....	13
7.1.1	A Good Start Lacking Follow-up.....	13
7.1.2	The Missing Links.....	13
7.1.3	Regaining the Momentum.....	14
7.2	The Management Process.....	15
7.2.1	Documentation.....	15
7.2.2	Consistency and Standardization.....	15
7.3	Pre-Treatment Assessment.....	17
7.4	Applied Research.....	18
7.5	Public Engagement.....	18
8.0	INTERIM ARRANGEMENTS.....	20
9.0	CONCLUSION.....	21
10.0	RECOMMENDATIONS.....	22

LIST OF FIGURES

Figure 1	Map showing 19 large-scale areas delineated in western Nova Scotia for strategic planning purposes.....	7
Figure 2	Trees in the lakeshore buffer representative of most of the harvested stand	8
Figure 3	Windthrow on harvest edge	9
Figure 4	Aerial view of harvest showing moose shelter patch, wildlife clumps and scattered white pine	10
Figure 5	Diagram showing an example of relationship among planning factors	16

APPENDICES

1.	MWAC Terms of Reference	27
2.	DNR press release on MWAC review	28
3.	Document Summaries.....	29
4.	PTA Requirements	42
5.	Auditor’s Report.....	44

REVIEW OF THE SOUTH PANUKE FOREST HARVEST

1.0 INTRODUCTION

1.1 Background

This report presents the results of a review undertaken by the volunteer-based Mersey Woodlands Advisory Committee (MWAC) regarding the South Panuke forest harvest in western Nova Scotia in the summer of 2014. This review was undertaken in response to a request from the Nova Scotia Department of Natural Resources (DNR) for an independent examination and determination as to whether all required procedures were followed in the planning, harvesting and monitoring related to forestry activities on the site. The DNR request for a review was motivated by, and in response to, media coverage that expressed concerns as to whether, and how, forestry operations should have been carried out on the South Panuke site.

1.2 The South Panuke Forest Harvest

Between May and August 2014, a 40-hectare block of Provincial Crown land south-east of Panuke Lake in Halifax County was harvested by Ledwidge Lumber Company Ltd, based in Enfield, Nova Scotia. This clearcut harvest occurred on lands that were previously owned by the Bowater Mersey Paper Company, but were purchased by the Provincial Government in 2012. The area in question is within the Panuke Block, one of 19 broad landscape-level areas covering the western part of the mainland, as identified in the planning document *Crown land management: A conceptual plan for Western Nova Scotia*, released by DNR in March, 2014.

Each of the Blocks is further characterized by one of five Planning Units and a number of Focal Values. The Planning Unit ascribed to the Panuke Block is “Environmentally Sensitive Area” and the associated Focal Values are Biodiversity, Recreation and Forestry. The Planning Unit designation does not preclude forest harvesting, however, as stated in the Conceptual Plan: *“Resource development can be undertaken in these areas, however, the dominant value is conservation, including the protection of biodiversity and habitat, and these interests will guide management and resource extraction”*.

1.3 The Mersey Woodlands Advisory Committee

The Department of Natural Resources established MWAC in the spring of 2014, as part of a broadly-based approach to public consultation concerning the future management of the Western Crown Lands, including the former Bowater lands. The volunteer members of the Committee (maximum of 20) are drawn from a range of stakeholder groups that reflect the various values and uses in relation to the forested lands in question. Members represent recreational paddlers, fish and wildlife organizations, hiking clubs, ATV associations, woodlot

owners, commercial harvesters, mill operators, municipal officials and the Mi'kmaq First Nation.

The purpose of the Committee is to provide a forum in which a diverse range of stakeholders may provide input into how DNR manages forest lands. This includes review of forest management plans, practices and policies. DNR is to consider the input provided by the Committee when making final decisions regarding policies and practices and report back to the Committee as to how the input was considered, and the extent to which it was applied.

1.4 Request From DNR

In mid October, 2014 MWAC received a request from DNR to undertake an impartial and independent review of the procedures governing the recent harvesting of a forested site within the Panuke Block in the St. Margaret's Bay area. The request was prompted by extensive media coverage that reflected a range of concerns related to the advisability and appropriateness of conducting a clearcut harvesting operation on the South Panuke site. The criticism essentially revolved around the premise that the clearcut harvest prescription, although allowed under the Conceptual Plan, was not in keeping with the intent of the "Environmentally Sensitive Area" Planning Unit designation and the associated Focal Values. DNR held the opinion that proper policies, planning procedures and operational protocols had been followed in the South Panuke harvest, but were concerned that negative media coverage was undermining the public perception of forest management practices in the Province.

MWAC convened a special meeting on October 23, 2014 at which time the background to the request was presented, and the terms of reference proposed by DNR were reviewed (Appendix 1). Following a lengthy discussion, the Committee agreed to undertake the review according to the terms of reference, and established a Sub-Committee to complete the task, consisting of Gordon Beanlands and David Dagley. In addition, it was agreed that it was necessary to retain the services of an independent forest auditor to assist the Sub-Committee in its work.

In order for the Sub-Committee to carry out its function in an independent and credible manner, MWAC set the following conditions, which were accepted by DNR:

- The Sub-Committee will be under the control of, and report to, the full MWAC.
- MWAC will review and forward the Sub-Committee's report to DNR.
- DNR will release the report to the public in a timely manner.
- The Sub-Committee will require the services of an independent and qualified forest auditor.
- Arrangements need to be made for the auditor to receive payment for services rendered.
- In arranging payment, it must be transparent that the auditor is under the control of, and reports to, the full MWAC

A press release formally announcing the review by MWAC was issued by DNR on October 31, 2014 (Appendix 2).

2.0 OBJECTIVE OF THE REVIEW

The objective of the review was to examine in detail the planning context for the South Panuke forest harvest, particularly in regard to the designation of the Planning Unit as an Environmentally Sensitive Area, review in detail the allegations made against the harvest, and make recommendations for change and opportunities for improvement, where appropriate.

3.0 METHODOLOGY

3.1 General Approach

Early in its deliberations MWAC decided to adopt a two-pronged approach to the review. The first would involve a formal audit focused on the extent to which all relevant planning and operational requirements were taken into account in the forest harvest conducted on the South Panuke site. Although the auditor was to pay particular attention to requirements for an Environmentally Sensitive Area, as outlined in *Crown land management: A conceptual plan for Western Nova Scotia*, all other management constraints were also to be addressed. These included applicable policies, regulations, certification requirements, management directives, planning procedures, protocols, guidelines, operational practices and post-harvesting monitoring. The audit was expected to make any recommendations for change directly related to the activities on the South Panuke harvest site.

The second part of the approach was for the Sub-Committee to review the South Panuke experience from the broader perspective of how best to avoid similar situations arising in the future. Given that we are dealing with “working forests”, there will be a continuous requirement for harvest prescriptions. By examining the state of evolution of the overall policy, planning, management and operational context within which site-specific decisions are being made, the intent was to identify and recommend changes that could lead to more clarity of objectives, result in more balanced decision making, and make operational outcomes more transparent.

3.2 Audit of the South Panuke Harvest

The Sub-Committee developed the qualifications required to select a professional auditor, including competency, familiarity with the issues, independence and availability. The terms of reference for the audit were essentially the same as those provided by DNR for the MWAC review (refer to Appendix 1). However, the auditor was required to meet with the MWAC Sub-Committee prior to commencing the audit, and also prior to issuance of the final audit report. A Request for Proposal and Tender Bid were sent to four qualified forest auditors who met the qualifications. Following a competitive bidding process conducted by MWAC, involving

evaluation of proposals and checking of references, on December 1, 2014 the contract was awarded to SPS Forestry and Environmental Consulting Inc., from New Brunswick, with Steven Spears, RPF, as the auditor.

During the week of December 1-5, 2014 the Sub-Committee met with Mr. Spears to review the terms of reference and answer relevant questions. Arrangements were also made for him to visit the South Panuke harvest site and have meetings with staff at DNR offices in Lunenburg, Halifax and Truro, as well as a meeting with staff of Ledwidge Lumber Co. in Enfield. The decision to meet with a representative of the Ecology Action Centre was left to the discretion of the auditor. Mr. Spears’ draft report was provided to the Sub-Committee on December 19 and, following review by the full MWAC, his final audit report has been incorporated in its entirety into this document as Appendix 5.

3.3 Sub-Committee Review

On November 6, 2014 the Sub-Committee, accompanied by DNR staff, spent considerable time investigating the South Panuke harvest site. In addition, the following meetings were held:

Date	Organization	Attendees
November 18	DNR staff, Waverley Depot	Harold Carroll, Director, Parks and Recreation Tim O’Brien, Provincial Forester Randy Tattrie, Regional Resource Manager Dan Eidt, Director, Resource Management Shavonne Meyer, Regional Biologist, Central Region Jillian Weldon-Genge, Regional Forester, Western Region
November 26	Ledwidge Lumber Company	Robert Lively, Forest Technician
November 27	Ecology Action Centre	Matt Miller, Forestry Program Coordinator
	Department of Environment, Halifax Office	Kermit DeGoyer, Protected Areas Planner Robert Cameron, Ecologist
December 1	SPS Forestry and Environmental Consulting	Steven Spears, President
December 2	DNR staff, Kentville Office	Dr. Sherman Boates, Wildlife Manager, Biodiversity, Wildlife Randy Milton, Wildlife Manager, Ecosystems & Habitat Program Peter MacDonald, Provincial Biologist, Large Mammals

In addition to meetings with various stakeholders, both the Sub-Committee and the auditor reviewed a number of documents that would have had a bearing on the planning for the South Panuke harvest and the resulting decision on the clearcut prescription. It is interesting to note that media attention was focused on perceived constraints posed by the “Environmentally Sensitive Area” designation in the Conceptual Plan. In reality, however, that particular harvest, like others on Crown land, was also subject to a host of other standard regulations and procedures. It should also be noted that the South Panuke harvest site is certified to Sustainable Forest Initiative (SFI) standards. The various documents noted below represent a partial list of the range of requirements, constraints and considerations that may influence

decisions on forest harvesting operations on Crown lands, including the South Panuke harvest. Since many of these reports are technical in nature and mainly designed for use by professionals in the forestry sector, for the benefit of non-expert readers brief summaries of the documents listed below are presented in Appendix 3.

Legislation

- Forests Act
- Crown Lands Act
- Wilderness Areas Protection Act
- Endangered Species Act
- Environment Act

Regulations

- Forest Sustainability Regulations
- Wildlife Habitat and Watercourses Protection Regulations
- Species at Risk List Regulations

Policy Documents

- The Path We Share; A Natural Resources Strategy for Nova Scotia 2011-2020
- The Path we Share, A natural Resources Strategy for Nova Scotia 2011-2020 – 24 Month Progress Report
- Crown Land Management: A Conceptual Plan for Western Nova Scotia
- Mersey Woodlands Forestry Policy
- Nova Scotia's Old Forest Policy

Management Guidelines

- Integrated Resource Management
- Woodland Owners Guide to Forest Ecosystem Classification
- Rossignol, St. Margarets Bay, North Mountain District Management Plan (draft 2014)
- Guide to Forest Management Approaches for Land Adjacent to Protected Areas

Operational Guidelines

- Nova Scotia Code of Forest Practice
 - Guidelines for:
 - Forest Ecosystems
 - Forest Products
 - Wildlife Habitat
 - Integrated Forest Use

- Pre-Treatment Assessments Requirements
 - Technical Manuals:
 - Forest Ecosystem Classification (FEC)
 - Tolerant Softwood & Mixedwood Management Guide
- Special Management Practices
 - American Marten
 - Boreal Felt Lichen
 - Mainland Moose
 - Other species
- Forest/Wildlife Guidelines and Standards for Nova Scotia
- Species at Risk Recovery Plans
 - Recovery Plan for Moose in Mainland Nova Scotia
 - Endangered Mainland Moose Action Plan
- License Agreement applicable to the South Panuke harvest
- High Conservation Value Forest Assessment, Port Hawkesbury Forest Management Area
- Certification Programs
 - Sustainable Forest Initiative (SFI)
 - Forest Stewardship Council (FSC)

4.0 THE CONCEPTUAL PLAN FOR CROWN LAND MANAGEMENT

Much of the critical reaction recorded in the public media concerning the South Panuke harvest can be traced to different interpretations of the meaning of terminology in the DNR planning document, *Crown land management: A conceptual plan for Western Nova Scotia*, released in March, 2014. It identified 19 large tracts of land, referred to as “Blocks”, covering the western half of mainland Nova Scotia. The Blocks were identified on the basis of broad thematic similarities, largely driven by considerations of biodiversity importance. The Blocks were categorized by one or more of the following overarching Planning Units: (i) Park or Protected Area; (ii) Resource Management Area; (iii) Multiple Value Area; (iv) Environmentally Sensitive Area; (v) Mi’kmaw Management Area. Each Block was further characterized on the basis of Focal Values, reflecting land management priorities based on input from the general public and resource experts, e.g., forestry, biodiversity, recreation, watershed, public access, etc. Figure 1 shows the distribution of the 19 Blocks.

The classification of the Blocks by Planning Units and Focal Values is meant to provide a rational basis at the strategic level to guide future detailed land use planning and management. According to the Conceptual Plan, *“Neither the designation of the units nor the focal or secondary values will necessarily preclude other activities within any unit. However, the designations and values will help inform future decision-making.”* It is clear that the Conceptual Plan is an early stage in an on-going planning process that is expected to provide *“more detailed operational plans that guide individual activities on the ground”*.

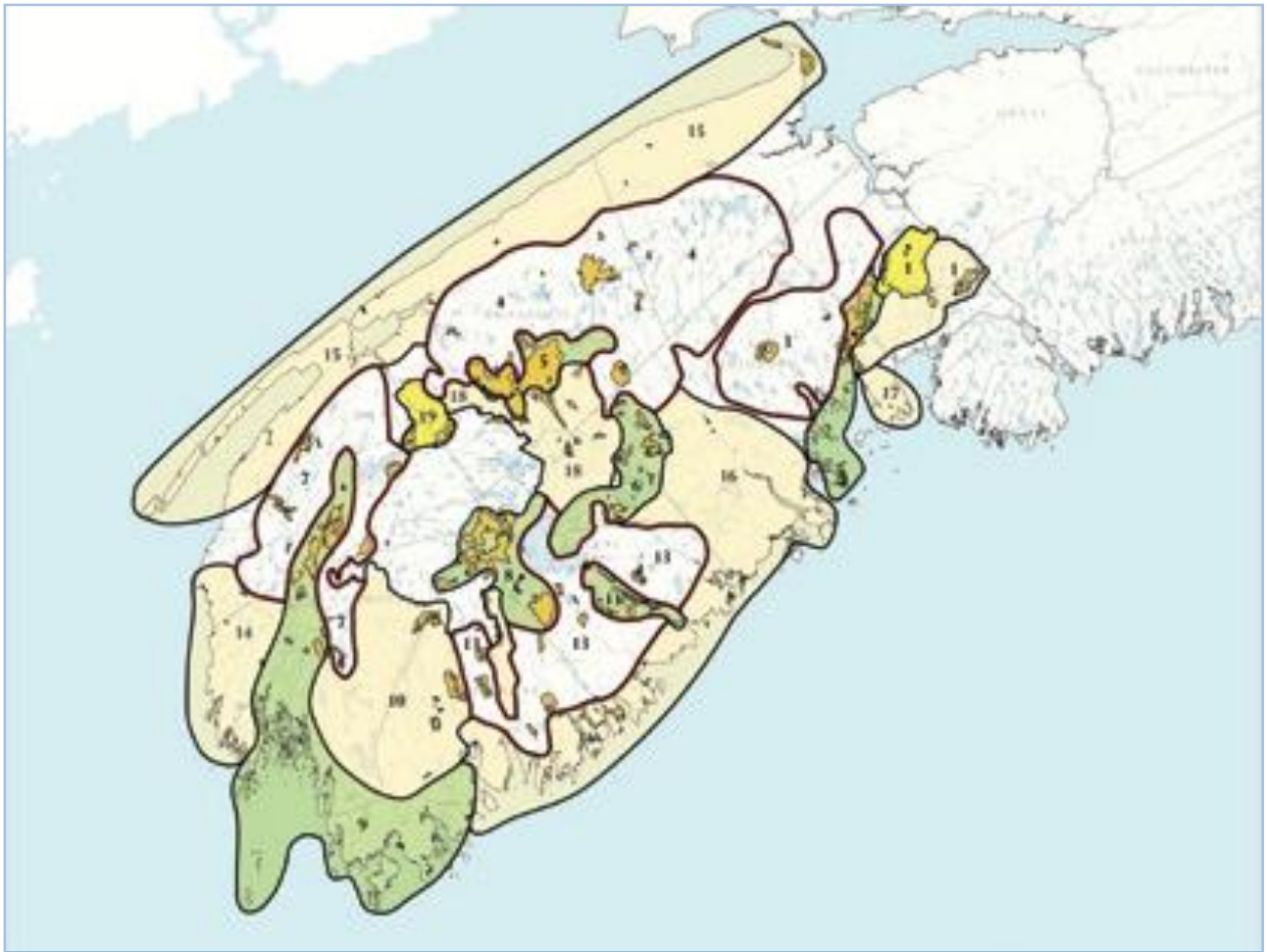


Figure 1. Map showing 19 large-scale areas delineated in western mainland Nova Scotia for strategic-level planning purposes. From: *Crown land management: A conceptual plan for Western Nova Scotia*.

5.0 BACKGROUND TO THE HARVEST

5.1 Pre-Harvest Conditions

The site of the South Panuke harvest is located to the south-east of the southern portion of Panuke Lake, a large hydroelectric reservoir running north-south that nearly bisects the Province. Under the Conceptual Plan, the site falls within the Panuke Block, in which the designated Planning Unit is “Environmentally Sensitive Area”, and the Focal Values are Biodiversity, Recreation and Forestry. The Panuke Block is also under independent third party SFI certification, which adds further to the list of requirements that must be followed in relation to harvesting. The area slopes up from the eastern shoreline of Panuke Lake and, prior to the harvest, was covered with an even-aged stand, predominantly of red spruce with some balsam fir. The average age of the stand was approximately 75 years. The soil layer is thin and rocky, with patches of exposed bedrock and scattered glacial erratics (granite boulders). The area is classified as having moderate exposure and trees growing on the western facing slope are

subject to strong westerly winds. Given the combination of exposure and soil conditions there is a risk of windthrow (blowdown), which is a common occurrence in the St. Margarets Bay region. The site falls within the St. Margaret's Bay Ecodistrict in which "hurricanes have played a significant role in shaping the forest". The areas to the north and south of the harvest site were harvested approximately 10 years ago and are now showing advanced regeneration with red spruce.

Based on observations of stumps in the harvest area and remaining trees within the buffer zone, the harvested stand was highly overstocked, resulting in the majority of trees having a tall spindly form, mostly suitable for stud wood (Figure 2). There was a scattering of larger trees that were probably survivors from a previous harvest or natural disturbance; growth ring count on one of the larger stumps with a diameter of 56 cm (22 inches) showed an age of approximately 125 years. Examination of larger stumps indicated that up until sometime in the 1940s growth had been slow, average diameter only increasing to approximately 20 cm (8 inches). In the following years the growth rate dramatically increased, presumably as a result of the opening of the canopy. The large majority of harvested trees were in the 70-80 year range and are assumed to have originated as regeneration following the previous disturbance. One spruce in the buffer area with a diameter of 35 cm (14 inches) was core sampled and found to be 70 years old. It was representative of the larger trees in the area, however, the majority were considerably smaller in diameter.



Figure 2. Trees in the lakeshore buffer representative of most of the harvested stand.

5.2 Management of the Harvest

The harvest area was assigned to Ledwidge Lumber under a License Harvest Agreement covering the period April 1–September 30, 2014. Prior to this License, Ledwidge Lumber operated under a Letter of Authority. Other companies in the forest industry were harvesting on Crown lands under similar arrangements. A Pre-Treatment Assessment (PTA) of the area to be harvested was undertaken by a Forest Technician from Ledwidge, following the requirements as laid out in the *Tolerant Softwood/Mixedwood Management Guide*, part of the Nova Scotia Code of Forest Practice (Appendix 4). A prescribed set of data on vegetation, soil and site attributes collected during the PTA, when used in conjunction with the Forest Ecosystem Classification (FEC), resulted in the determination of the stand as belonging to the Spruce-Hemlock Group, specifically SH5 (Red Spruce-Balsam Fir). This is a common vegetation type throughout the Province and listed as prone to hurricanes as natural disturbance. Windthrow was already evident on the edge of existing clumps due to shallow soil and significant wind exposure (Figure 3).



Figure 3. Windthrow on harvest

Information from the FEC and data from the PTA are used to produce a Recommended Stand Prescription. In the case of the South Panuke harvest, the recommended prescription was a clearcut, with allowances made for the standard restrictions related to conservation, wildlife concerns and water course buffers. The PTA was reviewed by DNR staff, in particular the Regional Biologist, who recommended further restrictions related to potential impacts on mainland moose, an endangered species. Although the harvest site is not in a moose concentration area, there was some concern over interruptions in habitat connectivity, and the requirements of the Moose Special Management Practices (SMP) were followed. As a result, the width of the buffer zone along the lakeshore was increased from 20 m to 50 m, the harvesting area on the north side was reduced, and the large clump of trees (moose shelter patch) originally scheduled to be left near the middle of the clearcut was increased in size to three hectares. It should be noted that DNR has been working on a number of moose-related initiatives, including a Mainland Moose Recovery Plan, interpretation of FEC for moose habitat, and a guidance document for contractors in the Moose SMP. However, at the time of the harvest, the final results of these endeavours were not available. Also, Ledwidge Lumber had determined that an area on a southern point of land, which extended into Panuke Lake, would be important habitat to conserve and suggested that it not be harvested. The DNR biologist agreed with that recommendation. In total, meeting all of the constraints reduced the harvest area from approximately 50 hectares to 40 hectares. The revisions were accepted and the harvest was conducted from May-August, 2014. An aerial view of the harvest site is shown in Figure 4.



Figure 4. Aerial view of harvest showing moose shelter patch, wildlife clumps and scattered white pine (Ecology Action Centre photo)

The Forest Technician from Ledwidge, who had originally flagged all of the harvest boundaries, monitored activities on the site every couple of weeks during harvest operations and after the harvest was completed. In addition, staff of DNR was required to monitor to ensure that SFI requirements were being met, and also performed site inspections.

6.0 PUBLIC REACTION AND MEDIA COVERAGE

During September and October, 2014 there was extensive media coverage pertaining to the South Panuke harvest. The Halifax Herald newspaper published at least 11 articles, one as front page coverage, and the CBC aired a number of interviews with stakeholders and the Minister of Natural Resources. The majority of the publicity was critical of the harvest, although there were a couple of supportive articles.

The media coverage tended to focus on four interrelated aspects. The first was related to the importance attached to the site being designated as an “Environmentally Sensitive Area”, and the expectations that decisions regarding forest management would reflect the focus on conservation values, i.e., it was expected that there would be observable differences from “business as usual”. It was contended that the Conceptual Plan did not define in detail the dominant conservation values attached to the harvest site, in particular the specific biodiversity concerns that needed to be addressed. Without such specificity, it was questioned how appropriate protective measures could have been taken and, therefore, how decisions could have been made in regard to the harvesting prescription. Although some of the media articles tended to suggest that the harvest site was an old growth forest, the facts do not support this

contention. All of this is to say that, in the eyes of the general public, there was no evidence available to show how the management decisions taken on the South Panuke site reflected the perceived intent of designating the area as environmentally sensitive. In the words of some stakeholders: “There is too much reliance on buffers”; and “Leaving a few clumps of trees and a buffer are pathetically weak biodiversity conservation measures”.

The second focus of public criticism was on the practice of clearcutting in general, and on the South Panuke site in particular. Public opposition to clearcutting has been a contentious and long-standing issue in forest management, and the South Panuke harvest has been a flash point for underlying concerns. Segments of the general public, as well as some experts, are opposed to the practice and can be strident in stating their opposition. An overarching sentiment is that there should be more encouragement to consider harvesting options other than clearcutting. In the media articles it was argued that the practice leads to nutrient loss in forest soils, is destructive of habitat for many species, alters microclimate through thermal changes, and increases the risk of erosion and sedimentation. Voices on the other side said that, done properly, clearcutting can be an efficient and safe means for sustainable forest harvesting. They argue that, when used in conjunction with the myriad of regulations and constraints currently in place, it can be an acceptable harvest method on appropriate sites. On a positive note, both sides of the argument appear to agree that the science-based Forest Ecological Classification system, recently developed by DNR, represents a significant first step in providing a much-needed ecological basis for forest management practices.

The third point of contention revolves around the existing policy framework for forest management. At the highest planning level, there appears to be a general acceptance of *The Path We Share, A Natural Resources Strategy for Nova Scotia 2011-2020*, released by DNR in 2011, and updated in 2013. The Strategy is based on adopting a collaborative planning approach and using the best available research and knowledge to balance multiple values related to economics (“working forest”), environmental conservation (particularly biodiversity and wildlife habitat) and social interests (recreation, access, etc.). This was followed in 2014 by the DNR planning document *Crown land management: A conceptual plan for Western Nova Scotia*, released in March, 2014. As noted previously in this report, as a conceptual document it lacks the detailed information necessary for decision-making at the operational level. This constraint on its use is recognized in the document itself, and there are clearly-stated intentions to provide more specific guidance in subsequent planning reports. Nevertheless, since the Conceptual Plan was made widely available, the general public was expecting to see how it influenced decisions at the ground level, such as those governing the South Panuke harvest. Although the decision-making process within DNR did follow existing guidelines related to moose habitat, there was no specific information available, or protocols in place, to clearly demonstrate what measures were/should have been taken in a broader context to protect the conservation values identified in the Conceptual Plan, specifically “Biodiversity”. This current disconnect between concept and operations prompted the public to question the integrity of

the overall policy framework, as evidenced by the following comments: “Conceptual plan is devoid of meaningful detail”; “Policy is absolutely useless”; “Implementation of Natural Resources Strategy has been a total failure”; “Province not following its own guidelines”; “There was no effort made to do anything but clearcut”.

The fourth concern raised by the public, although directly related to the South Panuke harvest, also relates to the broader issues of transparency in decision making and collaboration in the management process. Among the overarching goals of the Natural Resources Strategy are commitments to ensure that “...interested groups are well informed about issues affecting our natural resources”, and to “...build a culture of collaboration”. The contributors to the public media used the controversy around this particular harvest to reinforce their call for a procedure to inform “interested groups” about harvesting plans, and provide opportunities for input to the decisions. According to some public opinion, “Since the release of the Natural Resources Strategy, DNR has been less collaborative”. Furthermore, there is resentment that the Forest Technical Advisory Committee, the only multi-stakeholder body in place to inform forest policy, has not met once since the release of the Strategy. It was also suggested that planning based on High Conservation Value Forests (HCVF), as recently completed for forest lands currently under management by Port Hawkesbury Paper, should be extended Province-wide.

There is agreement that the recent posting of planned harvest locations and prescriptions on the DNR website, and opportunity for comment, goes some way to improving communication. However, the designation of planned harvests as either partial cut or clearcut is seen as too course a definition, particularly since “partial cuts can mean almost anything”. Further criticisms of the postings are that the size of the proposed harvest site is not included, and there is no landscape-level context. For example, it is difficult to gain a picture of the incremental harvesting within the broader Blocks identified in the Conceptual Plan and, thus to control cumulative impacts.

Finally, although not directly related to the terms of reference for this review, it should be pointed out that the coincident recent shortage of firewood for domestic purposes has compounded the public’s negative perception of forest management on Crown lands. This concern was raised during the public media furor over the clearcut on the South Panuke site, mainly because there was no other means immediately available to focus attention on this situation. Measures need to be taken to increase the supply of firewood from Crown lands, particularly in high-need areas, without unfairly competing with private commercial suppliers. Action needs to be taken as soon as possible in order for residents to have a supply of dry firewood for next winter. License conditions provide some flexibility in this regard.

7.0 THE MAIN ISSUES

7.1 The Planning Process

7.1.1 A Good Start Lacking Follow-up

One of the underlying issues is that the development of the planning process to reflect the objectives as set forth in the Natural Resources Strategy has not been completed. The result is that it is difficult to make harvesting decisions that clearly reflect those objectives without the benefit of clear guidance designed for application at the operational level. As an example, from the perspective of one of the interviewees, “Biodiversity was developed as an umbrella to guide wildlife management, but has yet to be applied at the operational level”.

According to the experts interviewed during this review, there are three interrelated phases in the overall planning process to develop a new approach to the management of the Province’s woodlands: (i) a strategic/conceptual framework, (ii) landscape-level planning and (iii) operational guidelines applicable at the stand level, all of which need to be grounded in appropriate policy, regulatory and operational frameworks. To date only the first phase has been partially completed, as reflected in the Resources Strategy for the Province and the Conceptual Plan for the Western Crown Lands. Since the development of both the Strategy and Conceptual Plan involved extensive public consultation, there was/is heightened expectation that the proposed approach to balancing economic, environmental (especially biodiversity) and social values in decision making would result in observable changes on the ground. Unfortunately, procedures have not yet been developed whereby it can be clearly shown how the significant changes that have occurred at the strategic/conceptual level affect decisions in specific operational situations, such as the South Panuke forest harvest.

7.1.2 The Missing Links

The Natural Resources Strategy appears to have been generally well received as an overarching guidance document. Although the Conceptual Plan for the Western Crown Lands has received some criticism, it tends to be focused on the need for clarification of terminology and how management decisions will be made in the context of multiple Focal Values. Apparently, the government of the time was anxious to release a plan and there was not sufficient time to design an approach that would provide practical guidance in interpreting the Focal Values in terms of specific land management decisions. These deficiencies are especially critical in relation to the Planning Units that have been designated as “Environmentally Sensitive Areas”, such as the Panuke Block.

One of the most challenging issues to address in environmental management is cumulative impacts, i.e., the gradual, incremental loss over time of valuable natural assets, such as endangered species or critical habitats. This requires planning and management over broader space and time scales than apply to specific site-limited operations, such as forest harvesting.

This approach constitutes the second phase in the overall planning process. As characterized by a number of interviewees, planning needs to move from the stand level to the landscape level. Cumulative impacts need to be managed over large spatial scales (ecodistrict or ecoregion) in order to maintain a long-term balance among critical ecological components. In the context of the Conceptual Plan, this implies considering the combined impacts of the size and location of all harvests over an extended period (5-10 years), within each of the 19 Blocks delineated in the Western Crown Lands. The first part of landscape-level planning is to develop operationally useful definitions and descriptions for Focal Values that take account of changes over extensive areas. From the perspective of one expert, landscape-level planning might provide the basis for developing a management objective for biodiversity equivalent to the annual allowable cut (AAC) used in forestry. Although the Integrated Resource Management (IRM) approach currently in use by DNR works well at the stand-level scale, it is not designed for use at the landscape level.

Currently there are a number of checks and balances that apply to forest harvesting operations on Crown lands. These are implemented through a variety of legislation, policies, regulations, referral mechanisms, certification requirements, operational procedures and best practices that have evolved over time. Some of these can be linked back to the Strategy and Conceptual Plan recently developed. However, the development of a coherent set of operational procedures to reflect the new approach to forest management will depend upon (i) more clarity in terminology and definitions, (ii) regulating operational guidelines for balancing competing values, and (iii) landscape level planning, i.e., setting the stage for the third phase of the planning process.

7.1.3 Regaining the Momentum

The need for more detailed planning is recognized in numerous references in the Conceptual Plan. The message is clearly stated (page 11): *“Planning for the Western Crown Lands will become progressively more detailed as the focus moves from the strategic level of this concept plan to the development of regional plans and then more detailed operational plans that guide individual activities on the ground.”* The various interpretations as to how the decision was made regarding the South Panuke harvest is a clear testimony of the priority that should be given to the development of such operational guidelines.

It is clear that the intention of government was to complete all levels of the forest management planning process. Based on the results of interviews with DNR staff, it is evident that there was political commitment and the necessary programming was being developed. In addition to input from the public, much of the data that contributed to the development of the Conceptual Plan was the result of formal interdepartmental collaboration. Indeed, although further research is required, provincial departments have extensive expertise, capabilities and data bases that are highly relevant to advancing development of the planning process. In particular,

as an example, efforts were underway, and to some extent continuing, to adapt the Forest Ecosystem Classification for assessment of wildlife habitat and biodiversity.

For a variety of unforeseen circumstances, progress in the development of the second and third phases of the overall planning process has been stalled or, at best, significantly slowed down. As mentioned, this has resulted in a situation in which the operational decisions that are being made, although still subject to careful scrutiny and regulations, are not clearly linked to the new Strategy/Conceptual Plan. This situation needs to be addressed as soon as possible in order to demonstrate to the public that progressive change is underway.

7.2 The Management Process

7.2.1 Documentation

As evidenced by the number of reference documents in relation to this review, forest management is a complex business that requires the integration of information and data from a wide variety of sources. The Sub-Committee was impressed with the expertise and capability of the DNR staff in managing that process and applying the results to the full gamut of the planning process, from policy to operations. Although they intuitively understand the overall process and apply it on a daily basis, there did not appear to be a single source that shows how all of the pieces fit together. Given the number of factors involved and the sequential nature of the interactions, it is difficult for an “outsider” to understand how the overall decision-making system works. A document is required that clearly shows and explains the information flow and associated decision path from strategy to operations. The diagram in Figure 5 is a simplified example to demonstrate the idea. Although it may be incomplete, and some of the connections may need to be changed, or may not yet be in place, some form of schematic as appears below would be helpful. It should include descriptions of the various interacting parts, and would be helpful as a reference base for all parties involved to keep track of modifications to the decision process that occur over time. It would also better enable the general public to understand, and appreciate, the various factors that influence how forest harvesting is planned and controlled.

7.2.2 Consistency and Standardization

During the review process, it became evident that there were inconsistencies in management among the three Regions of the Department. Concerns were expressed that, although the regulations are clear, there are differences between Regions on how they are interpreted and applied. These include differences in the way IRM requirements and PTA procedures are interpreted. Consistency in procedures for the conduct of PTAs is critical, since this stage represents the culmination of the planning process, where intentions become reality. Although the differences are more a matter of interpretation than omission, nevertheless, it undermines the objective of standardization. It was also noted that, in some cases, licensees are given

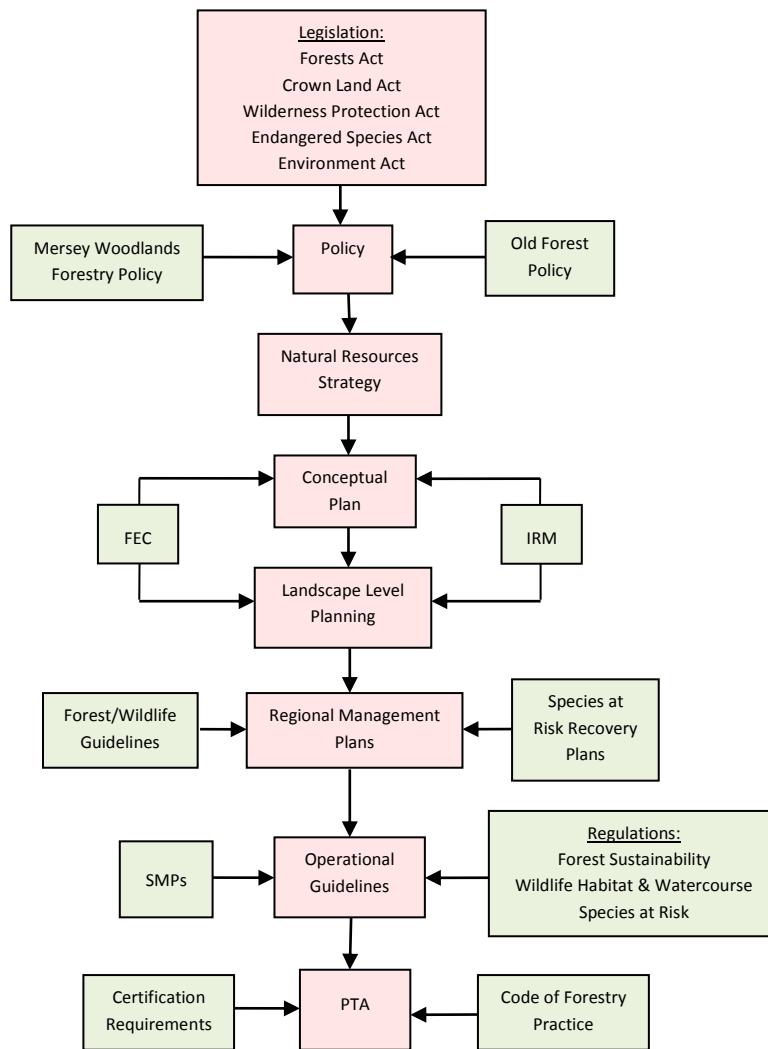


Figure 5. Diagram showing an example of relationship among planning factors

verbal approval to begin harvesting operations; in other cases they receive written permission to proceed, including the restrictions to be followed. From an audit perspective, the lack of a clear paper trail would be seen as an important deficiency.

Some of this variability may be related to different licensing agreements among the Regions. For example, the forest lands under a management agreement with Port Hawkesbury Paper are subject to the results of a High Conservation Value Forest (HCVF) assessment conducted according to Forest Stewardship Council (FSC) certification guidelines; other Regions have not followed this approach. In other cases, certification requirements may differ between areas within the same Region. The less-than-perfect standardization across the Regions is probably partly due to the lack of clear direction, and some influence from past management practices on the former Bowater lands. The accelerated pace of change following the release of the Natural Resources Strategy in 2011, compounded by the change of ownership of the former Bowater lands, has resulted in an incomplete planning process. As noted above, the lack of

clear guidelines for conservation measures specific to management Blocks, leaves room for differences in interpretation. Based on interviews conducted by the Sub-Committee, there is a need to develop standard practice for determining, in detail, appropriate conservation measures in scheduled harvest sites; otherwise the South Panuke media experience will be repeated over and over. In the words of one of the persons interviewed: “Everybody focuses on the map of the 19 delineated Blocks, but detailed explanations are lacking, which leaves things open to public interpretation and erroneous conclusions”.

7.3 Pre-Treatment Assessment

The PTA represents the culmination of the results of planning and management at the field level. The harvest prescription for the site in question determines the balance between conservation, biodiversity and forestry considerations. For that reason it is arguably the most critical step in the entire process. Although the guidelines for PTA generally reflect the application of Integrated Resource Management (IRM) and FEC principles and procedures, the analysis that determines the harvest prescription is largely based on stand-level data, with emphasis on factors such as forest composition, quality, growth and risk of disturbance. Particular attention is given to soil type, exposure (to wind) and tree quality. There are general references to Wildlife Trees, Wildlife Features, and Species at Risk, however, there is less detail regarding conservation measures applicable to the site in question, as compared with forestry-related information. If specific concerns are suspected, subject matter experts can be contacted to provide detailed information and guidance. It was recognized by most of the resource people interviewed that eventually the PTA will need to include consideration of landscape planning, and appropriate relevant training will have to occur.

Although the PTA is recognized as an important step in the planning process, a number of the people interviewed during this review suggested it needs to be updated to reflect the increased priority given to conservation values in the Conceptual Plan. In regard to the case of the Panuke Block, in which the South Panuke harvest site is located, the designation of Biodiversity as one of the Focal Values was related to maintaining habitat connectivity to avoid isolating species into vulnerable sub-populations. Unfortunately, the species of concern were not identified and the specifications for connectivity were not provided. In the absence of such information, the focus was on mainland moose, a high-profile threatened species. The DNR biologist recommended changes in the boundary of the harvest site, a wider buffer along the lakeshore, and leaving a large moose shelter patch near the centre of the clearcut. As reflected by coverage in the public media, it was questioned as to whether these changes to the harvest plan were sufficient conservation measures to address the biodiversity designation attached to the area. It was also suggested that, given the uncertainty around the definition of “Biodiversity” as it applies to the Panuke Block, there should have been consultations with a wider range of experts before the harvest was approved.

It is clear that improvements in the PTA are required. It is also clear that achieving such improvements requires completing the missing links in the overall planning process, as explained in section 7.1.2. The following section further explains the challenges involved and the changes in priority necessary to achieve this objective.

7.4 Applied Research

Much of the progress in the planning and management of forested lands in Nova Scotia is the result of investment by the Province in applied research and the development of data bases focused on improving our knowledge of forest and habitat ecology. An excellent example is the Forest Ecosystem Classification developed by DNR staff over the past few years. Based on years of extensive and detailed data collection and analysis, it now forms a hierarchical system for classifying forest lands on the basis of ecological characteristics, from a provincial scale to the stand level. As such, it forms the base upon which IRM and PTA assessments are conducted. There is wide acceptance of the importance of the FEC in the planning and management of forested lands in the Province.

As important as FEC is as a planning tool, it is not sufficient. As the scope of assessment has expanded from a forest focus to include biodiversity, there is a need, and an opportunity, to use the FEC data base to develop a similar type of classification system for the assessment of wildlife habitat. This would advance biodiversity planning and management the same way that FEC did for forestry. Most importantly, it could enable necessary determinations between forestry and biodiversity to be based on interpretations of the same ecological data, at both the landscape and stand levels. DNR staff is currently providing limited resources to this area of research, however, given the potential practical importance of the eventual results, it should be given higher priority.

On a more immediate basis, expert opinion needs to be focused on translating the Focal Values listed in the Conceptual Plan into specific conservation measures for application at the operational level. This is the key missing link in the current planning process and the main reason for the concerns that were raised in regard to the South Panuke harvest. This is a complicated task, requiring action at two levels. First, there is a need to move forward with landscape-level planning for each of the 19 Blocks in the Conceptual Plan. This is required to manage the cumulative effects of harvesting operations on biodiversity. Second, the results of the landscape analysis then will have to be interpreted for application of appropriate conservation measures at specific scheduled harvest sites. This entire landscape-to-operational planning initiative needs to be given high priority, both in terms of resources and scheduling.

7.5 Public Engagement

The preparation of the Natural Resources Strategy relied heavily on the values, views and aspirations of the general public. The movement towards more consultation and collaboration

was welcomed and expected to continue as the overall planning process evolved. The Conceptual Plan was intended to provide a rational basis for moving the strategic objectives closer to an operational status. That Plan was largely developed in-house by government experts, with limited opportunity for public input. However, as noted above, given the formal release of the Conceptual Plan, there was an expectation for continued collaboration and dissemination of information to the public. The lack of prior public knowledge regarding the conduct of the clearcut harvest on the South Panuke site, within an Environmentally Sensitive Area, was apparently viewed by some as a breakdown in trust.

There are three avenues to pursue in rebuilding that trust. First, is the timely provision of relevant information. The recent posting of scheduled harvest sites on the DNR website, with arrangements to receive and respond to comments from the public, is recognized as a laudable first step. However, the system needs to be modified to (i) provide more details on the type and size of harvest to be undertaken, i.e., specify the type of partial cut; (ii) specify the conservation measures in place; and (iii) show the landscape context (at the scale of the larger Block within which the site is located). The lack of such details causes confusion. For example, a recent posting on the DNR harvest allocation maps indicates a large non-clearcut harvest in Upper Medway District. Inquiries confirmed that this harvest site (346) comprised 172 hectares. Currently, clearcut harvests on Provincial Crown lands are limited to 50 hectares, either by management plans, provincial guidelines or license agreements. At present there is no limit on the size of a non-clearcut harvest. It is incumbent upon DNR to address this issue and determine a maximum allowable size for non-clearcut harvests; for example, consideration should be given to establishing a 100-hectare limit.

The second focus should be on education. Governments, past and present, have invested heavily in the sustainable management of the Province's forested lands, in terms of expertise, time and financial resources. Although less than perfect, the overall planning and management systems now in place have progressed significantly from the time when wood fibre was the only consideration. Yet, a case can be made that the general public is not aware of the status of existing forest resource planning and management, which limits their background knowledge when interpreting information in the media. There is a need for a well designed and focused public education program, not as a promotional campaign, but rather with the objective of providing factual information as background to inform public understanding of the range of factors that influence decisions regarding forest harvesting in the Province.

A third initiative would be to adopt a mechanism whereby the collaborative approach advocated in both the Natural Resource Strategy and Conceptual Plan can be established on an on-going basis. The intent would be to develop a process in which inter-departmental and public stakeholders have the opportunity to directly influence policies, plans and operational procedures related to forest harvesting on Crown lands. As a first step towards this goal, it was suggested that the Forest Technical Advisory Committee, previously established by DNR, but

now dormant, should be reactivated. It was composed of various stakeholders who provided on-going technical advice and recommendations to DNR on a variety of topics, including implementation of the forest strategy; issues related to forest management; biodiversity, economics and silviculture; and reporting related information to the public and clients. Some stakeholders are also advocating expanding the HCVF assessment process Province-wide. In their opinion, the HCVF approach worked well in the Eastern Region and is more amenable to collaboration than other planning models. Others recognize its value, but point out that it is linked to FSC certification and only includes forests that meet the HCVF requirements, i.e., not all forested land under management reflects the specified value-based criteria.

8.0 INTERIM ARRANGEMENTS

Based on the information presented in this review, there appears to be a disconnect between the procedures currently followed in the planning and management of forested Crown lands and the intent of the new Resources Strategy and Conceptual Plan. The controversy surrounding the South Panuke harvest can be viewed as a harbinger, in terms of public reaction and media coverage, of what can be expected until this gap is rectified. On the positive side, the deficiencies are acknowledged by government and efforts are underway to remedy the situation. However, even with the required political support and the substantial capabilities of the expertise spread among government departments, it will take considerable time to fully bridge the gap. Since forest harvesting will continue, it is important to plan for a transition period, during which time efforts will be made to reduce the risk to areas identified as having significant ecological value, until such time as all components of the revised planning process are in place and functioning properly. It is suggested that the interim arrangements could be structured around the following generalized initiatives, all of which would have to be undertaken simultaneously.

The first approach is to alter the process for allocation of harvest areas. Although the Conceptual Plan involves all of the Western Crown Lands, the most immediate priority is to reduce the risk to the conservation values in Blocks having the Planning Unit designation “Environmentally Sensitive Area”. In scheduling harvesting operations during the transition period, efforts should be made to allocate harvest sites outside of these Blocks, excepting cases where operational-level conservation guidelines, specific to certain Blocks, have been fully developed.

Coincident with harvest reallocation, a working group of appropriate experts should be established charged with refining the definition of Focal Values originally assigned to the 19 Blocks in the Conceptual Plan. As a minimum, membership should include subject matter experts from DNR, Environment Department (specifically Parks and Protected Areas Branch), academia, Mi’kmaq, and the NGO community. The objective of the working group would be to specify the conservation values and provide guidance as to the protective measures that should

be implemented, on a Block-by-Block basis. In this process, first priority should be given to Blocks designated as Environmentally Sensitive Areas, and second to Blocks with the designation of Multiple Value Areas. The working group should be formed as soon as possible and remain functioning until all of the required definitions and conservation measures are in place for both landscape-level planning and operational guidelines.

The third initiative to be undertaken during the transition period is to shift the current planning focus from the stand level to include the landscape level. This will require two major undertakings. First, the work currently underway within DNR on adapting and interpreting the FEC data base with the objective of developing an ecologically-based classification system for assessing wildlife habitat needs to be fast tracked. Second, procedures, analytical programs and protocols will need to be developed to define and monitor the cumulative effects of harvesting activities on biodiversity. The results of the aforementioned work on wildlife habitat assessment should feed into the cumulative effects assessment model. It is assumed that the defined Blocks in the Conceptual Plan will serve as the geographical basis for the cumulative effects assessment, although this may change as additional knowledge is attained.

9.0 CONCLUSION

The MWAC Sub-Committee reviewed the results of the independent audit undertaken by SPS Forestry and Environmental Consulting (Appendix 5). The audit was focused on forest management decisions specifically in the context of the South Panuke harvest and was conducted independent of, although concurrent with, the Sub-Committee review. As such, the audit report can be considered as a stand-alone document, the results of which can be addressed separately from the Sub-Committee review.

Nevertheless, there is a significant degree of coherence between the findings of the Sub-Committee review and the independent audit. For that reason, where appropriate, the principal outcomes of the audit have been incorporated into this concluding section of the review, as well as the following section on Recommendations. In so doing, however, there is no intention to deter DNR from addressing the audit recommendations directly.

Based on the results of the review by the MWAC Sub-committee and the findings of the independent audit, it can be concluded that all pertinent regulations, certification requirements, standards, guidelines and codes of practice, in effect at the time, were followed in the South Panuke forest harvest. However, there are two major qualifications to this conclusion.

First, based on the level of critical public reaction, the harvest in question cannot be considered to have been socially acceptable. For a variety of understandable reasons, segments of the public were angry and frustrated – they were not aware of the plan for the harvest and when

informed, after the fact, the decisions and the outcome were contrary to their expectations. Following the extensive public consultations recently undertaken related to the Provincial Natural Resources Strategy and development of the Conceptual Plan concerning the future use of the Western Crown Lands, the participants were looking for evidence of change to reflect the new strategic objectives. The clearcutting on land that was designated as environmentally sensitive seemed to suggest that the *status quo* was still in effect.

Second, although the harvest operation followed all of the rules, it was caught in a vacuum in the planning process. To use the old adage, it was caught in the wrong place at the wrong time. As explained in this review, the strategic and conceptual components of the planning process are in place, but at the operational level things are still running on the old rules. In hindsight it can be argued that, given the designation of “Environmentally Sensitive Area”, and knowing the status of the planning process, DNR staff should have sought more guidance on conservation measures before proceeding with the harvest. Even so, one can only speculate as to what extent the harvest would have been altered under the new rules, whatever they might be; but a logical assumption is that the outcome would have been somewhat different. On the positive side, the overarching strategic objectives and conceptual plan, which are grounded in ecological principles, seem to have been well received and offer a sound basis for development of progressive management procedures at the operational level. In short, the rules were followed, but the rules have to change.

If there is a silver lining in the South Panuke harvest, it is that it can be considered as a wake-up call. In addition to looking at the specifics surrounding this individual operation, this review has focused on a broader view of the context that will influence future forest management decisions, with the objective of avoiding repeat versions of the South Panuke harvest scenario. To do so will require commitment, cooperation, patience and a concerted effort over considerable time by all concerned. It is hoped that the following recommendations will help in the evolution towards a more balanced and sustainable use of forested lands in Nova Scotia.

10.0 RECOMMENDATIONS

Note: This appendix incorporates the recommendations from both the MWAC Sub-Committee review and the report of the independent auditor.

- (1) Temporarily stop harvesting in Blocks with the Planning Unit designation “Environmentally Sensitive Area” as shown in the planning document *Crown land management: A conceptual plan for Western Nova Scotia*.**

Implementation

This restriction can be lifted over time for Blocks in which specific conservation measures have been developed that are applicable at the stand level, as per the outcomes of Recommendations 4 and 5 below.

On a more immediate basis, for those locations where harvest operations have already been approved, there should be input from the staff of DNR Wildlife/Biodiversity Division and Environment Nova Scotia, Parks and Protected Areas Branch. This will allow impacts and mitigation measures to be identified which may not have been previously considered during the harvest site PTA process and approval.

(2) Establish priorities for future harvest allocations.

Implementation

Give first priority for releasing harvest areas in Blocks that have the Planning Unit designation “Resource Management”. Give the second priority for Blocks that have the Planning Unit designation “Multiple Values”. Although all conservation measures currently in place should be maintained, preference should be given to the release of harvest areas in Blocks for which specific conservation measures have been developed that are applicable for planning and management at the stand level, as such Blocks become available. Proper consideration should also be given to any previously identified old growth stands, high conservation value forest lands, and endangered species.

(3) Initiate a concerted effort to identify and allocate an increasing percentage of non-clearcut harvest sites.

Implementation

In 2013 it was reported that 89% of harvesting on Crown land in the Province was by clearcutting, well short of the target of 50% by 2016. However, at the time of this review, it was apparent that the majority of identified harvest prescriptions still called for clearcuts. Plans have to be developed and implemented to rectify this situation as soon as possible. Any such efforts need to take account of the following challenges and opportunities:

- Most licensees and their contractors have invested in equipment that is optimal for clearcutting, but which may not be suitable for other harvest prescriptions. Therefore, in order to justify significant investment in new machinery, it is important that there be a longer-term guarantee of non-clearcut harvest opportunities. A workable compromise in the short term may be to provide some forest prescriptions such as strip harvesting or the so-called “string of pearls” or “eggs” configurations.
- Currently clearcut harvests on Provincial Crown lands are limited to 50 hectares, either by management plans, provincial guidelines or license agreements. At present there is no limit on the size of a non-clearcut harvest. It is incumbent upon DNR to address this issue and determine a maximum allowable size for non-clearcut harvests; for example, consideration be given to establishing a 100-hectare limit.
- In order to maintain a critical supply of wood, licensees harvesting on Crown land generally operate on a three-month planning horizon, i.e., the time between starting sequential harvesting operations. Therefore, a critical component of the move towards more non-clearcut harvest options is that DNR develops and maintains, as soon as possible, an efficient and reliable process for allocating harvest sites that accommodates these operational realities.

- The results of the PTA have a major influence on the designation of the harvest prescription. It should be modified in a manner that encourages the use of harvest prescriptions other than clearcut. For example, require the PTA to provide the rationale for which harvest prescription offers the best balance between recommended conservation measures and the forest-related attributes of the harvest site.
- Revisit the technical definition of a clearcut: “A clearcut is a forest harvest where less than 60% of the area is sufficiently occupied with trees taller than 1.3 metres”. A harvested forest parcel covered in trees of 1.4 metres still appears to the public to be a clearcut. Consider a height taller than 5 metres as a potential change to the definition.

(4) Establish a working group to develop criteria to define and describe stand-level conservation measures for the sustainable management of biodiversity and wildlife habitat, to the extent that current knowledge, data and information permit.

Implementation

As a minimum, the working group should include subject matter experts from DNR, the Environment Department (specifically Parks and Protected Areas Branch), academia, Mi'kmaw, the NGO community, plus other expertise as required. The first priority should be for Blocks that have the Planning Unit designation “Environmentally Sensitive Area”. The second priority should be for other Blocks under harvesting pressure for economic or practical reasons, e.g., existing road access. The working group should be maintained until the required conservation measures are available for all Blocks in the Conceptual Plan. Developments related to Recommendation 5 will influence progress in this initiative.

(5) Give priority to applied research on landscape-level planning and management in order to address cumulative impacts, particularly related to biodiversity, wildlife habitat and species at risk.

Implementation

The objective is to provide a framework and decision protocols to guide the development of operational-level conservation measures that can be applied for each Block identified in the Conceptual Plan. In particular, fast-track the work currently underway within DNR on adapting and interpreting the FEC with the objective of developing an ecologically-based classification system for assessing wildlife habitat.

(6) Modify Pre-Treatment Assessment to reflect lessons learned from the South Panuke harvest.

Implementation

First, the management requirements currently in place for PTA should continue to be applied, with changes and additions to reflect the new specific conservation measures as they become available from the working group and the research on landscape analysis referenced above. Second, notwithstanding the general

application of existing requirements, the following changes need to be made to the PTA in order to address the high-profile concerns expressed by the public and experts regarding the South Panuke harvest:

- Expand the 20-metre buffer zone adjacent to watercourses and Wilderness Areas to 30 metres.
- Consider establishing a buffer of five metres along water courses 25-50 cm wide, in which trees less than five metres in height will be retained.
- Prevent clearcut harvesting within 300 metres of a designated Wilderness Area, or an area for which Wilderness Area designation is pending.
- Give consideration to changing the Endangered Mainland Moose Special Management Practices to not permit harvesting within “Moose Buffers”.
- Give priority to completion of the *Endangered Mainland Moose Action Plan* and incorporate the resulting conservation requirements into the PTA process.
- Conserve all mature hemlock stands exceeding three hectares until research determines their value as critical moose habitat for protection from summer heat and winter snow.

(7) Clarify and standardize the decision-making process for management of forest harvesting, from policy to operations.

Implementation

The decision process involves the consolidation and interpretation of information from a complex web of sources. Some of the inputs are clearly defined, while others can be subject to interpretation. Based on interviews during this review, it would be helpful to have the decision process presented in a manner that clarifies the hierarchy of steps involved and how the various policies, standards, guidelines, etc. interact. If presented in a simplified form, it could be used to inform the general public of forest management practices in the Province. Also, the roles and responsibilities of government staff and the private sector need to be clearly defined.

It is also recommended that DNR take steps to standardize policy and procedures across all three Divisions, particularly in regard to interpretation of requirements for IRM and PTA. This will involve the development of a standardized manual containing all policies and procedures pertaining to forest harvesting in the Province, including definitions of all possible prescriptions. Furthermore, a standardized checklist should be developed and used in conjunction with the PTA to provide the following information:

- Names, affiliations, responsibilities and input of all persons involved in the PTA.
- The dates at which decisions were made at various stages, from commencement to approval.
- Special additional conservation requirements identified.
- Experts from DNR Wildlife/Biodiversity Division and the Environment Department (specifically Parks and Protected Areas Branch) should be included on the checklist until the objectives of Recommendations 4 and 5 are achieved.

During the review, it was evident that discussion was underway concerning the possibility that licensees would be given responsibility for undertaking post-harvest audits. This procedural change should not occur in order to avoid a perceived conflict of interest.

(8) Obtain FSC certification for all Provincial Crown lands in mainland Nova Scotia.

Implementation

Most, if not all, Crown forest lands in Cape Breton are currently FSC certified, as are the Medway District lands previously purchased from Bowater Mersey. The FSC elevated level of environmental and biodiversity management, beyond SFI certification requirements, will assure Nova Scotians that the Province is living up to its prior statement: *“The Province of Nova Scotia is committed to sustainable forest management and endorses both SFI Principles for Sustainable Forestry and the FSC Principles and Criteria as well as its standards of the Maritime Forest Region.”*

Given the considerable amount of information that exists for the Rossignol/St. Margarets Bay/North Mountain Districts previously conveyed by Bowater Mersey, the focus should be on gaining FSC certification for these lands first.

(9) Place more emphasis on public engagement in terms of information, education and collaboration.

Implementation

First, the maps and information on the DNR website referring to scheduled harvests need to be revised to provide more detail relevant to the harvest to be undertaken, i.e., size, prescription, the specific Block, Planning Unit(s) and Focal Values involved. When available, information on the landscape context should also be included, such as a map showing harvests over the past 10 years, to indicate cumulative effects. Second, the Forest Technical Advisory Committee should be reactivated as an ongoing forum for representatives of various stakeholder groups to provide technical advice and recommendations to DNR on a variety of topics related to forest planning and management. Third, a public education program should be undertaken with the objective of providing factual information as background to inform public understanding of the range of factors that influence decisions regarding forest harvesting in the Province.

(10) Revisit these recommendations within six months to advise the public on the steps that have been taken, and at subsequent twelve-month intervals to determine progress in implementation and to rectify any roadblocks that may stand in the way of achieving the stated objectives.

Appendix 1 Terms of reference for MWAC review

Review the recent harvest by Ledwidge Lumber on Crown land near Panuke Lake:

1. Review the planning context for that harvesting operation. What requirements needed to be taken into account, including legal requirements and any requirements for the “environmentally sensitive” planning unit as outlined in the document “Crown Land Management: A conceptual plan for western Nova Scotia”? This should include discussions with appropriate DNR staff who led the work behind the “environmentally sensitive” planning unit in the conceptual plan.
2. Review the stand level information including the pre-treatment assessment and harvest prescription. This should include discussions with appropriate DNR staff and Ledwidge Lumber staff.
3. Inspect the actual harvest site to understand how harvesting was conducted with respect to meeting the planning requirements.
4. Review the major allegations that have been made against this specific harvest. This should include discussions with Ecology Action Centre staff who made the initial allegations.
5. Provide a report of your findings on items 1 through 4 with any recommendations for change and opportunities for improvement.

Appendix 2 DNR press release regarding MWAC review

NATURAL RESOURCES--Panuke Lake Harvest Review Panel Members Named

Today, Oct. 31, government asked the Mersey Woodlands Advisory Committee to review a recent forest harvest near Lake Panuke, Hants Co.

The advisory committee represents interest groups such as forest contractors, fish and game associations, municipalities, paddlers, conservationists, off-highway vehicle operators and other outdoor enthusiasts.

In late August, a mill was working near Lake Panuke with a licence from the Natural Resources Department. Special forestry practices were required because the land is a travel corridor for wildlife, including the mainland moose. Since then, some environmental groups contend the land was improperly harvested.

"It's important to ensure that best practices are being followed so I've asked for this review," said Natural Resources Minister Zach Churchill. "We want to ensure that Nova Scotians have a high level of trust and understanding of how the government manages its lands."

Mersey Woodlands Advisory Committee chair Gordon Beanlands, member David Dagley and an independent professional forestry auditor will advise whether harvest practices used comply with provincial legislation, regulation and policies.

Mr. Beanlands has a doctorate in Ecology and was director of Environment Canada's lands directorate and Dalhousie University's school for resource and environmental studies. He was senior vice-president, international, for Jacques Whitford Environment Ltd. and has authored several academic papers and industry guidelines used around the world.

David Dagley is the secretary of the Queens County Fish and Game Association and an affiliate director with the Nova Scotia Federation of Anglers and Hunters. He is a member of the Tobeatic Advisory Group and helped develop a management plan for the wilderness area. He is also a director of the UNESCO Southwest Nova Biosphere Reserve Association.

The committee is expected to report to government by the end of November.

Appendix 3 Summaries of reference documents (arranged in alphabetical order)

Note: These summaries are provided to give readers of this report an overview of the main features of the respective documents, without the need to access official copies. The summaries are not intended to be an official interpretation of any legislation, regulation, policy, guideline or document. Preference is given to aspects that are particularly relevant to this review. Readers are advised to refer to the official text for more detailed information.

1. A Woodland Owner's Guide to Forest Ecosystem Classification in Nova Scotia, 2013 (12 pages)

This is a basic guide and overview of the FEC system, with informative pictures of various forest and woodland types. It explains in layman's terms the general steps to be followed during the Pre-Treatment Assessment process. It explains the difference between landscape planning and management decisions at the stand level. It shows the reader how site-specific information on vegetation, soils and ecosites can help in making choices as to the appropriate forest management decisions. The Guide also explains how the classification system can be interpreted with respect to the identification and conservation of wildlife habitat, which is particularly important when species at risk, or species of special concern, may be present. The information is concise and well presented.

2. Crown Lands Act, 1989 (16 pages)

The Act principally provides for administration, utilization, protection and management of Crown lands by the Minister of Natural Resources. It provides for the utilization of Crown lands by governing forest management and harvesting, leasing and licensing, integration of wildlife and recreation in forest management planning, as well as their administration and management. With respect to Crown Lands, it includes responsibilities related to access, travel, habitats for the maintenance and protection of wildlife, harvesting and the renewal of timber resources, as well as forest recreation. The Minister may authorize the purchase or sale of Crown Land and shall keep on file records and plans showing the location of Crown lands. The Minister may construct, maintain or acquire any forest access road that is considered necessary for the administration of the Act, and may restrict access to such roads. Timber and other resources on Crown lands may be disposed of by means of a permit, license, or forest utilization agreement.

3. Crown Land Management - A Conceptual Plan for Western Nova Scotia, 2014 (14 pages)

This document builds on the results of an extensive public consultation following the government purchase of the former Bowater lands. It also reflects the principles in the previously-released Natural Resources Strategy. The focus is on managing the use of forested Crown land by balancing economic, environmental and social values. It is a high-level planning document, not designed to provide detailed guidance, although there are clear references that more operational plans will be forthcoming. In particular, it lacks clear guidance on how biodiversity will be managed on a sustainable basis.

A total of 19 Blocks were identified on a map, each characterized as reflecting one or more of the following Planning Units: Parks or other Protected Areas, Resource Management Area, Multiple Value Area, Environmentally Sensitive Area, and Mi'kmaw Management Area. In addition, each Block was accorded a number of Focal Values, e.g.,

Forestry, Biodiversity, Recreation, Energy, etc. These designations do not specify what would be acceptable forestry practices in the Block, the type of harvest prescription, or what restrictions should be in place to reflect biodiversity concerns, or other considerations.

In the conclusion to the report, it is stated: “*Rather than starting at the end, and carving land into individual plots each for its own purposes, the government is starting at the beginning: looking at the big picture and basing initial land use designation on key values.*” However, the subsequent planning processes recommended in this document do not appear to have yet been undertaken.

4. Endangered Mainland Moose Action Plan, 2014 (26 pages)

Developing criteria to manage endangered mainland moose habitat is critical to avoid forestry-habitat conflicts. This Plan updates progress on actions proposed by the Moose Recovery Team, such as identifying important summer and winter habitat. The following primary tasks are identified, along with required actions and projected budgets:

- Provide reliable data on distribution, abundance and population structure of mainland moose.
- Develop decision tools re forest planning/management at multiple spatial scales for moose habitat requirements
- Undertake studies on threats and limiting factors to better understand causes of moose population decline.
- Provide management strategies leading to the recovery of the moose population.
- Raise public awareness, build partnerships and encourage stewardship of mainland moose in Nova Scotia.

The priority actions identified are:

- Population & distribution: Infrared aerial surveys, continued DNA analysis, evaluate pellet count information.
- Habitat connectivity: develop analytical framework for patch- and landscape-level habitat suitability; assess spatial and temporal habitat selection using GPS telemetry collars in the four moose concentration areas.
- Threats: 1) continue examining health issues of dead/sick moose, calf mortality impacts, and effects of roads; 2) address poaching, vehicle mortalities, monitor compliance with moose SMP; 3) support connectivity across the Nova Scotia and New Brunswick border, and build partnerships to support moose recovery with Mi'kmaq.

5. Endangered Species Act, 1998 (11 pages)

The purpose of this Act is to provide for the protection, designation, recovery and other relevant aspects of conservation of species at risk in the Province, including habitat protection. Provision exists for the following:

- preparation of scientific status reports on species at risk
- activities for the recovery of species at risk in the Province
- activities including education and research to prevent species from becoming at risk in the Province
- acquisition of land for the maintenance and restoration of species at risk and species-at-risk habitats

The Act allows for establishing a Species-at-risk Working Group. The Group shall (i) provide the Minister with a list of the species at risk in the Province, including those species listed nationally as species at risk; (ii) advise the Minister annually of any addition or deletion of a species to or from the list, or of any changes in the status of a listed species; (iii) provide the Minister with a written summary of the rationale for changes to the list; (iv) make recommendations to the Minister regarding recovery plans; and (v) provide advice respecting the conservation and management of species at risk, and their habitats. The Act also places limitations upon damage, destruction or possession of an endangered species without proper authorization. The Minister may appoint a recovery team to prepare a recovery plan for the species, and may designate specific physical areas or landforms of the Province as core habitat.

6. Environment Act, 1994-95 (97 pages)

This legislation promotes and encourages the protection, enhancement and prudent use of the natural environment. It has a broad mandate in regard to regulating, inspecting and enforcing various activities that could cause environmental impacts. Of particular importance is one of the goals: “to maintain the principle of ecological value, ensuring the maintenance of and restoration of essential ecological processes and the preservation and prevention of loss of biological diversity”. As part of the context for this review of the South Panuke harvest, it is important to understand the role of the Department of Environment, particularly the Parks and Protected Areas Branch.

The Environmental Goals and Sustainable Prosperity Act, passed in 2007, requires the creation of a sustainable parks system, and the legal protection of at least 12 per cent of Nova Scotia’s total landmass by 2015. Coincidentally, the Natural Resources Strategy released in 2011 lays out five goals for provincial parks: shared stewardship, far-sighted planning, protection, education, and recreation. In 2103, the Ministers of the Department of Natural Resources and Environment agreed to cooperate in achieving their respective and mutually supportive goals by publishing the report *Our Parks and Protected Areas: A Plan for Nova Scotia*. Thus, the Department of Environment, Parks and Protected Areas Branch, appears to be empowered under the Environment Act to share with DNR some of the responsibility for preservation and enhancement of biodiversity within the Province.

7. Forests Act, 1989 (17 pages)

Among other objectives, the primary purposes of the Act include: (i) developing a healthier, more productive forest to yield increased volumes of high quality products; (ii) maintaining or enhancing wildlife and wildlife habitats, water quality, recreational opportunities, and associated forest resources; and (iii) doubling forest production by year 2025.

The Act provides Ministerial direction for forestry programs. This is to be accomplished by providing professional and technical assistance to private landowners and industry, supporting effective management of forest lands, prevention and management of risks such as fire, insects and disease, and conducting forest research. It speaks to the objective of sustainable harvesting, while considering the use of forest products for best economic purposes. Also addressed are wildlife conservation requirements, potential ecological impacts, outdoor recreation, and harvest prescriptions. The Act provides for additional research related to ecological land classifications, reforestation, harvest prescriptions, environmental impacts of forestry operations, as well as the human/wildlife interface. The Act allows for the enactment of a wide range of regulations.

8. Forest Ecosystem Classification for Nova Scotia, 2013 (452 pages)

In 2003 DNR published the Ecological Land Classification (ELC) for Nova Scotia, which maps the terrestrial ecosystems of the Province. The Forest Ecosystem Classification (FEC) is linked to the ELC and is a continuation of a hierarchical planning system that involves a cascading series of ecozones, ecoregions, ecodistricts, ecoregions and ecosites – the last being the detailed level where the ELC and FEC systems converge. The FEC describes the procedures required on Crown lands to assess vegetation types, soil types, and ecosites. It is the result of a 10-year research project that involved data collection from over 1,500 sample plots throughout the Province, to systematically identify and describe stand-level forest ecosystems.

The highest planning level in the FEC provides a framework for landscape analysis and planning, which can then be ecologically linked to planning and management at the operational. At this lower level in the hierarchical planning system, the ecological data provide the basis for undertaking a Pre-Treatment Assessment, from which is derived the harvest prescription at the stand level. Classifying forest ecosystems based on vegetation, soil and site attributes at the stand level allows for the development of management guidelines based on the inherent ecological characteristics of a site, thereby leading to more predictable and sustainable forest management.

The combination ELC/FEC provides a solid scientific basis for decision-making at various levels in the overall planning process. In particular, it helps to improve consistency and transparency in the PTA process. However, further refinement of the process is possible with additional research.

9. Forest Research Report, Tolerant Softwood & Mixedwood Management Guide, 2011 (23 pages)

This document provides guidance in the form of decision keys that identify the conditions where selection management is appropriate for softwood and mixedwood stands, along with even-aged prescriptions. The keys were developed for shade tolerant softwood and mixedwood stands, which in Nova Scotia includes vegetation types found in the Mixedwood and Spruce Hemlock Forest Groups 1 as defined in the FEC.

The Guide consists of four separate keys. Users start at the Main key and work their way through a series of questions concerning current stand conditions to arrive at a recommended prescription. Various forest classifications are identified, and are assigned management keys in conjunction with FEC classifications. The process considers topography, stand type and soil classification to determine "exposure", i.e., windthrow hazard rating.

To implement the tolerant softwood and mixedwood management guide, information must be collected on the stands of interest. The required data are collected during the PTA process (details of which are presented in Appendix 5 of this report). The results of the PTA, when linked with FEC and the Management Guide, determine the appropriate prescription for the stand in question. When prescribing partial harvesting systems in Nova Scotia, the potential for blowdown of residual trees is of concern. As a result, this guide incorporates an assessment of windthrow hazard as an important consideration when prescribing treatments. In the Guide, partial harvests are not recommended in high windthrow hazard situations, but are recommended in low hazard conditions. The decision to partial harvest in medium hazard situations comes with increased risk of elevated harvesting cost and revenue loss due to windthrow.

10. Forest Stewardship Council Certification Standards for the Maritime Region, 2008 (96 pages)

The Forest Stewardship Council (FSC) is a voluntary international certification and labeling system established in 1993 dedicated to promoting responsible forest management. FSC Principles & Criteria define the essential rules of environmentally appropriate, socially beneficial and economically viable forest management. Fibre from certified forests is tracked all the way to the consumer through the FSC Chain of Custody system. FSC-certified wood, paper and other forest products are sold with the FSC label by certified companies. The North American and global marketplace recognize FSC as a credible and effective forest certification system.

The FSC requires that participating forestry organizations must have their forest management planning and practices independently evaluated against FSC's Forest Management Standards, all of which are based on FSC's International Principles and Criteria. At a regional level, indicators and verifiers are further developed in order to reflect the unique environmental and social requirements of the region in question. In Canada, there are three regional standards: Boreal Standard, British Columbia Standard and Maritimes Standard. Nova Scotia is under the Maritimes Standard, which specifies the process requirements to be followed.

The FSC forest certification system is supported by major international, national and local Aboriginal, Environmental, and Social groups. Certification requires consultation with local Aboriginal Peoples, with the intention of protecting their rights, and protection of rare and endangered forests and wildlife. In addition, all forests that are undergoing FSC certification must be subject to High Conservation Value Forest (HCVF) assessment to determine if they contain any areas of high conservation value; and if these do exist, action must be taken to protect and enhance such values.

The FSC Maritimes Standard requires that areas of special ecological, medicinal or cultural value shall be clearly marked on maps with buffer areas and management options described as appropriate to the scale and sensitivity of the valued feature identified. The Standards also imply that forests that lie within, adjacent to, or contain a designated or proposed conservation area, be managed in a manner that is consistent with the conservation intent.

11. Forest Sustainability Regulations (19 pages)

New forestry Regulations were created during the spring of 2000, under the Forests Act, to require certain forestry companies, based on their annual volume of acquired wood, to undertake annual silviculture work on private land. Companies can meet the requirements of these regulations by carrying out a silviculture program on private lands, by

contributing money to a special fund, or some combination of both. The Regulations cover all privately owned woodlands and may result in an increase in silviculture funding. DNR continues to have the responsibility to ensure that Provincial Crown lands are properly managed.

Registered Buyers are forestry companies, including businesses and individuals who: (i) own or operate facilities that process primary forest products, (ii) import or export primary forest products to/from Nova Scotia, (iii) acquire more than 1,000 cubic metres per year of firewood for sale, or (iv) acquire forest products to produce energy. Registered Buyers who acquire more than 5,000 cubic meters solid wood per year from private lands are also required to:

- submit a wood acquisition plan (WAP) and year-end report to NSDNR by February 28 each year
- conduct a silviculture program or contribute to the Sustainable Forestry Fund in lieu of a program

The Regulations require Plans, Proposals and Reports to be filed at various times, and set silviculture fees, program criteria, and approval processes. Softwood and hardwood silviculture programs are included, as well as a technical standard to determine the proper prescription application.

12. Forest/Wildlife Guidelines and Standards for Nova Scotia, no date (19 pages)

These guidelines are designed to maintain or enhance fish and wildlife habitats in the forest environment. They are required to be followed on Crown lands, and are to be incorporated into forest management programs for private lands. Forest diversity is to be maintained to support wildlife by requiring mixed habitat to normally provide 65% softwood and 35% hardwood types, of different ages and size. A mixture of open and forested areas should be maintained at all stages of succession, from regeneration to mature stands.

Clearcuts are limited to 50 hectares (125 acres), and smaller size harvests are recommended. Three to eight percent of the management area should contain old growth trees. It is advisable to maintain edge habitat comprised of different types and sizes of vegetation. It is recommended to maintain an interconnected network of wildlife corridors with a minimum width of 50 metres. Clearcutting adjacent to a previous harvest area should not occur until regeneration reaches 2 meters in height in the earlier harvest area. Irregular boundaries and limiting corridor harvests to 40% of the merchantable volume are recommended.

Guidelines for special management zones include 20 metre buffer zones adjacent to water courses. Additional width is required on slopes, and machine exclusion distances are stated. Cavity trees suitable for nesting, and dead trees, should be left where possible. There is a provision for leaving 10 single legacy trees per hectare, or in clumps; birch and maple are the best species to leave as legacy trees, however oak trees also provide acorns. Other guidelines relate to leaving softwood stands as corridors for winter deer movement, tall dead trees as perch sites for hawks and owls, as well as protecting known nesting sites. Of particular interest is on page 18 where it states “no forest management activities should occur in or near ecological reserves or candidate special places on Crown lands”.

13. Guide to Forest Management Approaches for Land Adjacent to Protected Areas, 2002 (3 pages)

This Guide, prepared during the completion of the Tobeatic Wilderness Area Management Plan, addresses concerns related to the potential impact on wilderness values arising from negative impacts of developments on lands adjacent to Wilderness Areas. While these voluntary guidelines have not been widely shared with all forestry operators and land owners, a number of the recommended management practices are stated in the Rossignol/St. Margarets Bay/North Mountain Management Plan. Discussions between DNR and Nova Scotia Environment are pending, to further formalize this document and clarify the meaning of “adjacent lands”, but that process has not yet started.

Protected Areas and the surrounding “working forest” landscape are closely linked, both ecologically and for outdoor recreation. The *Wilderness Areas Protection Act* recognizes this by giving Nova Scotia Environment responsibility for encouraging the voluntary planning and management of land adjoining or affecting Provincial Wilderness Areas, in a manner consistent with the purpose of the Act. The Guide suggests that a broader range of management

applications should be considered where working forest lands are known to have “special values” which could affect a protected area. It would be desirable to have these concerns addressed as part of the PTA protocols for all Crown Lands.

The Guide outlines four objectives and preferred forest management approaches to support forest planning and management decisions that will help integrate protected areas into the broader landscape: 1) retain or restore natural climax forest species competition; 2) reduce edge contrast between working forest and protected area; 3) maximize protection of watercourses; 4) plan road network to minimize undesirable effects on nearby protected areas.

14. High Conservation Value Forest Assessment Port Hawkesbury Forest Management Area, 2009

As part of obtaining FSC certification, beginning in 2007 an HCVF assessment was conducted on NewPage Port Hawkesbury (NPPH) lands (24,308 ha.) and Crown lands (607,300 ha.) in DNR’s Eastern Region. It was completed under a License Management Agreement to NPPH. The company has since come under new ownership and operates as Port Hawkesbury Paper (PHP), however, the commitment to the HCVF assessment remains in place.

The underlying values in an HCVF assessment include forests areas:

- containing globally, regionally, or nationally significant concentrations of biodiversity values and/or large landscape-level forests where populations of most (if not all) naturally occurring species exist in the natural patterns of distribution and abundance.
- that are in or contain rare, threatened, or endangered eco-systems
- that provide basic services of nature in critical situations (e.g., watershed, protection, erosion control)
- fundamental to meeting basic needs of local communities and/or of critical cultural, ecological, economic, or religious significance (FSC Maritime Standard)

This HCVF Assessment has identified areas where the above values exist. Approximately 85% of all PHP lands are managed for one or more such values, and special harvest protocols have been established in areas relative to those values. Completion of this HCVF assessment required additional research and data collection related to biodiversity.

15. Integrated Resource Management, 2009 (11 pages)

Integrated Resource Management (IRM) is a systematic ecosystem-based planning and decision-making process that has been developed by DNR over the past few years. The underlying general principles relate to (i) environmental responsibility (ii) inclusiveness, (iii) maintenance of biodiversity, (iv) multiple use, (v) optimization of social and economic benefits of resource use, and (vi) sustainability. IRM considers the varied interests and issues related to the use of Crown lands, and attempts to balance the many concerns with Provincial guidelines so that long term sustainable benefits are optimized and conflict among uses is minimized.

At the heart of the system is the Scotia Nova Database of Significant Wildlife Habitats and Species (NSDSWHS), including a Province-wide forest cover map that shows sensitive habitats that might be jeopardized by uncoordinated development activities. Observation records on endangered species, species of concern, and species of special interest are geo-referenced and the habitat is precisely located on forest cover maps. This data is later entered into a geographic information system (GIS) where they can be analyzed and integrated with other information on the Province’s natural landscapes, land ownership, forests, water resources, and wildlife. The IRM planning system also incorporates data on ecological land classification, the natural disturbance regime and potential climax forest interpretations, and the forest ecosystem classification. All of this information is readily available for consideration in decisions regarding use of a particular land parcel, such as a scheduled harvest block.

The IRM process is in a continuous state of improvement, as updated information is added as it becomes available. It rests on the ability to interrogate a common pool of baseline information, which offers a more credible and efficient means of balancing forestry and biodiversity interests. It has been widely adopted across Canada and is a critical component of modern-day planning for sustainable forestry.

16. License Agreement for Panuke harvest block, 2014 (49 pages)

The License Agreement with Ledwidge Lumber Company to allow harvest of the Panuke site was similar to authorizations granted to other contractors conducting forest harvesting operations on Crown land. Prior to April 1, 2014 Ledwidge Lumber operated under a Letter of Authority issued by DNR in 2013, as an extension of their previous Forest Utilization License Agreement. The License Agreement stipulated that the requirements of the Nova Scotia Code of Forest Practice, the FEC and PTA were to be followed. The firewood needs of homeowners were also addressed, as well as applicable stumpage rates.

Ledwidge Lumber is mainly a stud mill operation, using smaller-diameter trees to produce lumber ranging in dimensions from 1"x3" to 2"x6"; as such, harvesting sites would be chosen to cater to that type of product.

Effective April 1, 2014, a timber license was issued by DNR to Ledwidge Lumber for a six-month term, ending September 30, 2014. An extension was provided by DNR to cover the period expiring December 31, 2014. Harvest site numbers and locations were based on past allocations.

Other Provincial guidelines and regulations became conditions of the license. In addition, if DNR advised of a need, potential firewood could be diverted from other industrial markets to meet the residential demand. Harvest sites and plans were required to be approved by DNR staff before the commencement of harvesting operations. A silviculture program formed part of the license, including road access and maintenance.

17. Mersey Woodlands Forestry Policy, 2013 (1 page)

With reference to management of the previously-owned Mersey Woodlands, this is a commitment by the Province to:

- comply with environmental legislation, regulations and associated policies
- develop forest management plans that recognize timber and non-timber values, including conservation of biodiversity and ecological services
- seek a balance that recognizes and supports public access for recreational purposes
- seek input from a wide range of stakeholders
- consult and collaborate with the Mi'kmaw
- direct and support research
- develop and implement Special Management Practices and Recovery Plans for at-risk forest values
- ensure through training that employees and contractors understand the environmental impacts of their jobs

18. Nova Scotia Code of Forest Practice, Guidelines for Crown Land, 2008 (34 pages)

The Code of Forest Practice is a work under progress by DNR and is being developed three levels:

- *A Framework for the Implementation of Sustainable Forest Management*, which has been published as Report FOR 2004-8 by the Government of Nova Scotia
- Four Guidebooks
- A series of technical manuals which will include detailed requirements for specific activities

When completed the Code of Practice will provide principles, guidelines and technical manuals designed to provide general direction and practical guidance for the implementation of sustainable forest management on Crown lands. This document provides the four Guidebooks, as part of the overall Code. The direction provided by the guidelines is mandatory on Crown lands that are administered by DNR, and will be implemented in the planning and design process for the development of Integrated Resource Management (IRM) plans for each of the Ecodistricts in the Province. The guidelines serve to inform licensees and contractors of the required practices expected of them, and they become legal requirements as stated in the License Agreements with industry. While the principles are applicable to sustainability on a broad ecosystem level, they can also be implemented at the landscape or stand level. Private landowners are also encouraged to follow the guidelines on their own properties.

Guidebooks are presented for Forest Ecosystems, Forest products, Wildlife Habitat, and Integrated Forest Use. Within each Guidebook, code principles and guidelines are presented under various sub-headings reflecting specific aspects of planning and management. For all sub-headings within each Guidebook, specific guidelines are given for implementation at the broad planning level, as well as the operational level. Under a broad definition of biodiversity, economic and social goals, the intention is to achieve a balance among the need for a sustainable wood supply; the restoration and maintenance of natural composition and structure to support wildlife; and cultural, recreational, tourism, and environmental interests.

Manuals and technical references are also being developed to assist the forest owner/operator to implement forest practices that meet the requirements of these guidelines. Some examples include: Forest Ecosystem Classification (FEC); Tolerant Softwood & Mixedwood Management Guide; and Tolerant Hardwood Management Guide.

19. Nova Scotia's Old Forest Policy, 2012 (17 pages)

This policy lays out objectives and procedures for the management of old growth forest. The goal is to conserve remaining old growth forests on public land, and ensure that a network of the best old growth restoration opportunities is established across ecological landscapes. It provides guidelines for selecting and evaluating old forests and establishes procedures to ensure that old forest values receive the highest priority during IRM decisions affecting the identified areas. Definitions of forest maturity are provided, as well as an old forest score sheet to quantify conservation and restoration potential. The objective is to identify old growth and the best old forest restoration opportunities on at least eight percent of publicly owned forest land in each of the Province's 38 forested ecodistricts.

Of particular note are the following two management guidelines:

- *Management activities in and around old forests should consider the integrity of old forest, and should be designed to maintain old forest score and sustain interior forest conditions. For example, the use of buffers and modified harvesting for sites adjacent to old forest.*
- *Ecological connectivity among the network of old forest patches should be fostered using ecosystem based landscape planning approaches, including links to wildlife corridors and special management zones, as well as provision of mature features within managed forests.*

These management considerations place importance on non-clearcut harvesting to be the preferred prescription for harvest near old growth forests, and further exemplify the necessity of landscape planning.

20. Pre-Treatment Assessment Requirements, 2013 (17 pages)

Pre-Treatment Assessment (PTA) is one of the key guidelines in the Code of Forest Practice and is a requirement for all decisions related to silviculture and harvesting on Crown lands. It is an important part of ecosystem-based management, and specifically serves as a basis for stand-level management plans. PTA is a detailed process that DNR staff, licensees and contractors use to take account of numerous requirements that go into the determination of

a harvest prescription for a particular site on Crown land. It is used in conjunction with the FEC and involves collecting specific data on vegetation type, soil type, ecosite, wind exposure, windthrow hazard, stand characteristics (basal area, species, tree diameter, tree height and quality), existing regeneration, and special wildlife and geological features. From these data a harvest prescription can be determined either by manually referring to and interpreting a set of printed keys, or by the use of a computer program that can be downloaded from the DNR website.

The PTA is a critical step in the decision-making process relating to harvesting at the operational level. It is a consistent and efficient means for prescribing appropriate treatments, specific to stand attributes, and avoid a “one-size fits all” system of forest management. (Note: more details on data collected in a PTA are given in Appendix 5).

21. Recovery Plan for Moose in Mainland Nova Scotia, 2007 (38 pages)

This DNR report, compiled with the assistance of the Nova Scotia Mainland Moose Recovery Team, defines the recovery goal, objectives, strategies and actions that are deemed necessary to protect, conserve and ensure the recovery of the mainland moose population in Nova Scotia. The moose in Cape Breton, which were introduced from Alberta in the 1940s, are a separate and distinct population, and are not endangered.

The Recovery Plan provides substantial background data on mainland moose. Research has shown that during the summer, in addition to areas providing browse, moose require a mature conifer forest that offers a tight canopy to escape high daily temperatures. During the winter, similar conifer stands provide habitat required to survive cold temperatures, snow storms and wind. Connectivity between these habitats and known moose populations is critical. Roads are known to have a negative impact on moose populations.

Key objectives in the Recovery Plan are to maintain and enhance the current mainland population, mitigate threats, initiate research, and maintain and enhance habitat. Strategies are to be developed to reduce poaching, decrease preventable mortality, determine the feasibility of New Brunswick moose being translocated to Nova Scotia, and review and adapt forest management practices as necessary. Special moose management practices were released in 2012.

The Recovery Plan is based upon the best knowledge existing in 2007 and implementation was indicated to take place in whole, or in part, by 2012. Although specifics of moose distribution were not available when the Recovery Plan was issued in 2007, moose concentration areas have since been mapped. It should be noted that no Core Moose Habitat has been designated at this point. It also appears that there has not been sufficient monitoring of known moose populations, partly due to budget constraints and helicopter availability. The special moose management practices established in 2012 are an important tool to support moose recovery, however, it is apparent that more research is required to mitigate the potential impacts of forestry practices. The *Endangered Mainland Moose Action Plan*, presently being developed, will hopefully address these important issues, and provide the basis for ensuring the survival of the mainland moose population.

22. Rossignol, St. Margarets Bay, North Mountain District Management Plan, 2014 (87 pages)

This Plan refers to several of the forest management districts formerly owned and designated by Bowater Mersey, which became Crown lands following purchase by the Province in 2012. The Province maintained the SFI certification on these districts as well as the FSC certification on the former Bowater Medway District. Some portions of lands purchased from Bowater Mersey have not yet been formally designated as protected areas. The Management Plan applies to 132,513 hectares of forest land and states: “*The Province of Nova Scotia is committed to sustainable forest management and endorses both SFI Principles for Sustainable Forestry and the FSC Principles and Criteria as well as its standards of the Maritime Forest Region.*”

The Ross/SMB/NM District lands are to be managed assuming a sustainability time horizon of 100 years. The Management Plan follows the approach described in the document *The Path we Share, a Natural Resources Strategy for Nova Scotia*. It should be noted that, while this Management Plan states that the Province endorses FSC Principles and Criteria as well as its Maritime Standard, FSC certification was not formally applied for, or obtained, for the Ross/SMB/NM lands.

For each of the three districts in the Management Plan, information and maps are provided that cover the following characteristics:

- Ecoregions and Ecodistricts, with relevant information on climate and forest cover
- Natural disturbance regimes
- Forest inventory by forest community type
- Age-class distribution
- Capability classes
- history of ownership and management

In addition, the majority of the Management Plan is devoted to describing 15 management goals and indicators, most of which reflect the forest management objectives in the Natural Resources Strategy.

23. Special Management Practices, 2012

Boreal Felt Lichen (3 pages)

This document provides the special management practices required to assist with the conservation of Endangered Boreal Felt Lichen (BFL). It provides a brief overview of BFL and its habitat, as well as an update of recent research activities, known locations and numbers. Areas of recorded occurrence of BFL will be further updated following surveys wherever harvests are being planned. Where BFL is found various protocols are required, including retaining a 100 metre buffer around the area of the sightings. Additionally, if BFL are located in a peatland, or a forest stand adjacent to a peatland, a minimum 20 metre buffer will be required around that land, where harvesting will not be permitted. Large peatlands may only require that the BFL suitable habitat portion be protected. Special Management Practices for Boreal Felt Lichen are binding obligations placed upon holders of Crown land harvesting licenses. It is expected that additional locations of BFL will be discovered as biodiversity research continues.

Mainland Moose (2 pages)

This document directs the special management practices required to assist with the conservation of Endangered Mainland Moose. There are five main areas in mainland Nova Scotia where moose populations are known to be concentrated, and which contain the majority of moose outside of Cape Breton. Any forest harvesting within those Concentration Areas, are required to follow Special Moose Management Practices. These include leaving a minimum of two moose shelter patches of three hectares or more of undisturbed forest, within 250 metres of the edge of the harvest. Alternatively, one larger moose patch may be acceptable. Various options are also available to meet different forest situations. Moose retention patches will be established in harvest areas to allow temporary shelter for moose and support connectivity. Buffer zones of 20 metres are also required next to water bodies and wetlands. Road construction should be avoided where possible to avoid human-moose conflicts. Special Management Practices for Endangered Mainland Moose are binding obligations on holders of Crown land harvesting licenses.

American Marten (6 pages)

Marten are provincially listed as an endangered species due to the small population and limited localized occurrence. Historically widespread, marten are now found, in low numbers, in only two locations - a re-introduced population in southwestern Nova Scotia and a small relic population in Cape Breton. These Special Management Practices apply to the Cape Breton population and are based on recommendations of the Marten Recovery Team.

The species is generally associated with late-succession conifer-dominated forests, and their optimal habitat appears to be older forests. Although younger mixedwood and conifer-dominated habitats may also be used, horizontal and vertical stand structural complexity and landscape patterns are determining factors. Coarse woody debris (snags, downed logs, exposed root masses and stumps) play an important role for marten in hunting and thermo-regulation.

To address future habitat supply at the landscape level Special Management Practices are being applied to forest harvesting throughout the Cape Breton Highlands. To date, no management guidelines have been issued specifically for the mainland population of marten, although it would be expected that similar criteria would apply.

Other Species

Additional Special Management Practices are also available for other species such as Bald Eagle Nests, Canada Lynx, Heron colonies, White-Tailed Deer wintering areas, and Wood Turtles.

24. Species at Risk List Regulations

The purpose of these Regulations is to provide a complete list of Nova Scotia Endangered Species as required under the Endangered Species Act. The Species-at-Risk Working Group, pursuant to requirements of the Act, lists by category the 41 species at risk in the Province. Updating occurs as necessary.

25. Sustainable Forest Initiative

The Sustainable Forestry Initiative (SFI) is an independent, charitable organization that promotes sustainable forest management across North America and responsible fiber procurement globally. It is an international forestry standard that seeks a balance between the environment and sound business decisions. The SFI is the world's largest single forest certification standard by area. It includes a set of principles, objectives and performance measures, and indicators that are used to assess forest land-use practices. The SFI standard includes protection of biodiversity; responsibility for water quality; long-term forest productivity; species at risk and wildlife habitat; protection of special sites; prompt regeneration; and the efficiency of wood utilization. SFI certified companies require sustainable forestry practices on their own lands and other lands from which they procure fiber.

A number of forest companies within the Province have received third party certification to the SFI standard, as well as DNR, as it applies to some Crown lands for which they have management responsibility.

26. The Path We Share: A Natural Resource Strategy for Nova Scotia 2011-2020, 2011 (82 pages)

This 10-year strategy released by DNR provides direction for managing natural resources until 2020, based on an extensive public consultation process. After 27 public meetings, the initial public consultation report titled *Our Common Ground* was released. Subsequently, a stakeholder engagement/technical expertise process was initiated comprised of four panels representing biodiversity, forests, minerals and provincial parks. Panel reports were submitted to a Steering Panel, which then proposed a future direction under the heading *A Natural Balance*. As a result of that process, DNR, on behalf of the Province, formulated the Natural Resources Strategy, which seeks to achieve balance among economic, environmental, and societal values related to the use of Crown lands.

The Strategy has four overarching goals; Collaborative leadership, Sustainable resource development, Research and knowledge sharing, and Good governance. Within this overall framework, the Strategy sets 23 specific goals for achieving long-term economic gains while ensuring a healthy natural environment, now and for future generations. Each goal is supported by specific actions. The goals and actions commit government to an integrated ecosystem approach in the management of biodiversity, forests, geological resources and parks.

Specific goals include:

- preserving native species in sustainable numbers while maintaining genetic diversity and ensuring stable jobs
- changing the Code of Forest Practice to support sustainable forestry
- improving knowledge and the science on biodiversity
- completing identification and designation of conservation areas and connectivity of landscapes
- reducing clear cutting to 50% of all forest harvests
- clarifying rules pertaining to whole-tree harvesting
- consulting with stakeholders in assigning the annual allowable cut
- setting biomass fuel limits

There was support to ensure sustainable mining and to transform depleted mining land to other valued uses, as well as exploration and value added initiatives. The Provincial Parks system was expected to expand recreational values by supporting nature-based recreation. Progress towards achieving all of the Strategy goals was to be reviewed within 24 months, followed by updating every subsequent 24-month period.

While the movement towards improved resource management was to occur over a broad front of initiatives, the public became focused on the goal to reduce clear cutting to 50% of permitted harvests on Crown lands, and that unachieved goal has continued to remain on the public radar since the release of the Strategy.

27. The Path We Share: A Natural Resource Strategy for Nova Scotia - 24 month progress Report, 2013

This 40-page report was intended to document progress towards undertaking the 32 priority actions identified in the Natural Resources Strategy originally released in 2011. In particular, the intent was to ensure that “*maintaining the status quo was not an option*”. In total eight actions were completed, four had timelines extended, and 20 were still being worked on. It also advised that only 50% of Provincial Acts are expected to be reviewed by 2020.

Some of the action items of interest were:

- Redesign of the IRM extended to 36 months due to slow down in public consultation in the western region
- Reduction in clearcutting had been reduced to 89% of all harvests on Crown land
- Code of Forest Practice guidelines made mandatory when harvesting Crown land
- Discontinued public funding for herbicide applications
- Clarified biomass usage
- Established rules for whole-tree harvesting , and prohibited the practice on Crown lands
- Applied an ecosystem-based approach to forest management
- Partnered with Nova Scotia Environment to expand protected areas under the 12% Plan
- Placing strong emphasis on biodiversity using existing data, but acquisition of new data is slow
- Significant progress in designations and consultations regarding establishing new Provincial parks

While advances have been made, in general the public’s desire for signs of progress exceeded the ability of government resources to meet the projected timelines. Unfortunately, by 2014 the intent to increase biodiversity knowledge to support informed decisions still does not appear to have progressed to the point where operational guidelines are available. Nor were reductions in clearcutting meeting public expectations.

28. Wilderness Areas Protection Act, 1998 (22 pages)

The Purpose of the Wilderness Areas Protection Act is to provide for the establishment, management, protection and use of wilderness areas, in perpetuity, for present and future generations. The Act defines permitted and non-permitted uses of Wilderness Areas, and also allows for management plans to be developed for all Wilderness Areas in the Province. In addition, it sets out Ministerial discretion and Government policy in a number of areas.

The Act has the following specific objectives:

- Maintain and restore the integrity of natural processes and biodiversity
- Protect representative examples of natural landscapes and ecosystems
- Protect outstanding, unique, rare and vulnerable natural features and phenomena
- Provide reference points for determining the effects of human activity on the natural environment
- Protect and provide opportunities for scientific research, environmental education and wilderness recreation
- Promote public consultation/community stewardship in establishment and management of wilderness areas

Of particular interest is Section 16 - Encouragement of Voluntary Activities, which states: *The Minister shall encourage the voluntary planning and management of land adjoining or affecting wilderness areas in a manner consistent with the purpose of this Act and the regulations.*

29. Wildlife Habitat and Watercourses Protection Regulations, 2002 (3 pages)

These Regulations, issued under the Forests Act 2002, pertain to watercourse protection related to forestry harvesting. They include provisions for retention of legacy trees, either as individual trees or in clumps. They also specify special management zones for watercourses of different sizes. A protective riparian zone of at least 20 metres is required on either side of watercourses of 50 cm or more in width. The riparian zone may be widened according to the degree of slope to the watercourse. No machinery is to be operated within five metres of a watercourse less than 50 cm in width. Limitations on the use of motorized harvesting equipment and the necessity of maintaining proper wildlife clumps within harvesting operations are clarified.

Appendix 4 Pre-Treatment Assessment (PTA) requirements

Information extracted from: McGrath, Tim. 2013. *Pre-Treatment Requirements (PTA) Under the Nova Scotia Code of Forest Practices*, Report FOR 2013-1 No. 95, Nova Scotia Department of Natural Resources

Pre-Treatment Assessments

One of the key guidelines of the Code of Forest Practice (COFP) concerns Pre-treatment Assessments and states:

- 1.2.2 *The provincial FEC, an extension of the ELC, will be the stand level operational guide for applying ecosystem-based management.*
- 1.2.3 *Areas planned for silviculture treatments, including timber harvest, will have a pre-treatment assessment (PTA) prepared that describes site, and forest conditions.*
 - 1.2.3.1 *The PTA will serve as a basis for stand level management plans.*
 - 1.2.3.2 *Stand level management plans will be compatible with the ecodistrict plan*

As is stated in these guidelines, a PTA that includes FEC and forest condition information is a required element in implementing ecosystem-based management (EBM). Before a silviculture operation is carried out, stand-level details on the site such as vegetation type, soils type, ecosite and windthrow hazard along with stand characteristics such as basal area, species, tree diameter, height, potential quality and existing regeneration must be collected. Information on special wildlife and geological features is also required. This information will enable prescribing appropriate treatments, specific to stand attributes and avoid a “one-size fits all” system of forest management.

To help meet the objectives of COFP Guideline 1.2.3, a system was developed to identify the required elements of pre-treatment assessment (PTA). This PTA system was first published as part of the Tolerant Management Guides (4), (5) to gather the information necessary to prescribe appropriate silviculture treatments for specific ecosystems and stand conditions. This report extracts this methodology into a separate document in order to define PTA requirements silviculture and harvest programs. It is required on crown lands and is being encouraged on private lands. Although detailed data collection and summary methods are described here, alternative collection methods are allowed as long as the required information is collected, summarized and used to prescribe ecosystem and stand condition specific prescriptions. Paper tally sheet and computer data collection methods are described as options. These tools are available from the Department of Natural Resources.

A sample PTA summary sheet is also shown; it illustrates the minimum required ecosystem, mensuration, biological and geological information necessary for prescribing ecosystem-based management prescriptions. The information shown can be used to prescribe treatments by using the Tolerant Hardwood or Tolerant Softwood/Mixedwood Management Guides for the vegetation types included in these guides. Guides covering other major FEC vegetation groups are in development. If alternative treatments to those prescribed in the guides are recommended by the cruiser, written justification must be included in the PTA.

Pre-Treatment Assessment (PTA) Methods

Cruising Instructions:

Take 1 prism point every hectare with a minimum of 5 prism points and a maximum of 25 per stand.

- Use a BAF 2 prism.
- Evenly distribute these points throughout the stand.
- A PTA summary will include the following information.
 - Location
 - Stand ID
 - Number of sample plots
 - Area of stand
 - FEC vegetation type [Forest Ecosystem Classification | novascotia.ca](#)
 - FEC soil <http://www.gov.ns.ca/natr/library/forestry/reports/Soil-Types.pdf>
 - Wind exposure, <http://www.gov.ns.ca/natr/library/forestry/reports/Soil-Types.pdf>
 - Windthrow hazard <http://www.gov.ns.ca/natr/library/forestry/reports/REPORT91.pdf>
 - Total Basal Area
 - Basal Area of **Acceptable Growing Stock**
<http://www.gov.ns.ca/natr/library/forestry/reports/REPORT91.pdf>
 - Species composition by basal area
 - Basal Area by Diameter class (Dbh). At minimum, 5 cm Dbh classes are required.
 - Regeneration stocking by species
 - Special Wildlife/Biological features
 - Silviculture Prescription

Appendix 5 Auditor's Report

Note: The pagination beginning on the next page conforms to that of the audit report.

South Panuke Lake Harvest Site Audit

**Conducted for the Mersey Woodlands Advisory
Committee**

December 10, 2014

To Mr. Gordon Beanlands:

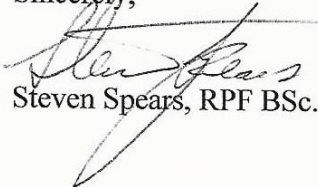
Re: South Panuke Lake Harvest Area Audit:

I have completed the audit of the South Panuke Lake harvest area, having both reviewed the documentation given to me, plus interviewing Department of Natural Resources and Ledwidge Lumber staff who were involved with the planning of the harvest area. I have also interviewed DNR staffs who have been involved with the creation of the document *Crown Land Management: A conceptual plan for Western Nova Scotia*. The report submitted here has been split up into the following sections:

- Introduction
- Audit Context
- Audit Findings
- Recommendations
- Conclusions
- References

This has been an exciting opportunity for us and I believe SPS Forestry & Environmental Consulting Inc. is the best company for the job. With our experience I believe we have provided you with answers to the items that were asked of us to cover. I have enjoyed this experience and look forward to talking to you more about this audit at a further time.

Sincerely,



Steven Spears, RPF BSc.

Table of Contents

Introduction4
Background4
Audit Findings7
Recommendations11
Summary12
References13

South Panuke Lake Harvest Site Audit

Mersey Woodlands Advisory Committee

Introduction

In November 2014 following a competitive bid process, the Mersey Woodlands Advisory Committee (MWAC) contracted SPS Forestry & Environmental Consulting Inc., to conduct an audit of the South Panuke Lake harvest block in Halifax County, Nova Scotia.

The survey of the South Panuke Lake harvest area is not a traditional audit. A traditional audit sets out items to be assessed usually regarding an environmental management system (EMS) or forest certification. In this case, the harvest area falls under the province's Sustainable Forest Initiative Standard (SFI). However, SPS was asked specifically to review certain items by MWAC. Those items are listed below.

Overall, the audit comprised a review of the harvest site planning, the site itself, and the prescription that was carried out on the site. Specifically, SPS was to:

1. Meet with Mersey Woodlands Advisory Committee members, respond to questions by them, and conduct a follow-up session to discuss the draft report.
2. Review the planning context of the South Panuke Lake harvest area taking into account diverse requirements such as legal issues and the need for an environmentally sensitive planning unit as outlined in the document *Crown land management: A conceptual plan for Western Nova Scotia*. The review includes interviews with Department of Natural Resources (DNR) staff who led the work behind the environmentally sensitive planning unit in the conceptual plan.
3. Review the stand-level information from the pre-treatment assessment (PTA) and the harvest prescription that resulted. Interviews with DNR staff involved with planning and Ledwidge Lumber Company Ltd. staff involved with the operational planning were carried out as well.
4. Inspect the area to further understand how the harvest was carried out with respect to meeting policy and planning requirements.
5. Report the findings with any recommendations for change and opportunities for improvement.

This audit comprises the South Panuke Lake harvest site and the work was limited to the items listed above. Other issues, such as lack of firewood in the area, are outside the scope of this audit.

Background

To effectively understand the audit process and findings, it is important to know how planning is undertaken for a harvest area, in particular the South Panuke harvest site. This process includes

planning undertaken by the licensee and the Department of Natural Resources. Background material on the document *Crown land management: A conceptual plan for Western Nova Scotia* and its relevance is also helpful.

There is no set process for management planning at the landscape level and the operational level. Different jurisdictions engage in different approaches. Many planning processes incorporate various values that involve such issues as habitat, old-growth forest, and wildlife corridors. These values may be enshrined in legislation or reflect concerns the planning unit may have themselves about the land base.

Originally the Bowater Mersey Paper Company Limited developed a management plan for the Rossignol, St. Margarets Bay, and North Mountain districts. At that time, Bowater Mersey lands were certified under the Sustainable Forest Initiative Standard. The standard includes a set of principles, objectives and performance measures as well as indicators used to assess forest land-use practices. It includes responsibility for water quality, long-term forest productivity, wildlife habitat, protection of special sites, and the efficiency of wood utilization. SFI-certified companies require sustainable forestry practices on their own lands and other lands from which they procure fiber.

After the province acquired the Bowater Mersey lands in 2012, the management plan was amended but continued to meet SFI certification requirements and the Nova Scotia Code of Forest Practice. The amended management plan also included input from the Forest Certification Steering Committee, developed in 2013 to guide and review progress and effectiveness of the certification program.

Both plans, original and amended, had a 100-year time horizon and included attainment of a sustainable harvest level. The original plan had been submitted and approved by DNR. The updated plan was to become effective in 2013 and then updated every five years. At this time, the amended plan has been submitted but is still in draft version. Although updated and amended, the most recent plan relies heavily on the original plan. The South Panuke harvest area comes under the purview of this management plan.

The license agreement associated with the South Panuke Lake harvest area is a volume-based agreement allocated to Ledwidge Lumber. The agreement outlines DNR's responsibilities and those of the licensee. Under this agreement, Ledwidge was responsible for completing the PTA and harvest layout, and providing operational maps to DNR as part of the planning of the harvest area.

Discussions between DNR and Ledwidge Lumber were ongoing as part of the Integrated Resource Management (IRM) process, which is co-coordinated by the Regional Forester, Central Region, for the South Panuke Lake harvest area. The IRM framework is detailed in the document *Implementing Ecosystem based Integrated Resource Management in Nova Scotia*, and it states that the IRM process "was developed to coordinate planning among resource sectors to optimize multiple benefits and minimize conflicts."

A number of factors are taken into account during this process including the ecological land classification for Nova Scotia (ELC), the natural disturbance regime and potential climax forest interpretations, and a forest ecosystem classification (FEC). The FEC guide comprises three documents discussing vegetation types, soil types, and ecosites. As part of the FEC, a Pre-

Treatment Assessment (PTA) is conducted on each stand that is being assessed. A prescription, a type of harvest technique, is derived using keys set out in the FEC guide along with the PTA survey data. This prescription is specific to the type of forest stand, soils, and conditions found on the site.

DNR has developed management guides with decisions keys imbedded in them. These keys help in the development of prescriptions by using data collected in the PTA survey. The management guide used in this audit is the *Forest Research Report: Tolerant Softwood & Mixedwood Management Guide*.

As part of the IRM process, all legal and other requirements are reviewed for any harvest block on Crown land. Both DNR and the licensee review the requirements and any special management procedures (SPM) needed for any site. Some of these maybe evident through the use of geographic information systems (GIS), the PTA process, or the harvest site layout process. Using GIS map layers, a regional biologist reviews the harvest area, looking for significant habitat, old forest, moose, boreal felt lichen, species at risk and other components. Once the final site approval is given, the licensee can move forward and begin operations.

Also as part of the IRM process, Crown harvest areas are inspected by DNR technicians to determine if the prescription is being followed and if relevant regulations, legislation and SPMs are being followed. This can include items as the width of a watercourse buffer and occupational health and safety issues. A final harvest inspection is also completed to assess the site. Assessments for regeneration and related issues usually take place several years after the prescription, providing time for the harvest area to “green up”.

SPS was asked to determine if the environmentally sensitive area designation as described under the most recent *Crown land management: A conceptual plan for Western Nova Scotia* included any legal or other requirements that would have affected the planning of the South Panuke Lake harvest area. The 2014 conceptual plan was developed to provide a big-picture document enabling landscape values to be evaluated at a higher level. This approach mirrors the province’s 10-year plan as detailed in *The Path We Share, A Natural Resources Strategy for Nova Scotia 2011-2020*. A working group comprising many provincial departments, including Agriculture, Fisheries, and Natural Resources, was approached for input on the conceptual plan. Many different GIS layers were examined and values were mapped.

The 2014 conceptual plan identified five distinct planning units: parks or other protected areas, resource management areas, multiple value areas, environmentally sensitive areas, and Mi’kmaw management areas. The South Panuke Lake harvest area is designated as an environmentally sensitive area.

According to the plan, resource development can be undertaken in these areas; however, the dominant value is conservation, including the protection of biodiversity and habitat, and these interests will guide management and resource extraction. “Resource management activities in these areas will be carried out in a manner that protects the identified conservation values,” the plan states.

It is important to note that the values inherent in an environmentally sensitive area designation are not unique to that area. These values can be assessed for other areas; however, these values dominate in areas identified as environmentally sensitive.

At this time, the conceptual plan is just that, a concept. It is a higher-level document that can be used for further discussion regarding management of resources. This finding is supported in the *Crown land management: A conceptual plan for Western Nova Scotia* itself. The document states that:

“The principles and public values associated with natural resource management will be evident as the government moves through the process to develop detailed land use planning for all 1.5 million acres of Crown land in western Nova Scotia. The conceptual plan, is essentially, lines drawn on a map; not etched in stone.”

Further discussion about the conceptual plan appears in the “Audit Findings” section of this report.

Audit Findings

The audit was carried out from December 1-5, 2014. A site visit to the harvest area and interviews with those involved in planning the block were conducted. Since one of the items the auditor was asked to review concerned the *Crown land management: A conceptual plan for Western Nova Scotia*, interviews were conducted with individuals involved in the working group that prepared the document. The findings below are presented in the same order as found in the introduction to this report.

1: Meet with Mersey Woodlands Advisory Committee

Requirement: Meet with the Mersey Woodlands Advisory Committee members, respond to questions and, conduct a follow-up session to discuss the draft report.

A meeting with members of the MWAC sub-committee took place on December 1, 2014, to identify questions and issues related to the audit. The auditor had a number of conversations with the sub-committee to discuss the findings of this report.

2: Review the planning context and requirements as detailed in the conceptual plan and related legal requirements

Requirement: Review the planning context of the South Panuke Lake harvest area taking into account diverse requirements such as legal issues and the need for an environmentally sensitive planning unit as outlined in the document *Crown land management: A conceptual plan for Western Nova Scotia*. The review includes interviews with Department of Natural Resources (DNR) staff who led the work behind the environmentally sensitive planning unit in the conceptual plan.

There are two components to this requirement. The first was to determine if the legal requirements were adhered to. The second, to identify all requirements related to the South Panuke Lake harvest area’s environmentally sensitive delineation.

After reviewing the 2014 *Crown land management: A conceptual plan for Western Nova Scotia* and interviewing individuals on the working group that prepared this document, it became

apparent this is a high-level report that delineates five planning units and the values inherent in their effective management.

This conceptual plan recommends that for environmentally sensitive areas such as the South Lake Panuke harvest site the dominant value is conservation, including the protection of biodiversity and habitat, and these interests will guide management and resource extraction.

Having an area designated as “environmentally sensitive” does not mean it necessarily is, but that potential is there. As a result, practices such as protection of biodiversity are important. The designation also does not limit any resource activities taking place as long as the inherent values are taken into account.

At this time, this document has no direct effect on the current IRM process or on operational activities within any harvest block. There are no legal or other planning requirements under the *Crown land management: A conceptual plan for Western Nova Scotia* having to do with areas designated environmentally sensitive. As noted in the conceptual plan, “This new Crown land planning process does not supplant other critical land and resource planning already underway.”

The document also notes that “The principles and public values associated with natural resource management will be evident as the government moves through the process to develop detailed land use planning for all 1.5 million acres of Crown land in western Nova Scotia. The conceptual plan, is essentially, lines drawn on a map; not etched in stone.”

What does have an effect on the IRM process are the acts, regulations, and policies that set out how forest harvesting takes place in Nova Scotia. In reviewing the planning process with individuals from DNR and Ledwidge Lumber who were involved with the planning process for this harvest area, it was determined that all legal requirements were being followed.

As a licensee Ledwidge Lumber completed a PTA, submitted it to DNR, consulted with DNR about the legal requirements, laid out the harvest site, and implemented the joint plan created by DNR and Ledwidge Lumber for this harvest area.

That this work was completed is supported by interviews with DNR and Ledwidge staff. Further evidence of this can be found in a letter from Ledwidge Lumber wherein they responded to questions asked of them by the SPS auditor about their role in the IRM process. They state in the letter that they have no direct role in the IRM approval of the harvest area, but are legally required to complete the PTA for the harvest area. In the letter, Ledwidge also describes how the planning of the harvest area takes place, a process that includes discussions with the regional biologist from DNR. Emails demonstrating that this discussion took place and that the operational conditions of the harvest area were agreed on were provided by the regional wildlife biologist for the Central Region.

In addition, inspections conducted by DNR technicians on June 5th and November 7th of 2014 showed that there were no violations of the harvest area. An internal SFI audit was also completed that included a visit to the South Panuke Lake harvest area. This audit found no major non-conformances. One minor non-conformance was found: the need for clarification about the definition of “over-story removal.” (SFI non-conformances are determined through the certification process and the auditors’ evaluation of them during the audit.)

The Department of Natural Resources Central Region forester and biologist worked with Ledwidge Lumber's representative in planning of the South Panuke Lake harvest area, as noted earlier. They reviewed the harvest area to ensure legal requirements and SMPs were being met. The resulting plan was created and implemented by Ledwidge, with DNR staff doing inspections to ensure it was carried out. At this time, Ledwidge was operating under an annual Letter of Authority from DNR to harvest their allocation of wood.

As shown, Ledwidge met its legal obligations regarding planning of the harvest area and inspections found no significant issues with implementation of the plan.

In the process of creating this operating plan for the harvest area, several things should be noted:

1. The harvest area was reduced from more than 50 hectares down to approximately 40 hectares in size.
2. A larger buffer corridor was placed on the South Panuke Lake than was called for by regulation. A 50-meter buffer was created; only a 20-meter buffer was legally required. This helped reduce the size of the harvest site and increase the size of the wildlife corridor beside the lake.
3. An area nearer to the lake, approximately 3 hectares in size, was removed from the site altogether by Ledwidge. This expanded the wildlife corridor.
4. Though the harvest site was not in an area home to moose, it was adjacent to one. As a result, the regional biologist and Ledwidge created a 3-hectare clump for moose within the harvest area. This was not a legal requirement, but it did enhance the possibility of creating more moose corridors.
5. Eight wildlife clumps were left scattered throughout the harvest area. According the *Wildlife Habitat and Watercourses Protection Regulations*, one clump is required for every 8 hectares. The harvest area was 40 hectares, so only 5 clumps were legally required.
6. Though not required, Ledwidge left scattered white pine standing at the back of the harvest area at the request of the regional biologist.
7. An area identified as having possible boreal felt lichen was buffered out and removed from the harvest site.
8. Once the larger buffer, moose clump and other enhancements had been added to the plan and agreed to, they became legally binding requirements as noted during interviews with DNR staff.

It is the opinion of SPS that DNR and Ledwidge went above and beyond what they were legally required to do. If they had met only the legal requirements, more volume might have been cut, wildlife corridors would have been smaller, a large clump would not have been created for moose, additional wildlife clumps would not have been added, and the scattered white pine would not exist. These improvements now add to the future stand structure, wildlife habitat and biodiversity of the area. Although independent of the environmentally sensitive area designation in the conceptual plan, these enhancements serve as an effort to address concerns related to

biodiversity even though such concerns were not specifically stated for the South Panuke Lake harvest area.

3: Review of stand level information and prescription

Requirement: Review the stand-level information from the pre-treatment assessment (PTA) and the harvest prescription that resulted. Interviews with DNR staff involved with planning and Ledwidge Lumber Company staff involved with the operational planning were carried out as well.

A copy of the PTA was acquired from DNR and reviewed. As part of the review, discussions with both DNR and Ledwidge staff were held to understand the reasoning behind the prescription. Later an inspection of the harvest area itself was completed and this helped clarify the results from the PTA and the prescription carried out on the South Panuke Lake harvest area.

The PTA showed that 12 plots had been completed over the potential harvest area. From this, the following was determined:

1. The vegetation type was SH5: Red spruce – balsam fir/Schreber’s moss.
2. The average height of the stand was 15.3 meters.
3. There was 60% acceptable regeneration taking place within the stand.
4. There were three soil types found:
 - a. ST2-S Fresh – MCT (stony phase)
 - b. ST2-GS Fresh – MCT (granite stony phase)
 - c. ST3-S Moist – MCT (stony phase)
5. Long-lived species made up 92% of the stand, with 85% being tolerant species.
6. The total basal area was 40 m²/ha.
7. Exposure: Moderately exposed
8. The average wind throw hazard was moderate.
9. The stand had not been previously treated.
10. The average age of the potential harvest area was 75 years.

The *PTA Detailed Summary (1)* the prescription called for the stand to be left alone because the average wind throw hazard was moderate. On further examination of the PTA data, however, the wind throw exposure rating was found to be incorrect, and was modified by the licensee to reflect the proper rating. The ST2 and ST3 soils found at the site combined with a moderately exposed rating show that the wind throw hazard is high. (See “Table 1. Windthrow Hazard Rating Categories Based on Exposure and Soils” in the DNR *Forest Research Report: Tolerant Softwood & Mixedwood Management Guide*.) Once the correct exposure rating was substituted, the proper prescription could be determined by using keys provided in the DNR guide. The prescription for the area is a mosaic harvest and would be used to prepare the stand for future natural regeneration.

A site visit to the harvest area with DNR staff was completed on December 2, 2014, where the prescription was discussed and a walk-through of the block was completed. When SPS examined the harvest area, and later the PTA, one issue regarding the designation of wind throw arose. It should have been “high” instead of “moderate.” The combination of the soil types, the exposure of the hill, and the lake nearby made this a high-wind area. In fact, some blow down could already be seen in a few of the clumps left on site.

The prescription for the harvest area is sound taking into account the results from the PTA, the lay of the land, the high chance of wind throw occurring, and the soil types found. Any selection or partial harvest within this harvest area would have likely led to a large amount of wind throw taking place as evidenced already in some of the clumps left behind. Though wind throw trees provide an important ecological niche in the forest, a selective or partial harvest could have resulted in much of the area on the ground being a safety hazard and a loss of standing biodiversity and future stand structure.

4: Inspect harvest area to ensure policy and planning requirements were met

Requirement: Inspect the area to further understand how the harvest was carried out with respect to meeting policy and planning requirements.

As was mentioned previously, an inspection of the harvest area had taken place. Here the issue is if the harvest area met policy and planning requirements. The answer is “yes.” In fact, requirements were exceeded as discussed previously in these findings. Further evidence of compliance comes from two inspections carried out by DNR technicians on June 5th and November 7th of 2014. These inspections were carried out using DNRs *F-harv-02-Environmental Compliance Checklist for Harvesting* form. This list is used to check against such things as wildlife habitat features, utilization, water and soil quality, and sensitive features. Both inspections found Ledwidge to be in compliance and there were no major non-conformances.

The Department of Natural Resources also holds the SFI certification for the old Bowater Mersey lands and as part of this must undergo an internal audit each year. As part of this, audit site visits are made and the South Panuke Lake harvest area was one of the sites visited. The summary of this internal audit showed that no major non-conformances were found and only one minor non-conformance was identified.

If the policy and legal requirements had been strictly adhered to, a larger volume of timber would have been harvested. However, as the final plan was set up, more wildlife habitat was kept, a larger wildlife corridor was made along the lake, and biodiversity was enhanced. In addition, the PTA results and the landscape of the area confirm that the prescription used was appropriate for the site.

Recommendations

As part of this audit, it was requested that recommendations for improvements be provided. The following recommendations came from personal observations of the auditor and interviews with DNR and Ledwidge staff. However, it should be noted that these recommendations come from auditing only one harvest area and reviewing the planning process and operations for that area.

1. Work on the next stage as identified in *Crown land management: A conceptual plan for Western Nova Scotia* should continue. While only a conceptual plan, it is a useful guide.

A standardized manual that contains all policies, SMPs, procedures and other documents pertaining to planning within Nova Scotia should be created. This could be both hardcopy and digital, and made available to the public to allow them to be better educated about

planning processes for harvest areas in Nova Scotia. (It would be worth including silviculture practices for harvest areas as well in this manual.)

2. Enhanced cooperation – specifically sharing efficiencies and methods in the IRM process – should occur between regions and licensees.
 - a. During this audit, interviews were held with DNR staff in the Western and Central Regions as well as the licensee. Though the IRM process was being followed, the methods used differed between regions. Efforts to standardize and share approaches, where appropriate, should be explored to provide DNR and the licensee with opportunities for improvement.
 - b. One tool could be the standardized manual mentioned previously as well as standardized maps, submissions, start-up and final harvest inspections, and operational instructions among, other documents.
 - c. If tools and methods are developed by DNR, they could be shared with the licensee to potentially reducing the work required by DNR in reviewing harvest sites. Issues and solutions should be identified prior to the DNR review (e.g., if boreal felt lichen is present).
3. There are three recommendations regarding the pre-treatment assessments:
 - a. A standardized detailed definition of all prescriptions that can take place in Nova Scotia.
 - b. A selection of assessments should be audited, either by DNR or a certified third party to ensure they are done correctly and prescriptions fit the stand(s) in question.
 - c. A program or presentation should be developed to educate the public about PTAs. This would include why and how they are done and the benefits of doing them. In this way, the public can see the extent DNR and licensees are going to ensure the best possible prescriptions are being applied to forest management.
4. The document *Implementing Ecosystem Based Integrated Resource Management in Nova Scotia* discusses how IRM works. However, it would be helpful to identify who is responsible for what tasks under the process. This would help ensure that all parties know exactly what is required of them both in terms of resources and costs. A document that lays out the IRM process, perhaps in graphic form, showing each step should also be developed.
5. This audit is specific to the South Panuke Lake harvest area. More harvest areas should be audited in each of region to confirm the applicability of these recommendations and to provide broader baseline data. These recommendations may affect DNR and licensees across the province so it makes sense to audit a sample from across the land base.

Summary

This audit was conducted on the South Panuke Lake harvest area in Halifax County, Nova Scotia. Five items were required to be completed for this audit, including preparation of this report. Each of the required items has been addressed as summarized below.

1. Meetings were held with the MWAC Sub-Committee at the start of the project and at the conclusion of the audit.

2. The document *Crown land management: A conceptual plan for Western Nova Scotia* was reviewed, and it was found that there were no legal or other requirements from this document that pertained to planning harvest areas in Nova Scotia at this time.
3. The prescription was appropriate for the site and stand condition.
4. The harvest site was inspected and it was found that all policies and planning requirements were followed or exceeded. The licensee provided more habitat and wildlife corridors than legally required.

Flowing from the audit findings, are the following recommendations:

1. In the Western region, the conceptual plan should now move to the next phase or the plan should be expanded to the entire province.
2. A standardized manual that contains current policies, SMPs, procedures and other documents pertaining to planning within Nova Scotia should be developed.
3. To enhance efficiency, a process for sharing methods and information related to the IRM process should be developed between regions and the licensees.
4. With respect to Pre-Treatment Assessments:
 - a. A standardized detailed definition of all prescriptions that can take place in Nova Scotia should be developed.
 - b. Pre-Treatment Assessments should be audited, either by DNR or a certified third party, to ensure they are being done correctly and prescriptions fit the stand(s) in question.
 - c. A program or presentations should be developed to educate the public about PTAs.
5. It should be clearly delineated who is responsible for what activities under the IRM process. As well, a graph or other visual depicting the IRM process should be created.
6. More harvest areas should be audited in each of the regions to determine if these recommendations are relevant across harvest sites and to provide broader baseline data.

References

People Interviewed

MWAC

Gordon Beanlands, Chair

David Dagley, Member

Department of Natural Resources

Jillian Weldon-Genge – Regional Forester (Western)

Tim O'Brien – Provincial Forester

Shavonne Meyer – Regional Wildlife Biologist (Central)

Harold Carroll – Director of Parks and Recreation

Dan Eidt – Director Resource Management
Perry Armstrong – Technician

Ledwidge Lumber

Robert Lively, Forest Technician

Documents Reviewed

1. *The Path We Share, A Natural Resources Strategy for Nova Scotia 2011-2020*
2. *Implementing Ecosystem Based Integrated Resource Management In Nova Scotia*
3. Special Management Practices (<http://novascotia.ca/natr/wildlife/habitats/terrestrial/>)
4. *Forest/Wildlife Guidelines and Standards for Nova Scotia*
5. *Endangered Mainland Moose Special Management Practices*
6. *Forest Ecosystem Classification for Nova Scotia: Part I Vegetation Types (2010); Part II Soil Types (2010); and Part III Ecosites (2010).*
7. *Forest Research Report: Tolerant Softwood & Mixedwood Management Guide*
8. *Recovery Plan for Moose (*Alces alces americana*) in Mainland Nova Scotia*
9. Rossignol, St. Margarets Bay, North Mountain District Management Plan
10. *Crown land management: A conceptual plan for Western Nova Scotia*
11. *Nova Scotia's Code of Forest Practice: A Framework for the Implementation of Sustainable Forest Management Guidelines*
12. Ledwidge Lumber Company Ltd., lease/license agreement
13. Internal Audit Summary SF1 2010-2014
14. SOP-harv-01 – Sustainable Forest Development
15. WI-harv-01 – Sustainable Forest Development
16. *Forest Research Report: Pre-Treatment Assessments Requirements (PTA) Under the Nova Scotia Code of Forest Practices*
17. Environmental Compliance Checklist for Harvesting (F-harv-02)
18. Ledwidge Lumber Company Ltd.: Crown Land Annual Operating Plan 2013 St. Margarets Bay, Panuke Lake
19. *PTA Detailed Summary (1) and PTA Stand Calculations (2) for South Panuke Lake harvest area*
20. Maps of the South Panuke Lake harvest area
21. Emails between DNR and regional biologist and Ledwidge Lumber