Forest Management Guide and Pre-treatment Assessment Review and Revision

Summary of Feedback from Targeted Stakeholders

December 2020

Contents

1.0 Introduction

The December 2018 government response to the Independent Review of Forest Practices committed to revising the Forest Management Guide (FMG) and the Pre-Treatment Assessment (PTA) process to place an emphasis on ecological values when conducting forestry in the Matrix zone on Crown land[1]. The overarching objective of this project is to manage our natural resources for public benefit, and to give priority to ecosystems and biodiversity in the conservation and sustainable use of our natural resources.

The project's specific objectives were fourfold:

- revise the FMG to create conditions that, where appropriate, maintain or restore multi-aged and mixed species forests of late successional species
- reduce clear cutting through revisions to the FMG that recognize when clear cutting is and is not appropriate, and provide a broader range of silviculture options
- expand the PTA process to include greater emphasis on biodiversity in management planning
- meet the intent of the Lahey Review for the Matrix zone of the Triad

A multi-stage stakeholder engagement plan was developed at the outset of the project to identify and engage the breadth of affected stakeholders and to ensure their perspectives and ideas were incorporated into the draft guide at multiple points throughout its development. The engagement process began in June 2019 at the Ecological Forestry Forum hosted by the Department of Lands and Forestry, where stakeholders were invited to provide initial comments on a cross-section of Forest Practices Review projects, including the FMG project.

Following the Ecological Forestry Forum, 17 stakeholder organizations were invited to provide additional feedback throughout the project (see Appendix A). The Assembly of Nova Scotia Mi'Kmaw Chiefs' Forestry Advisory Committee and the Millbrook and Sipekne'katik First Nations were consulted in a parallel process.

In August 2019, a discussion paper was shared for comment with these organizations and Department of Lands and Forestry staff. Feedback was considered during development of a revised draft of the FMG, including revised decision keys; now called the **Nova Scotia Silviculture Guide for the Ecological Matrix (SGEM)**. A round of targeted stakeholder sessions took place on March 2 and 3, 2020. Alongside the draft SGEM, participating stakeholders were provided with two additional resources. First, a cross-section of the scientific literature on tree retention was reviewed and summarized in, **The Value of Retention for Biodiversity Conservation**. Second, **a Consultation Companion Document** presented a summary of the comments received from stakeholders in August 2019, along with an explanation of how comments were considered in developing the SGEM. Following the half-day in-person consultation sessions in March 2020, participants were invited to submit additional written comments by March 13th, 2020.

In total, 171 in-person comments were recorded, and another 239 comments were received in writing. Many comments were highly technical and on several key issues there was either a spectrum of opinion or strong interest from one but not all segments of the stakeholder community. An exhaustive account of all feedback received is beyond the scope of this report. However, the FMG project team reviewed

[1] For more information on ecological forestry and the Triad approach, visit: https://novascotia.ca/ecological-forestry/

and discussed all comments while revising the SGEM. Any comments that were deemed to be out of scope for the mandate of the project team were forwarded to appropriate staff members in the department, including other Lahey Implementation project teams.

This report will provide a summary account of stakeholder feedback and the impact this feedback had on the revised SGEM. High-level impressions, including changes made to the original FMG that stakeholders identified as important, are discussed in the next section. This is followed by a discussion of the following reoccurring themes:

- Economics of Implementation
- Wildlife and Biodiversity
- Silvicultural Treatment and Timelines
- Decision Keys

This report closes with a summary of key changes made to the first draft of the SGEM, including increased retention, a focus on restoration and creating multi-age stands, and greater restrictions on operating in ecologically sensitive ecosystems. These changes reflect stakeholder feedback and the commitment of Government and the department to prioritizing biodiversity values when implementing ecological forestry in the ecological Matrix on Crown lands.

The department recognizes that there are differences between the Acadian and Maritime Boreal forest groups. The department is continuing to work to determine how best to apply ecological forestry practices to the Maritime Boreal. As a result, it is important to note that the current draft SGEM does not include proposed forest management prescriptions for Maritime Boreal forests, but rather focuses on Acadian forest groups. In the interest of moving forward, the department decided to release the SGEM for consultation without including the Maritime Boreal. It is the department's intention to hold a second consultation to get feedback and input on the proposed harvesting practices for the Maritime Boreal at a later date. All input received relating to the Maritime Boreal has been included in this document and will continue to be considered in the department's review and revisions for these forest groups.

2.0 High-level Impressions and Key Components

Overall, the process was seen to be responsive and successful. Stakeholders generally acknowledged that the SGEM is a complex technical document and that good work was done. Several components that were new and seen as positive developments include: a significant role for irregular shelterwood, increased attention to stand-level biodiversity, the inclusion of timelines for silviculture interventions, and recognition of pre-commercial thinning and commercial thinning as valuable treatments within the ecological Matrix. Finally, the inclusion of nutrient budget modeling (NBM) was viewed as commendable and as representing ecological forestry.

It was not clear to some stakeholders how the SGEM will realize multi-age, multi-species forests with restoration opportunities for long-lived species and greater emphasis on biodiversity. Specifically, the draft SGEM was described by multiple stakeholders as more of a timber-harvesting guide than a silviculture guide for ecological forestry, with ecological outcomes continuing to be overridden by timber

objectives. This is addressed in more detail under the reoccurring themes below. However, the central concern was that too many pathways within the draft SGEM decision keys led to treatments with high removal rates that would meet the definition of a clear cut, and that this would not meet the expectations of the public or address flaws Lahey identified in forest management.

The team worked to address concerns that ecological forestry objectives were underrepresented in the SGEM by revising the decision keys and including expanded sections on ecological forestry, climate change, retention trees, restoration and silvicultural timelines. A new section on natural disturbance regimes is also included to clarify how the current science and information on natural disturbance regimes and agents in Nova Scotia is reflected in and influences the SGEM.

There was substantial concern from industry and other forestry sector stakeholders around the economics of implementation. This included anticipated impacts on wood supply but also costs associated with implementing ecological forestry in the Matrix zone, as prescribed by the SGEM.

The department is aware of these concerns and work is underway to understand and manage the overall economic implications of implementing Forest Practices Review recommendations, to support a sustainable forestry industry in Nova Scotia.

Linkages with other Lahey implementation projects comprise a third, broad area of concern for stakeholders. For some, High Production Forestry and the overall impact of implementing NBM is required before they can fully understand how the SGEM will affect their interests. There was also concern that the SGEM might manage forests into an old growth condition, signaling a need to coordinate the SGEM and the management of Matrix lands with a revised Old Forest Policy. For others, stronger linkages with natural disturbance regime science was needed, along with landscape-level linkages, since biodiversity and species are not readily or adequately managed solely at a stand level. Related to this, the land base continues to be actively managed and this affects baseline conditions for the application of Matrix forest management, going forward. Environmental and industry stakeholders generally supported an update of interim guidelines while the SGEM continues to be developed, as this could address harvest operations underway while allowing time for other Lahey implementation projects to advance as well, in turn creating the conditions where the different parts could be brought together and considered in aggregate.

Linkages between the draft guide and other projects under the broader initiative of Forest Practices Review implementation will be considered as projects continue to progress and additional information becomes available.

3.0 Reoccurring Themes

Wildlife and Biodiversity

There was a sense among many stakeholders that the draft SGEM was still primarily a timber harvest-focused guide, which for some stakeholders implied that the prioritization of ecosystems and biodiversity were not the main focus of the guide.

Summary of feedback

- Stakeholders spoke to the importance of forested wetlands (e.g. wet deciduous and wet coniferous forests), for avian biodiversity and that harvesting in these areas should be removed altogether.
- There was concern that the draft guide did not adequately address species at risk. Site visits and tree marking were suggested for retaining key features, and wildlife considerations should be more than retaining live and dead snags.

<u>Department Response</u>

The SGEM has been revised to shift the emphasis away from economically driven decisions and toward the prioritization of biodiversity, specifically through the creation, enhancement and maintenance of diverse multi-aged forests, where ecologically appropriate. In addition, there is now a mandatory requirement for permanent reserve (legacy) structures (i.e. trees) to remain on all sites for biodiversity purposes, and a greater emphasis on avoidance of management within ecologically sensitive ecosystems on Crown land. Specifically, harvesting is not prescribed in the SGEM and should not occur in the following Forest Ecosystem Classification (FEC) forest groups: *Cedar, Karst, Open Woodland, Floodplain, Wet deciduous and Wet coniferous.*

It was apparent from some stakeholder comments that new PTA requirements may not have been fully communicated. There are additional requirements in the PTA pertaining to capturing and reporting data on stand-level biodiversity features such as wildlife features (including species at risk habitat and identification), rare trees and plants, coarse woody material, vertical/horizontal diversity & stand age. Treatments prescribed from PTA data must also consider NBM outputs first and adjust, if required, by increasing retention, or delaying or avoiding harvesting, to ensure long term site nutrient sustainability. PTA Certification training for practitioners will be revised to match new standards within the guide and include biodiversity-focused field and classroom components using *A Field Guide to Forest Biodiversity Stewardship* as core training and reference material for practitioners.

Economics of Implementation

The economic implications of the draft guide were a key area of concern. Stakeholders expected that the real cost per ton (or cubic meter) of fibre will increase due to a need for more time spent on field and office-based planning, additional training time requirements, increased pre-treatment assessment (PTA) requirements, and more roads and infrastructure needed to access timber. The impact of these increased costs will be compounded by less timber being harvested per entry per unit area at the site level. Some stakeholders felt this may be particularly true in the near term, e.g. they indicated that managed forests in the Ecological Matrix comprised of larger, older trees, may provide large volumes of valuable hardwood and softwood sawlogs eventually, but this will be many years into the future and will require silviculture investment in the near term to do so.

Summary of feedback:

- In addition to increased costs and lower quality products in the near-term, implementation of the SGEM will be challenged by limited markets for softwood pulpwood and all hardwood products.
- For these reasons, timing of implementation is important. Impacts on long and short-term fibre supply need to be understood and time allowed for mills to modify sourcing strategies and avoid empty yards.
- High production forestry and forestry in the Matrix should be planned and implemented together.
- Moreover, silviculture assistance will be required to ensure tending work is feasible.

<u>Department Response</u>

The department recognizes the importance of these concerns. The design of the SGEM does have implications for implementation, many of which will have associated costs. As mentioned, other projects that are underway as part of the current stage of implementing recommendations from the Independent Review of Forest Practices will also impact the economics of forestry on Crown lands in the years to come. Accordingly, the impact of the SGEM is difficult to understand in isolation. In part for this reason, the mandate of the team was to focus on the technical elements of Matrix forest management and especially on aligning the SGEM with NDR science.

The SGEM is being designed to be adaptive in nature and improved over time based on new research and information and emergent issues related to its implementation, as well as wider changes including climate change, shifting societal demands on the forests, and/or changes to forest policies and legislation.

Finally, although the FMG was previously designed for all landowners, the SGEM applies to ecological Matrix zone within the Triad and is focused solely on Crown lands.

Silvicultural Systems, Treatments and Tools

The inclusion of silvicultural timelines in the draft SGEM attracted a lot of interest and was generally received favourably. Stakeholders commented on the importance of thinking about forest management in terms of the aggregate effect of multiple entries, whether to better manage toward restoration objectives or to anticipate how management decisions now may affect the range of options available at a later date, for instance as forests get older following higher retention harvest activities.

Summary of feedback

- Some technical aspects of irregular shelterwood require clarification and consistency. Location of gaps and their orientation in size and shape to release already established regeneration is one of the most important aspects of irregular shelterwood. Also require further information on how elements of stand structure would be managed within and between entries (e.g. tending of immature trees within gaps).
- Timelines for selection cutting and irregular shelterwood removal percentages and cutting cycles may not result in desired number of cohorts. If removal from successive entries exceeds growth since last entry, this will deplete residual growing stock over time. Moreover, the decision keys will not set stage for successive entries to follow the same silvicultural system, as illustrated in the timelines.
- The draft guide needs to be expanded to provide guidance for forestry in Maritime Boreal forest groups (i.e. Highlands and Atlantic Coastal), to manage single age-class forests spatially to support biodiversity.

<u>Department Response</u>

Overall, multi-aged systems (irregular shelterwood & selection) are prescribed as the predominant systems across Acadian FEC forest groups. The revised SGEM provides more avenues to restoration treatments, and tending treatments are still available for forest managers (pre-commercial thinning, commercial thinning, crop-tree release), as techniques to shift species composition towards greater proportions of long-lived intermediate to tolerant (LIT) species. These tending treatments can also improve future economic value of individual trees.

It is important to note that the silvicultural timelines included in the initial draft of the SGEM were to some extent illustrative. It is difficult to predict how a forest will change over time, and there are instances where a stand might move from one pathway to another (e.g. from irregular shelterwood to selection). Further information has been provided to inform the location and size of gaps. This is reinforced by the addition of planimetric representations (i.e. as viewed from above), of post-entry stand structure. These representations are also meant to be illustrative and not prescriptive.

The department recognizes that Maritime Boreal forest groups, and FEC forest groups within the Acadian forest that are azonal, are limited by site, nutrient and environmental factors, and therefore will not have the same structure or successional pathways as Acadian zonal forest groups. As noted earlier, work on the Maritime Boreal forest groups continues and proposed changes to management in these forest groups will be available for comment during a separate, future consultation process.

Decision Keys

As with the FMG, the decision keys in the SGEM draw on the scientific and technical knowledge contained in the guide to provide a decision tool that generates harvest prescriptions at a stand level based on key factors, for instance forest group and aspects of stand condition. Stakeholders provided a substantial amount of feedback on the keys, and on their constituent parts and outputs. This section will address comments on the keys in general and on three related areas where stakeholders expressed a high level of interest: the definition of Acceptable Growing Stock (i.e. AGS, and by extension the definition of Unacceptable Growing Stock, i.e. UGS), retention levels and salvage. These three sub-issue areas will be addressed sequentially in that order, after comments on the keys in general have been addressed. Concerns around regeneration are discussed in the subsection on retention levels.

Summary of feedback

- Decision keys still reflect economic objectives and lead to regenerate keys too often, with economic factors such as economic maturity and product-orientated definition of AGS driving post-harvest levels. It was argued that tree health and presence of LIT species should drive decisions in regenerate keys, not economic maturity and seed-bearing age.
- Keys do not address stands that are currently multi-aged, which should not be treated using regenerate key regardless of UGS.
- The SGEM cannot cover every forest condition. Allowing flexibility and relying on forestry professionals to make the right decisions, for which they will be accountable, could be a critical component of doing ecological forestry right.
- In multiple places the SGEM recommends patch or gap openings where windthrow risk is high, yet keys frequently prescribe continuous cover irregular shelterwood when wind hazard is high. Consider reintroducing strip and patch shelterwood for some stands to improve wind firmness. This can also move forests toward shade tolerant, quality sawlog forests.

<u>Department Response</u>

Decision keys for zonal and azonal Acadian forests have been reviewed with reference to ecological conditions, predominant Nova Scotia climatic influences, and resulting forest development and succession.

Decision points throughout the decision keys for these forest groups were changed to better reflect the prioritization of biodiversity, and the shift from an economic focus to a biodiversity and restoration-focused guide. Changes include using age and forest structure as an initial decision point, significant reduction in avenues to clearcut harvest systems, thresholds for AGS and UGS, and modified definitions. Finally, silviculture systems and retention of pre-harvest conditions were designed to create and maintain stand structures and compositions similar to those resulting from natural disturbances.

The regenerate keys have been removed and replaced with restoration and irregular shelterwood keys. The restoration keys place more emphasis on the restoration of populations of native trees that are currently insufficient, but where an ecosystem can support their growth and development.

Concerns related to the prescription of low retention continuous cover shelterwood were helpful. These treatments have been removed from the SGEM. Strip and patch shelterwood treatments have been reintroduced, as these may mitigate windthrow better in lower retention irregular shelterwoods. Medium to high retention irregular shelterwood treatments are proposed to be used to establish multi-aged stands, after which time selection harvest may be indicated.

"Economic maturity" has been removed and replaced with more ecologically appropriate terminology. Maturity is now assessed based on regeneration and stand development.

AGS/UGS

Summary of feedback

- Stakeholders and Mi'kmaq representatives commented that the SGEM seems to be orientated toward economic objectives. Restrictions on AGS should be reduced, and definitions should better reflect ecological values.
- Defects should be further defined. For instance, many UGS physical descriptions are important for supporting biodiversity values. If only defect free stems qualify as AGS this will lead to more regeneration cuts in the Matrix.

Department Response

Economic maturity has been removed as a consideration within the keys. The keys have been designed to increase AGS and LIT abundance simultaneously. The concept of AGS/UGS is retained to discourage high grading in partial harvests, however the significance of AGS/UGS is less of a determining factor in whether a partial harvest is prescribed for a given site or not. For example, a site with high proportion of UGS can still receive a high retention irregular shelterwood or partial harvest treatment, depending on the pre-harvest proportion of LIT.

Regarding the need to be more inclusive of biodiversity values, the SGEM will be accompanied by an updated PTA procedural document. The presence of biodiversity attributes including coarse woody material, snags and wildlife trees will be recorded and reported as part of the PTA submission to the department, which will allow the Integrated Resource Management team (IRM) to audit post-treatment conditions to ensure compliance with management objectives.

Retention

Summary of feedback - Retention

- Mi'kmaq representatives commented that higher retention levels should be prescribed where possible.
- Numerous stakeholders commented that 20% retention was too low, that actual retention following multiple entries could be lower still, and that this does not accurately reflect natural disturbance regimes of the Acadian Forest.
- There was additional concern that lower retention could also lead to more blowdown, further lowering effective retention levels and potentially introducing safety concerns.

Department Response

Overall, retention levels have been adjusted upward. The SGEM now requires 1/5 minimum retention in Acadian azonal ecosites, and 1/3 minimum retention in Acadian zonal forest groups, with majority of interventions expected to retain 1/2 to 2/3 of pre-intervention stand structure for biodiversity and growing stock purposes. The revised SGEM provides for increased use of prescribed retention in gaps, as well as specific guidelines, standards and best management practices for retaining forest structure throughout all harvests.

The department recognizes that blowdown is and will be a problem now and in the future. To better respond to these expectations, the revised SGEM makes expanded use of gap-based systems with a high retention Matrix where windthrow risk is deemed to be high.

Salvage

Summary of feedback

- Multiple stakeholders had concerns with salvage harvests and felt that the 25% disturbance trigger was too low, and that 80% removal was too high.
- It was felt that this does not mimic natural disturbance and may be damaging to soil and restoration requirements for many forest stand types.
- Stakeholders suggested that the salvage threshold be reconsidered to reflect biodiversity and restoration as primary concern.

Department Response

In response to stakeholder concerns, salvage has been removed from keys and will now require special approval from the department. This could include review and approval from IRM and Forest Protection, depending on whether the salvage scenario under consideration is driven by wind, fire, insects or disease.

4.0 Summary of Key Revisions to Date

Following its release for comment in March 2020, the SGEM has undergone a significant revision process, in large part to reflect and respond to input received from internal and external stakeholders, including key experts and targeted stakeholders. This section provides a synopsis of key revisions that have been made. The revised SGEM now includes:

- A focus within zonal Acadian ecosites on developing forests comprised predominantly of long-lived, shade tolerant species.
- Decision points throughout all forest groups that have been changed to reflect a commitment to prioritizing biodiversity and restoration, including:
    - Use of forest structure as an initial decision point,
    - Elimination of avenues to clearcut harvest systems except in rare circumstances,
    - Removal of regeneration keys and replacement with irregular shelterwood and restoration keys.

- Greater retention of trees following harvest, with the goal of managing toward more diverse forests in terms of age, structure, and species diversity.
- Silvicultural systems and retention designed to create and maintain stand structures and compositions similar to those resulting from natural disturbances.
- Separation of Maritime Boreal and Acadian Forest for management purposes, based on natural disturbance regimes.
- Increased minimum retention levels of 20% (1/5) in azonal Acadian forest groups, and 33% (1/3) in zonal Acadian forest groups.
- Harvesting is not prescribed and should not occur in ecologically sensitive ecosystems on Crown (cedar, karst, floodplain, open woodland, wet deciduous and wet coniferous).

In addition, the following changes have or will be made to the pre-treatment assessment (PTA) process:

- Additional requirements for PTA to capture and report data on stand-level biodiversity features.
- Inclusion of new old forest assessment triggers in the PTA.
- A requirement for treatments prescribed from PTA data to first consider Nutrient Budget Model and adjust treatment if required to maintain or enhance long term site nutrient sustainability.
- PTA Certification training for practitioners to be revised to match new standards within guide and include biodiversity focused field and classroom components.

Appendix A – Participating Organizations and First Nations

First Nations

- Assembly of Nova Scotia Mi'kmaq Chiefs
- Millbrook First Nation
- Sipekne'katik First Nation

Licensees and Industry

- Great Northern Timber
- JD Irving
- Medway Cooperative Community Forest
- Mi'kmaw Forestry Initiative
- Northern Pulp
- Port Hawkesbury Paper
- Taylor Lumber
- Westfor

Environmental NGO

- Ecology Action Center
- Healthy Forest Coalition
- Mersey Tobeatic Research Institute
- Nature Nova Scotia

Associations and Stakeholder Representatives

- Association for Sustainable Forestry
- Large Private Landowners
- North Nova Forest Owners Co-op
- Nova Scotia Forest Technicians Association
- Registered Professional Foresters Association of Nova Scotia

Department of Lands and Forestry Staff

- Renewable Resources Branch
    - Forestry Division
    - Resource Management Division
    - Wildlife Division
- Regional Services Branch

    - Parks, Outreach and Service Delivery
    - Forest Protection Division
    - Integrated Resources Management
- Policy Planning and Support Services Branch