Crystal Lake Road Rehabilitation Collaborative Plan

VERSION 2.0

March 31, 2020

Prepared for:

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Acknowledgements

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- **Sean and Craig Kennedy** – Kootenay Silver Inc., Mineral Claim Holder
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Executive Summary

The intent of the Crystal Lake Road Rehabilitation project is to build a collaborative plan that incorporates the objectives from the Environmental Stewardship Initiative for road rehabilitation efforts in the Crystal Lake area south of Vanderhoof, BC. To achieve this, a multi-phased approach was used to identify current and future land and resource uses, overlapping management objectives and priorities, and road rehabilitation candidates based on this strategic direction, then recommend treatment opportunities and strategies to mitigate and/or offset industrial activities as they relate to and impact ESI objectives.

The Crystal Lake Road Rehabilitation Plan was developed as a collaborative planning process with the following key steps:

1. Planning and collaboration
2. Information gathering and data preparation
3. Land base analysis and rehab candidate identification
4. Collaborative planning and stakeholder engagement
5. Treatment prioritization and strategies
6. Road Rehabilitation Collaborative Plan (as reported here).

Through this effort, approximately 275 km of road was identified across the Plan Area as potential opportunities for road rehabilitation efforts. This represents 61% of all roads within the Plan Area. Assuming an average road width of 5 metres, this is approximately 138 ha of opportunity overall. In addition, approximately 25 km of road (or 12 ha) may be available as a partial rehabilitation opportunity (i.e. decompact and plant the road while maintaining a small trail for required access). Based on previous road rehabilitation programs delivered in the Vanderhoof area, it is understood that the total road length and area identified in the analysis may not be realized on the ground (e.g. due to natural regeneration occupying the site). Using the success rate of 65% from previous programs, this may result in 178.7 km (89.3 ha) of realized rehabilitation opportunity, with an additional 16.1 km (8.0 ha) of partial rehabilitation.

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List of Acronyms

AMP	Access Management Plan
AMEBC	Association of Mineral Exploration in BC
ATV	All-Terrain Vehicles
BCWS	BC Wildfire Service
BCTS	BC Timber Sales
BEC	Biogeoclimatic Ecosystem Zone
CEA	Cumulative Effects Assessment
CSFN	Carrier Sekani First Nations
CSTC	Carrier Sekani Tribal Council
ESI	Environmental Stewardship Initiative
ESSF	Engelmann Spruce Sub-Alpine Fir
FCI	Forest Carbon Initiative
FNR	Functionally Non-Roaded
FPPR	Forest Planning and Practices Regulation
FSR	Forest Service Road
HCTF	Habitat Conservation Trust Fund
LRMP	Land and Resource Management Plan
MEM	Ministry of Energy and Mines
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MPB	Mountain Pine Beetle
MSP	Mechanical Site Preparation
NAR	Net Area for Reforestation
RESULTS	Reporting Silviculture Updates and Land Status Tracking System
ROS	Recreation Opportunity Spectrum
SBS	Sub-Boreal Spruce
SERNbc	Society for Ecosystem Restoration in Northern BC
SPNM	Semi-Primitive Non-Motorized
SPM	Semi-Primitive Motorized
SOP	Standard Operating Procedure
TRC	Truth and Reconciliation Commission
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
VRI	Vegetation Resources Inventory

1 Introduction

The Environmental Stewardship Initiative (ESI) is a collaboration between the provincial government and 30 First Nations in northern BC, with the approach of incorporating western science and Indigenous knowledge to work collectively towards shared principles in land management. The scope of the ESI includes four key areas: (1) ecosystem assessment and monitoring, (2) ecosystem restoration and enhancement, (3) ecosystem research and knowledge exchange, and (4) stewardship education and training. In the Omineca region, working groups have been established to focus on biodiversity, moose, and freshwater and anadromous fish, and develop options for establishment of biodiversity conservation and recovery areas for these values.

The intent of the Crystal Lake Road Rehabilitation project is to build a collaborative plan that incorporates ESI objectives for road rehabilitation efforts in the Crystal Lake area south of Vanderhoof, BC. To achieve this, a multi-phased approach was used to identify current and future land and resource uses, overlapping management objectives and priorities, and road rehabilitation candidates based on this strategic direction, then recommend treatment opportunities and strategies to mitigate and/or offset industrial activities as they relate to and impact ESI objectives. This project supports the ESI program and can be viewed as an example of implementing ESI objectives through respectful relationships and collaborative planning efforts.

1.1 PLAN OBJECTIVES

Plan objectives were defined by the committee during the initial project meeting in order to facilitate the land base analysis and the collaborative planning process.

Objective 1 – Reforesting Roads

- Identify methods for treatment and set rehabilitation goals for the Crystal Lake area;
- Coordinate road treatment priorities with industrial developments and create priorities based on ESI objectives and timing of treatments; and
- Categorize and identify roads for treatment while seeking incentives for rehabilitation (e.g. costs).

Objective 2 – Biodiversity and Habitat Values for Wildlife

- Consider treatment methodologies that promote, enhance or improve wildlife biodiversity (e.g. planting deciduous and alternative native species);
- Prioritize rehabilitation treatments to enhance established wildlife habitat and biodiversity values identified through the ESI objectives; and
- Prioritize roads for rehabilitation in a variety of forest age classes, landforms and soil conditions.

Objective 3 – Best Road Management Practices

- Create a framework for long-term planning of new road development that can be extrapolated to other areas (i.e. plan the lifespan of the roads in advance of building them); and
- Improve upon Best Management Practices for road development that promote better quality roads through improved locations and increased longevity, planning and forethought for future road development that supports rehabilitation and reforestation.

1.2 PLAN AREA

The Crystal Lake Plan Area is located approximately 22 km southwest of Vanderhoof, BC around Crystal Lake and includes approximately 37,900 ha between the Kenney Dam Road to the west and the Kluskus Forest Service Road to the east (see Figure 1). Based on the available spatial data, there is approximately 449 km of roads within the Plan Area including main access routes such as the Kenney Dam Road.

The majority of the area is Crown land with a few Woodlot tenures in the northeast (Saik'uz First Nation and two privately owned), some private land parcels in the west along Kenney Dam Road, and one parcel (65 ha) of Agricultural Reserve Land in the north. In addition, Greer Creek Falls and Home Lake recreation trails, as well as recreation sites and reserves around Paddle Lake, Home Lake, Veronica Lake, Greer Creek and Greer Creek Falls (92 ha total) are within the Plan Area. The major forest licensees operating in this area include Canfor, Sinclar Group (Nechako Lumber), and BC Timber Sales. Additional land uses and jurisdictions that influence the planning process includes the Prince George Fire Centre (BCWS), Prince George Timber Supply Area (MFLNRORD), two range tenure holders, four trapline holders (majority of the Plan Area is covered by one license), two guide outfitters, and one mineral claim.

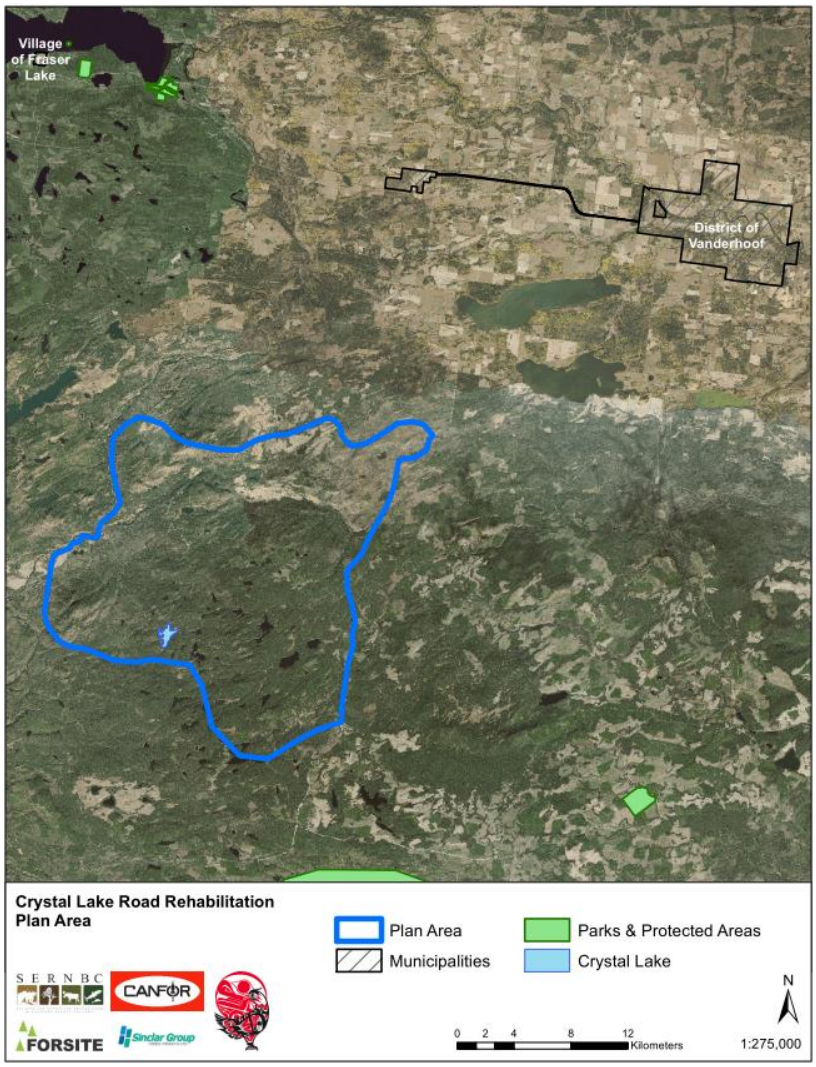

Figure 1: Crystal Lake Road Rehabilitation Plan Area

Based on the Biogeoclimatic Ecosystem Classification version 11 (BEC, 2018), the BEC zones occurring in the Plan Area are predominately Sub-Boreal Spruce (SBSmc3 (48%), SBSdw3 (33%), SBSdk (9%), and SBSmc2 (4%)) with a portion of the area in Engelmann Spruce-Subalpine Fir (ESSFmv1 (6%)). From the Vegetation Resources Inventory (VRI, 2019), the leading species is mostly interior lodgepole pine (45%) and spruce hybrids (32%) with some occurrences of trembling aspen (7%), black spruce (6%), subalpine fir (1%) and Engelmann spruce (1%) (Figure 2). The age class distribution shows that 73% of the Plan Area is over 81 years old (27,560 ha), 11% is under 20 years old (4,210 ha), and 9% is between 21 and 80 years (Figure 3). Approximately 7% of the Plan Area has no species assigned and therefore no age class associated with it in the VRI.

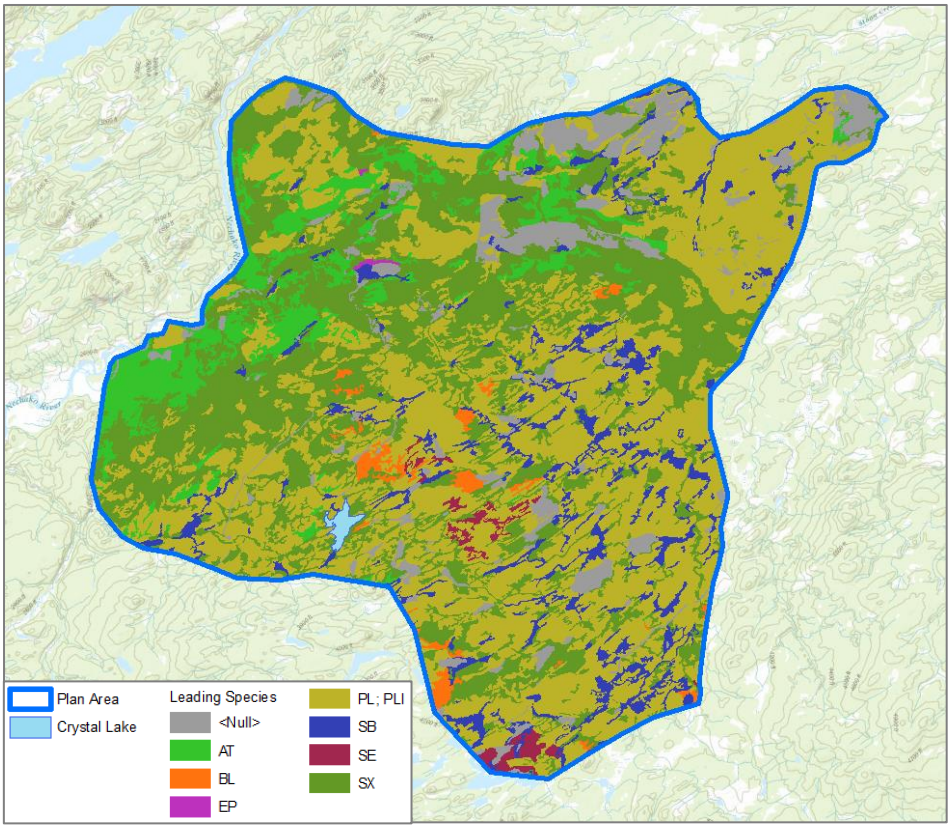

Figure 2: Projected Leading Species Distribution

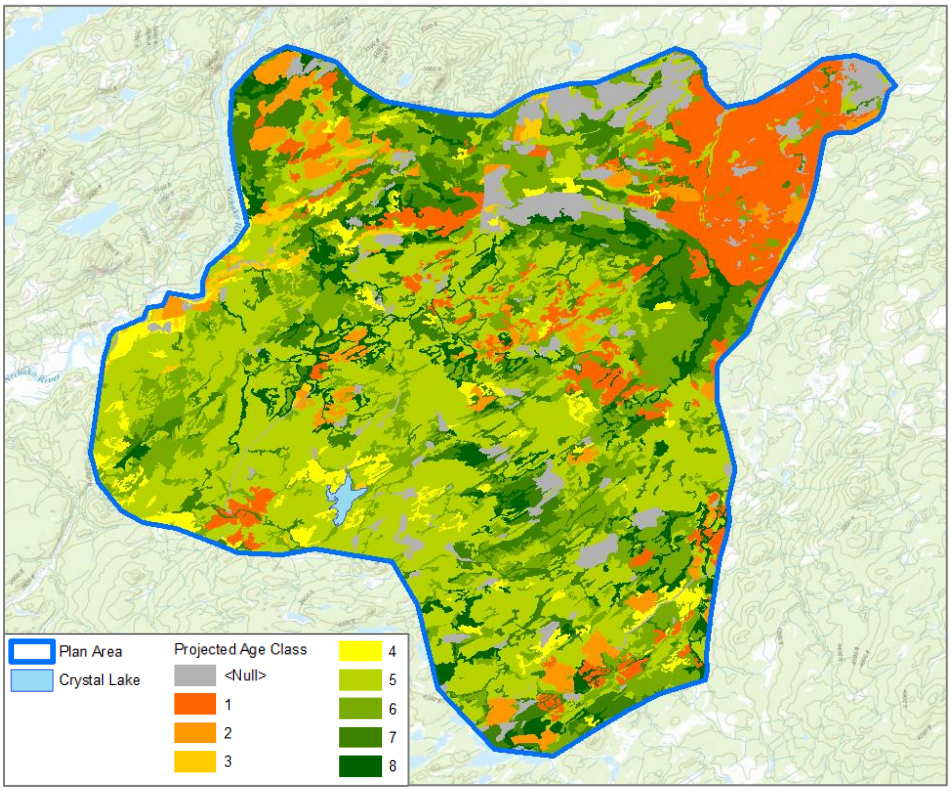

Figure 3: Projected Age Class Distribution

2 Approach

2.1 PLANNING AND COLLABORATION

A project kick-off meeting was held on October 29, 2019 with the Steering Committee (see below) in Vanderhoof, BC. The purpose of the meeting was to confirm the Plan Area and project objectives, expectations, approach, deliverables and timelines. Objectives were identified by the committee relative to the ESI program as well as policy or other management direction in support of road rehabilitation efforts. This meeting provided the introductory forum for the committee to come together and engage in collaborative planning discussions in order to develop a transparent decision making process that reflects the values represented by the committee. A Terms of Reference document was developed that describes the intent and objectives of the project and identifies the committee's individual roles and responsibilities. This document (provided under separate cover) includes a Communication Strategy for engaging with the key stakeholders identified by the committee during this initial meeting.

STEERING COMMITTEE

In support of the planning process, a Steering Committee (the committee) was established that consisted of representatives from the provincial government, First Nations, and the major forest licensees operating in the area. The role of the committee is to ensure focus of delivery, scope and details of industrial development, values to be managed, and gaps in existing planning that will need to be addressed. The committee met throughout the project to provide input and direction to the overall process and resulting plan. The committee consisted of the following individuals:

- John DeGagne, RPF – President, Society for Ecosystem Restoration in Northern BC (SERNbc); Stewardship Forester, Stuart Nechako Natural Resource District (MFLNRORD)
- Bev Boersen – Land and Resources Assistant, Saik'uz First Nation
- Reese Patrick – Environmental Monitor, Saik'uz First Nation
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- Cathy Middleton, RPF – Authorizations Forester, Stuart Nechako Natural Resource District (MFLNRORD)

2.2 INFORMATION GATHERING AND DATA PREPARATION

Key base information and planning inputs were gathered to guide plan development and support the land base analysis. This includes values and objectives identified through the ESI, higher level plans such as the Vanderhoof Access Management Plan, or in communication with the committee. Past and planned future forestry development opportunities, including any efforts to ameliorate industrial activities, were documented in the spatial data in collaboration with the licensees, as well as clarification of any outstanding obligations. Additional land base information was either downloaded from the provincial government data warehouse (DataBC) or requested directly through MFLNRORD (e.g. ESI data). A complete list of data sources and supporting information is provided in the Appendices.

2.3 LAND BASE ANALYSIS

Once all data and planning inputs were finalized, the Plan Area was reviewed with this information in order to identify potential treatment opportunities. Roads were reviewed in light of current and planned forest licensee practices and the proposed ESI moose winter ranges and biodiversity target areas. Current satellite imagery (2019) was used to digitize any missing roads within the Plan Area which were confirmed by the licensees prior to inclusion in the Plan. The decision making process regarding prioritization occurred at later stages of the analyses, allowing this preliminary review to focus on harvesting practices and outstanding obligations.

The following steps were completed to identify a road as a candidate for rehabilitation:

1. Delineate main roads, Forest Service Roads, and private roads as not available for rehabilitation (REHAB = NOT A CANDIDATE).
2. Determine the status of harvesting (i.e. planned, in progress, completed, outstanding obligations).
3. Identify roads within already harvested cutblocks, including free to grow declared blocks, for current rehabilitation opportunity (REHAB = CURRENT).
4. Identify roads within planned cutblocks for future treatment opportunity (REHAB = FUTURE).
5. Review identified roads with project objectives to confirm rationales for rehabilitation.

2.4 STEERING COMMITTEE AND STAKEHOLDER ENGAGEMENT

Engagement with the committee occurred throughout the process with key engagement occurring at project initiation, after the land base analysis was completed, in development of treatment prioritization and management strategies, and review of the final Road Rehabilitation Plan. In addition, communication with the group once stakeholder feedback was received was important to review their interests and discuss inclusion in the Plan.

The Communication Strategy (as per the Terms of Reference) was implemented with key stakeholders to solicit their input and feedback into the planning process. The engagement method selected by stakeholder varied depending on the type of contact information available and the stakeholders' preferred method of contact. Efforts at engagement included an email early in the planning process to discuss the plan and their interest in participating, subsequent ongoing email communications, phone calls, in-person meetings, and distribution of information and data via an FTP site, emails, and mail.

All efforts at engagement and any resulting discussions were documented to support collaboration moving forward. A Microsoft Excel workbook was used to track and maintain all efforts of communication and feedback throughout project delivery. Feedback received was reviewed against the Plan objectives and discussed with the committee. This includes any adjustment to the initial land base analysis (rehabilitation classifications) with a rationale documented in the spatial dataset to support a transparent decision making process.

2.5 TREATMENT PRIORITIZATION AND STRATEGIES

With the updated road dataset, a prioritization flow chart was developed as a transparent decision making process to identify when a road can be rehabilitated and which management objective(s) it is achieving. This was developed in collaboration with the forest licensees as they had the operational understanding of how treatments could be implemented and would be involved with or responsible for treatment activities (e.g. future developments). Prioritization of rehabilitation efforts considered

locations of active and future harvesting operations in order to take advantage of contractor equipment already on site.

Once prioritization was defined, general operational considerations were identified for treatment strategies, including the standard to which the road was built and site conditions that would influence treatment prescription, as well as the estimated cost per kilometre to support further prioritization of treatments. However, site specific information is gathered through the field assessments in support of developing treatment prescriptions, which is a component of Plan implementation and therefore is not documented in the Plan itself.

2.6 ROAD REHABILITATION COLLABORATIVE PLAN

The final Crystal Lake Road Rehabilitation Plan identifies rehabilitation opportunities on the land base with a rationale for whether a road is treated or not as supported by the project objectives or in collaboration with the committee. Recommended treatment strategies and priorities capture:

- Priorities and directions resulting from existing processes, such as the ESI;
- Future access needs from multiple user groups;
- Operational efficiencies;
- Clarification of obligations; and
- Opportunities for waste pile grinding and access required to complete that activity.

The final plan includes a Tactical Funding Plan which documents challenges and gaps in current planning and policy frameworks that were identified through this collaborative process, including where funding is the main impediment to Plan delivery.

3 Planning and Management Context

The strategic direction for this plan was primarily driven by the Omineca Region ESI group and the broader ESI program, as well as recommendations and objectives detailed in higher level plans. The key direction from each of these plans has been summarized below (section 3.2) with a discussion on other existing road rehabilitation programs in the general area that support this Plan.

3.1 EXISTING ROAD REHABTILIATION PROGRAMS

There are a few examples of existing road rehabilitation programs in the north that can be used as a foundation for the Crystal Lake Road Rehabilitation Plan.

DUNKLEY LUMBER

Dunkley Lumber has developed a road rehabilitation program in the Prince George area which can be used to gain a foundational understanding of how rehabilitation activities are implemented and to modify practices with any lessons learnt through Dunkley's efforts. This program defined road rehabilitation to include the removal of ditch lines, pulling back all organic materials previously removed for road construction (including large woody debris, root wads, and organic soils), and removing culverts and skidding them to an accessible location for reuse or recycling. The intent of rehabilitation activities are to create a road prism indistinguishable from road-side areas other than the fact that there is no

established vegetation until planting activities are completed. The final product should appear to be mounded and fluffy due to the presence of organic materials.

The criteria used to identify candidates for the program include:

- The road is a dead end and provides no future opportunity.
- The road is accessed by a stream crossing that is deemed to be short-term.
- The road is, from a stability and environmental perspective, in a higher risk location.
- Rehabilitation offers improved visual quality in the mid to long-term.

Rehabilitation is included in Site Plans as temporary access to be accounted for in the Net Area to be Reforested (NAR). At the time of rehabilitation, a plan is developed which includes maps, a rate table, and pre-work standard operating procedures (SOPs, including a Deactivation/ Rehabilitation Pre-Work Checklist, Rehabilitation Inspection Form, and Mechanical Site Prep Pre-Work). If additional roads are identified post-development that would benefit from the program the road is recorded and a Site Plan amendment is prepared. Site visits are performed during and after rehabilitation activities are complete. All rehabilitated roads are planted the season following treatment, and all activities are reported to the Reporting Silviculture Updates and Land Status Tracking System (RESULTS).

In general, rehabilitation rates are by the kilometre however in some instances rehabilitation work is paid by the hour. In 2018, Dunkley paid between $2,600 and $4,000 per kilometre depending on the road standard. This rate generally includes the relocation of culverts to an accessible location for pick-up (to be recycled or reused), however it did not include removal of bridges (performed on an hourly basis). In addition, all erosion control work such as seeding and silt fencing is performed and paid for separately.

SERNBC

SERNbc has been involved in road rehabilitation planning and treatment activities in recent years across the north. A planning process was initiated in the Francois Lake area to develop a Road Rehabilitation Program that could be used broadly in the north by land managers. This planning process was the foundation for the work completed in the Crystal Lake area, and included steps for collaborative planning and stakeholder engagement as well as the land base analysis, development of treatment prescription options, and creation of standardized field forms with operational guidance documents to support on the ground efforts. In sum, the field assessment form considers the following key factors:

- **Site specific conditions**– road type (built standard), road prism compaction, soils, hydrology (i.e. adjacent riparian areas, stream crossings, existing infrastructure), current site occupancy (natural regeneration), adjacent stand characteristics (i.e. species, height), forest health factors, presence of invasive plants, and the presence of cattle (for natural range barriers).
- **Treatment options** – mechanical site preparation (MSP), planting prescription (i.e. species mix, density), drainage issues, and type and location of access control structures.
- **Priority** – based on site factors (i.e. higher risk locations) and higher level plan objectives (i.e. ESI).

The Operational Guidance document clarifies and defines the terminology used in the program (i.e. what is considered rehabilitated), site preparation considerations by equipment type (i.e. cat, excavator), general planting requirements including species and site selection, and access control measures. These documents have been made available for this project (provided under separate cover) as reference for the next steps in implementing this Plan.

3.2 ROAD REHABILITATION DIRECTION

The key guidance from higher level plans and direction from government and First Nations was used to develop the land base analysis and guide committee and stakeholder engagement (Table 1).

Table 1: Key Guidance from Higher Level Plans

Higher Level Plan	Management Direction / Priority for Treatment
ESI moose	• No new roads (beyond 0.6km/km^2 target) • Rehabilitate all roads within Moose winter range and the 5km buffer • No new roads/ rehabilitate priority < 200m from wetlands • No new roads/ rehabilitate priority < 300m from mineral licks • Functional rehabilitation means working in concentrated areas
ESI Biodiversity Target Areas	1. Low biodiversity areas (minimum targets) 2. Medium biodiversity areas 3. High biodiversity areas (maximum/ ideal targets)
Vanderhoof LRMP	• Rehabilitation encouraged in block spur roads • Use existing roads as much as possible • No new roads developed to access lakes • Maintain primitive access and provide good recreational vehicle access to the boundary of subzone C (Mt Hobson and Mt Greer)
Vanderhoof AMP	1. Functionally Non-Roaded (FNR) 2. Semi-Primitive Non-Motorized (SPNM) 3. Reduce road density across the District, especially where it overlaps with ESI Moose polygons
	• Not create the potential to establish a future pattern of use that is inconsistent with access management designations. This includes avoid creation of loop roads. • Minimal running surface counting towards road density and limited opportunity for useable and passable road surfaces for motorized recreation access. • Develop temporary roads that will be deconstructed, while being cognizant of how road disturbance can impact the undisturbed nature of these areas.
Forest Licensees	1. Current harvesting and/or no obligations 2. Future planned development and/or outstanding obligations
Other Land and Resource Users	• Access needs for tenured users – e.g. Range, Mineral Claims • Access for the general public – e.g. recreational groups, hunting

Saik'uz First Nation has adopted the ESI High Biodiversity Areas as "avoidance areas" in their Interim Resource Management Plan. Saik'uz's expectation is that if further activity in these avoidance areas occurs, appropriate mitigation measures will be employed that includes meaningful ecological offsetting (ongoing discussions with the Province).

4 Engagement and Input

Stakeholder engagement included discussions with the major forest licensees operating in the Plan Area as well as discussions with key stakeholders identified by the committee.

4.1 FOREST LICENSEE PRACTICES

Forestry practices to ameliorate current and future developments vary depending on a variety of factors beyond who holds the license. The following discussion only reflects the industrial practices of Sinclar and Canfor as they were engaged in this process. Deactivation practices are established in the Forest Planning and Practices Regulation (FPPR), including constructing cross ditches and waterbars to address natural drainage patterns, and removing bridges. However, rehabilitation activities are less common in the area unless there are direct land use constraints and objectives that dictate this type of management.

In this area, Sinclar utilizes winter harvesting and road construction to help reclamation and planting efforts at minimal costs through existing avenues in the appraisal system. Future development is planned for the winter, depending on snow packs, which if the right practices are followed can create more favourable conditions for rehabilitation (i.e. less compaction on the road prism due to road design and roads constructed to a different standard). In contrast, this area is considered more suitable for summer harvesting by Canfor as the soils are generally less sensitive due to rocky conditions compared to other areas in which Canfor operates.

Road constructions practices for Canfor include maintaining debris and organic materials on site to be pulled back onto the road surface once harvesting and obligations are complete. This practices provides nutrients to the previously exposed road surface to support reforestation efforts, breaks the line of sight along the road (i.e. when fluffy mounds are created), and makes general access in the area more difficult. In addition, activities are completed to interrupt the travel corridors and disrupt the line of sight for wildlife and humans.

Forest licensees currently are not able to accrue additional costs for rehabilitation over and above those identified in the permitting process, however they are looking to improve efficiencies by:

- Working together, such as through this committee and collaborative planning process;
- Utilizing machinery already on-site as much as operationally possible; and
- Incorporating planning for future rehabilitation into the operational planning cycle.

Licensees have also been working with local stakeholders in recent years to develop informal agreements such that forest development has minimal or short-term impacts on other land and resources users (see section 4.2).

OTHER FOREST LICENSEES

BC Timber Sales (BCTS) was not included on the committee, however a portion of their operating area overlaps with the Crystal Lake Plan Area and as such they were engaged to discuss their road practices. Some road rehabilitation activities are undertaken, especially within the LRMP designations, however objectives have varied by block from increasing timber supply (and subsequently carbon sequestration), access control, and salvage harvesting to manage for wildlife, and is influenced by what standard the road is being rehabilitated too (i.e. minimal built, planting).

In general, rehabilitation activities have focused on riparian areas to be planted at the time of block planting. In addition, the front end of some roads are rehabilitated in concert with deactivation activities to minimize future motorized traffic and to break the line of sight within the first couple hundred metres of a road or until it goes out of sight (i.e. through a natural feature like a topography break).

Through discussions with BCTS, no issues were identified on the roads selected for rehabilitation within their operating area and no changes were made to the Plan. BCTS has no current or future planned development in the Plan Area.

4.2 KEY STAKEHOLDERS

Key stakeholders were identified through a spatial data review of existing tenures and in discussions with the committee. This process identified the following users or user groups to be engaged with through the collaborative planning framework:

- MFLNRORD representatives – Recreation Officer, Range Officer
- Other forest licensees – BC Timber Sales
- Range tenure holders – Rim Rock Ranch Ltd., Corsa Contracting Ltd. (C4 Ranching)
- Trapline holders (4 individuals)
- Guide outfitters (2 individuals)
- Tourism operators and resorts – Crystal Lake Resort, Nechako Lodge & Aviation, Nechako Retreat
- Interest groups – Upper Nechako Wilderness Council
- Mineral claim holders – Kootenay Silver Inc.
- Ministry of Energy and Mines (MEM) representative – Inspector of Mines

In general there was support for any efforts towards rehabilitation and land reclamation. A few areas were brought forward as important for rehabilitation, in particular there was strong support around Paddle Lake (in general south of the 38 Road) and Home Lake. A recommendation was made to consider partial rehabilitation in key areas to maintain some ATV access for other tenure holders. Finally, some concerns were raised with creating new patterns of use on newly constructed roads, especially within LRMP designated areas (e.g. functionally non-roaded).

Stakeholder feedback was documented throughout the process to maintain a record of discussion regarding stakeholder concerns or support for the plan; this has been provided in the Appendices. Feedback was reviewed with the committee and where appropriate adjustments were made to the Plan in order to manage for multiple objectives on the land base.

AGREEMENTS

Forest licensees have already been working in concert with stakeholders to consider and include road management concerns within their operations. The following summarizes the current agreements in place between licensees and stakeholders within the Plan Area.

- **Grunt Lake** – Verbal agreement between Crystal Lake Resort and Sinclar to deactivate this road network during harvesting operations (2020) and maintain an ATV trail from the main road to Grunt Lake. ATV access to be maintained past Grunt Lake in the short-term for planting crews to access the blocks; once complete, this road will be fully rehabilitated.

- **Paddle Lake** – Sinclar commitment to rehabilitate roads in concert with harvest operations around Paddle Lake (e.g. current rehabilitation opportunity). This will require additional planning (by Sinclar) to coordinate silviculture access, acknowledging that ATV access will be needed in the short-term, however the intent is to plant roads at the time of block planting.
- **Crystal Lake Resort** – Concerns in general with increasing access in and around their guiding area which resulted in road standard commitments made by both Canfor and Sinclar to deactivate roads in identified areas (as represented in this Plan).

MINERAL CLAIM HOLDERS

In-depth discussions were held with the mineral claim holder, Kootenay Silver Inc., as they expressed opposition to deactivation practices in general as they will use all available access for mineral prospecting which can take decades while a region is being explored. There is a concern that rehabilitation activities will restrict access within their claim area or exclude the possibility of future drill programs, however there is support for managing access more effectively and limiting some access through deactivation practices provided it does not restrict their business opportunities.

To support this engagement, discussions were also held with the Director of Regulatory and Technical Policy with the Association for Mineral Exploration in BC (AMEBC), which represents, advocates, protects and promotes the interests of mineral exploration. In general, there is support with the collaborative process employed in this project as it represents a shift in timing when mineral claim holders are engaged with (i.e. at the onset of the planning process compared to after a plan has been developed which historically has been the case). This project was viewed as an opportunity to be involved with local land use planning to support improved understanding across industries and resource uses. There was acknowledgement that although a reasonable road network is desirable in order to access the broader claim areas, the location of future programs is unknown and highly variable and that maintaining every existing road on the land base does not provide for good land stewardship.

5 Road Rehabilitation Plan

The benefits of rehabilitating roads are far-reaching. In addition to bringing land back into productivity and potentially contributing to future timber supply (when planted with merchantable timber), planted trees in general contribute to increased carbon sequestration, reduced potential for slope failure and soil erosion, reduced potential for water quality degradation, and improved wildlife habitat, among other benefits.

5.1 DEFINITIONS

For the purposes of the Crystal Lake Road Rehabilitation Plan, the following definitions apply:

Deactivation – Non-permitted roads or permitted roads no longer needed in the future are to be deactivated. The primary need is to address natural drainage patterns, surface erosion or instability on the road prism. This may or may not be a licensee obligation depending on the road status. The legal road deactivation requirements for forest licensees are outlined in the Forest Planning and Practices Regulation (FPPR) section 82 and include barricading the road surface width in a clearly visible manner to prevent access by motor vehicles (other than all-terrain vehicles), removing bridges and stream culverts, and stabilizing the road prism. Warning signs should be posted during road deactivation activities. After a road is deactivated, a licensee must ensure that exposed soil is revegetated if it will reduce the likelihood of erosion, as per FPPR section 40.

Decompaction – Involves decompaction and scarification as defined by the Forest Practices Code of BC's *Forest Road Engineering Guidebook* (2002), with the goal of increasing infiltration rates and preventing concentrated water runoff while enhancing revegetation on the road by decompacting the road surface to provide favourable conditions for root establishment. This is achieved by breaking apart road surface materials to the point where below this are natural soil conditions (pre-road construction), providing a rooting depth to the soil and nutrients required for root and tree survival. Where practicable or identified in the Site Plan, this may include scattering of organics and woody debris on the treated road surface.

Road – as set out in the FPPR, *"means all or part of a road that is*

(a) a forest service road,

(b) authorized under a road permit, a cutting permit, an agreement under the Forest Act that does not provide for cutting permits, or a special use permit, or

(c) located within a Provincial forest, and authorized under an Act or its regulations, other than

(i) the Community Charter, Transportation Act, Land Act or Local Government Act, or

(ii) the Coal Act, Mineral Tenure Act, Mines Act or Mining Right of Way Act, if the road is located within the boundaries of a claim, lease, permit or other authorization granted or issued under the applicable Act or regulation".

For the purposes of road rehabilitation, this includes the road prism, as defined below, and landings as they are identified, but does not include the clearing width or right-of-way.

Road Prism – means an area consisting of the running surface, cut slopes, road fill, ditches, berms, pullouts, and landings.

Road Rehabilitation – The process of decompaction (if required) and planting of a road to reestablish a stand of trees. This is generally not a licensee obligation unless there is a stewardship

requirement to do so, or the temporary on-block roads are above the percent disturbance limits (as per FPPR section 35) and need to be rehabilitated.

Full Rehabilitation – Complete rehabilitation treatment activities on the entire road prism.

Partial Rehabilitation – Complete rehabilitation treatment activities on the road prism excluding the entire running surface, meaning that after treatment ATV access is maintained along the most compacted portion of the running surface. The intent is to decompact the road and plant along the road prism/ running surface while maintaining a small access route for ATV's (e.g. licensees to complete silviculture obligations) in the short-term with the assumption that planted stock along the ditches will eventually grow to achieve site occupancy on the road.

Running Surface – The entire flat surface on the road prism that has been compacted from vehicle use. This may be wider in some locations due to pullouts or small landings, and may not be consistent along the length of the road.

5.2 ROAD REHABILITATION CANDIDATES

Preliminary road candidates were identified through a review of forest licensee harvesting cutblocks, outstanding obligations, and rehabilitation priorities (i.e. ESI areas) in collaboration with the committee. Opportunities for rehabilitation were classified based on the timeline in which the road is available for treatment (Figure 4). Timing considers the status of outstanding obligations, particularly silviculture and planting activities as these tend to be the highest costs for operations. Note that the final treatment decision will be made after field assessments are completed and confirmed that a road is suitable for treatment.

- **Current Rehabilitation** – Roads available in the next two years with no outstanding or expected future obligations. Captures completed (pre-2020) and some currently active (2020) harvesting roads, as well as roads that are no longer active or in use.
- **Current Partial Rehabilitation** – Roads available now for treatment but are not a candidate for full rehabilitation due to ongoing access needs.
- **Future Rehabilitation** – Roads available in the future (post-2020) after planting is completed or silviculture obligations have been met. Captures roads that are currently proposed or under construction with planned harvesting activities.
- **Future Partial Rehabilitation** – Roads available in the future for treatment but are not a candidate for full rehabilitation due to ongoing access needs.
- **Not a Candidate** – The road is not suitable for rehabilitation activities (i.e. is a required main road or is on private land) and therefore is removed from any potential treatment opportunity.
- **Trail (Not a Road)** – Roads identified in the analysis that are no longer roads (i.e. due to natural regeneration) or are trails (i.e. ATV networks, historical mining trails). These were classified in the spatial dataset in order to avoid including them in any rehabilitation program.

A summary of the treatment opportunity by road classification has been provided in Table 2. An average road width of 5 m has been used to calculate an estimate of total area available for treatment. However, as noted above, this is variable based on site conditions, the standard to which the road was built, and planting prescriptions developed in the Site Plan (i.e. planted ditches may have already resulted in site occupancy on the road). Therefore, this has been provided only as an estimate to understand the scale of opportunity, and will be refined once field assessments are complete and treatment prescriptions have been developed.

Table 2: Summary of Road Rehabilitation Opportunities

Road Classification	Total Length (km)	Total Area (ha)	% of All Roads
Rehabilitation – Current	153.3	76.7	34 %
Rehabilitation – Future	121.6	60.8	27 %
TOTAL	**274.9**	**137.5**	**61 %**
Partial Rehab – Current	16.4	8.2	4 %
Partial Rehab – Future	8.3	4.2	2 %
TOTAL	**24.7**	**12.4**	**6 %**
Not a Candidate	147.25	73.6	33 %
Trails (Not a Road)	2.1	1.0	0.5 %

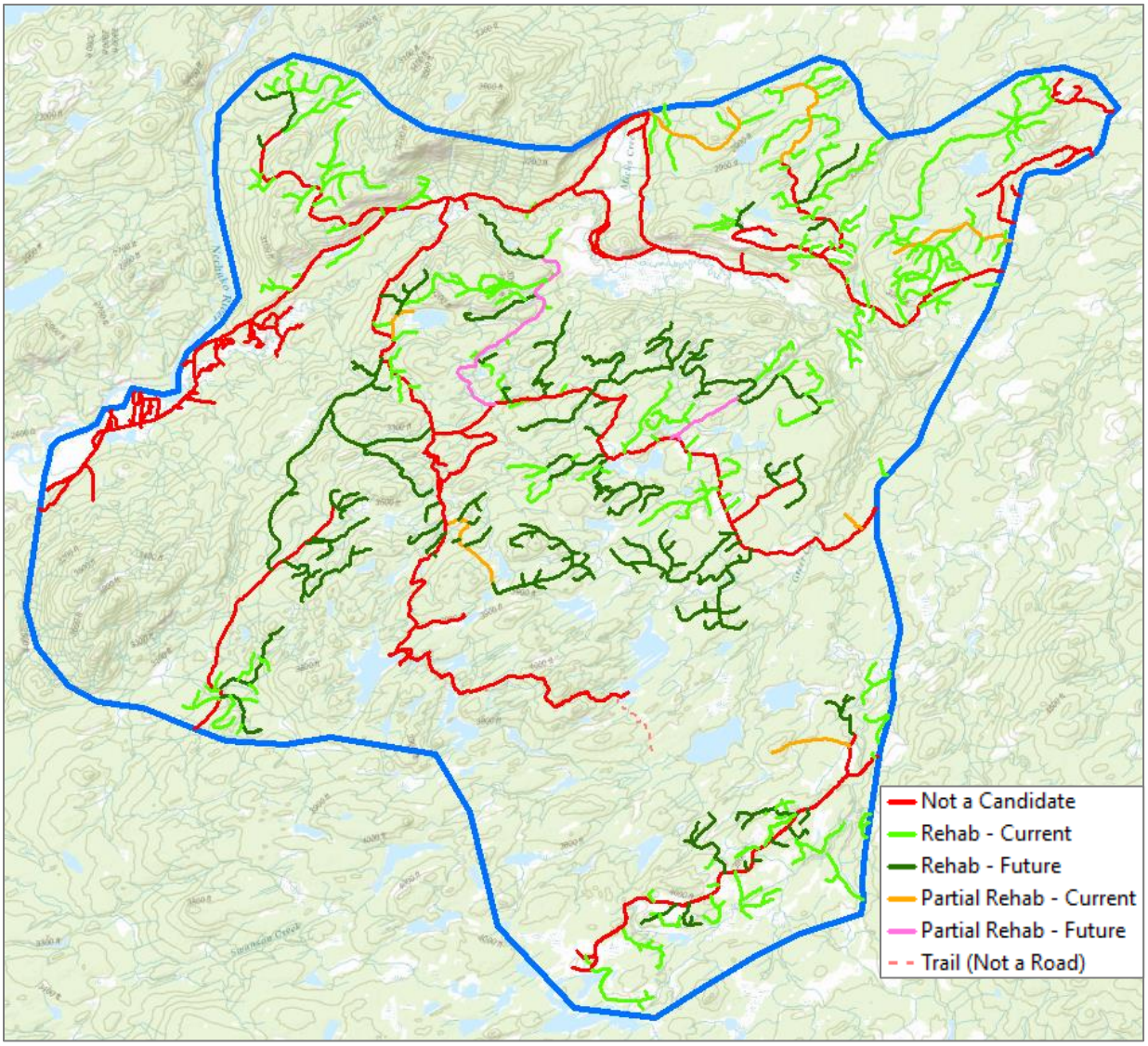

Figure 4: Road Rehabilitation Candidates in the Crystal Lake Plan Area

A final review was completed that assessed each road's opportunity relative to roads in the general proximity in order to consider the operational efficiencies of treatments. Through discussions with the forest licensees, some roads were changed from current to future, or vice versa, to avoid an area being treated multiple times if possible. For example, if a network of roads was identified as a future opportunity however there was one spur road available now, that spur road was changed to a future opportunity in order to be treated at the same time as the adjacent roads. Overall this had a minimal impact on the final road classification.

Based on previous road rehabilitation programs delivered through SERNbc, it is understood that the total road length and area to be treated identified in Table 2 may not be realized on the ground for several reasons. In the *Road Rehabilitation Program – Francois Lake* report (SERNbc, 2018), the success of identifying a road for rehabilitation from the land base analysis to field assessments was 65%. This means that from the office review only 65% of roads were realized as an opportunity on the ground. In order to capture this potential classification inaccuracy, the following success rates have been calculated (Table 3).

Table 3: Classification Accuracy and Potential Success Rates

Road Classification	100 % Success	75 % Success	65 % Success	50 % Success
Rehabilitation – Current	153.3 km 76.7 ha	115.0 km 57.5 ha	99.7 km 49.8 ha	76.7 km 38.3 ha
Rehabilitation – Future	121.6 km 60.8 ha	91.2 km 45.6 ha	79.0 km 39.5 ha	60.8 km 30.4 ha
Partial Rehab – Current	16.4 km 8.2 ha	12.3 km 6.2 ha	10.7 km 5.3 ha	8.2 km 4.1 ha
Partial Rehab – Future	8.3 km 4.2 ha	6.2 km 3.1 ha	5.4 km 2.7 ha	4.2 km 2.1 ha

The extent of rehabilitation activities that will take place will be dependent on budgets as funding is the key limitation to program delivery. As such, it is important to make decisions based on the cost of the activity, such as considerations for rehabilitation compared to other measures that are outside the scope of this Plan (i.e. access control, deactivation). The field assessments will provide the site specific data required to prepare a treatment prescription with the rationale for this decision.

5.3 REHABILITATION TREATMENTS

Rehabilitation efforts over the past 15 years have shown that achieving adequate tree growth in rehabilitated areas may be simpler than previously understood (FREP Extension Note #33, 2015). Results in the central interior have shown that low-cost rehabilitation techniques have been successful across various site conditions when planting to lodgepole pine. While this Plan will be planting a more diverse species mix, the concept of simplifying prescriptions will be applied while maintaining the integrity of the Plan's objectives. Site conditions will drive how the treatment prescriptions are developed and can be variable across the Plan Area. However, the primary decisions are:

1. Is the road is a candidate for rehabilitation: Yes or No
2. Does it require some type of decompaction activity (i.e. ripping): Yes or No
3. How will it be reforested (i.e. plant, fill-plant, not applicable due to natural regeneration)?

In development of a Rehabilitation Plan, it's important to consider the operational feasibility, authorizations and administrative processes, and funding sources to support plan implementation. Through this collaborative process the forest licensees were able to commit to the following in the Crystal Lake Road Rehabilitation program:

- Offer efficiencies through:
    1. Working together in collaborative planning processes such as this Plan;
    2. Provide access to machines and equipment already on site for harvesting operations in adjacent areas when possible; and
    3. Incorporate principles for road rehabilitation into their planning cycles;
- Work to offset rehabilitation costs by including additional roads outside of the Plan Area, where appropriate, in order to reduce road density across the Plan Area and the District;
- Sinclar is willing to build more winter roads in their planned/future developments, as this road standard is assumed to provide more favorable conditions for decompaction and planting efforts at a lower cost; and
- Implement this Rehabilitation Plan and the best practices documented within.

Licensees are not able to cover the costs of rehabilitation in addition to road deactivation and other practices they had already committed to. Efforts to reduce costs will support funding applications as well as the licensee's ability to incorporate rehabilitation plans within their broader operations.

The Domtar Road was identified as requiring further consideration during field assessments. A tank trap is already in place near Johnson Lake, however its current condition and ability to support rehabilitation activities (i.e. bringing equipment on site past this barrier) is still to be determined. If treatment opportunities exist past this barrier than it may be necessary to install a temporary bridge for access.

OPERATIONAL CONSIDERATIONS

Once field assessments are complete and preliminary treatment prescriptions prepared (through implementation of this Plan), the following considerations will be reviewed to determine an order or sequence of rehabilitation treatments based on operational efficiencies in effort to reduce costs. Field data on the road standard, soil type and treatment options are captured in the treatment prescription, while the cost threshold will be a discussion with the committee once all prescriptions are prepared and an operational plan is being developed.

- **Road standard** – The standard to which the road was build, including winter, summer or summer gravel, as well as short-term versus long-term.
- **Soil type** – To determine the level of compaction (e.g. compaction hazard from Site Plans) which will influence the ability and general success of planting. This will be completed using a basic shovel test to determine soil type (i.e. clay, sandy) and compaction.
- **Treatment options** – Considerations for different equipment (e.g. cat, excavator, direct planting with no site preparation) and their capabilities or effectiveness at achieving the Plan's objectives.
- **Cost threshold** (i.e. +/- $2,000) – To consider funding constraints and support operational efficiencies when machinery is on-site. Based on Dunkley's road rehabilitation program, a potential cost threshold may be $3,000 per kilometre, where roads projected to cost less than this threshold would be prioritized over roads with a higher operating cost. However, there is

caution to ensure that the objective priorities are not lost and that rehabilitation maintains its focus on the environmental stewardship benefits.

BEST PRACTICES

Through discussions with the committee, as well as a literature review on road rehabilitation, the following best practices are recommended in the Crystal Lake area:

1. Rehabilitation activities should consider the following practices at a minimum:
    a. **Remove the ditch line**.
    b. **Pull back all available organic materials** onto the road surface (i.e. large woody debris, root wads, organic soils).
    c. Physical **scarification of the road bed**. Rip the road bed to decompact the former running surface.
2. Rehabilitation activities should also consider the following practices where appropriate:
    a. **Partial rehabilitation** – decompacting the road surface and planting ditches while maintaining a small trail on the road surface, ideally where it is most compacted (assumed less successful for tree establishment). This allows for some access while reforesting the road such that over time the site will become occupied. This may be utilized where access to a cutblock is required beyond the network of roads to be maintained in order to provide short-term ATV access to key areas.
    b. **Breaking the line of sight** – designing or treating roads to interrupt the line of sight which disrupts the travel corridor for wildlife and humans. The intent is to treat the road such that you cannot see beyond your treatment, even though the treatment may not continue for the entire road length. Rehabilitate the first 100 – 300 metres of the road or until the road travels out of sight or through a natural feature (i.e. stream crossing). Can also plant in the middle of the road's running surface.
    c. Removal of the road bed to the point of re-contouring the land base if possible.
3. Explore opportunities for **planting deciduous and berry-producing shrubs** (e.g. willow, aspen, birch, and native shrub species). Goal is to recreate abundance and mitigate climate change. Often requires moist sites for success as these species are prone to drying out, therefore this practice this will be site dependent.
4. Considerations for **protecting planted trees** – including barriers, tank traps, etc. (beyond the scope of this Plan).
5. Manage treated roads to **avoid creating patterns of use** – using access control measures (i.e. barriers, tank traps) and community outreach and education (i.e. signage, newsletters).
6. Where appropriate for rehabilitating natural drainage patterns, **remove culverts** and transport to an accessible location for retrieval, ideally reusing where possible (e.g. taken offsite) or compacting the remaining culverts for recycling (more efficient for removal).
7. **Monitor rehabilitation efforts** over time to determine the efficacy of treatments to support iterations to this Plan and contribute to the broader knowledge of road rehabilitation.

8. To address timing of treatments, coordinate with the licensees to **deactivate roads now** (post-harvest) **that are a future rehabilitation opportunity**. This will aid in preventing patterns of use (by wildlife and humans) and improve road management in the short term until the road can be fully rehabilitated.

During time of road construction, licensees commit to the following in support of road rehabilitation efforts. Note some of these items are beyond the scope of this Plan, however they are important to consider as best road management practices moving forward so that roads are designed and constructed more effectively to support rehabilitation efforts in the future.

9. Use existing roads wherever possible to **minimize road construction** and avoid increasing the existing road density. This includes minimizing permanent road construction.
10. **Optimize road locations** when roads are necessary through collaborative and proactive planning.
11. **Avoid creating loop roads** or roads which parallel identified recreational values.
12. Utilize pre-existing access management points that are effective.
13. Collaborative management between forest licensees and other tenure or permit holders to develop Road User Agreements to ensure access management needs are met, as well as commitments and responsibilities are clearly identified.
14. Rehabilitation treatments are often the most economical when undertaken along with or shortly after the block is planted. **Plan for rehabilitation at the time of timber development**.
15. Include **temporary roads as part of the net merchantable area** for rehabilitation, allowing eligibility under the Interior Appraisal Manual for basic silviculture allowances.
16. Build **winter harvesting/ roads** to support rehabilitation efforts and the potential to treat without machines or site preparation as this standard of road is generally less compacted. This supports reduced greenhouse gas emissions and costs due to fewer equipment on site.
17. **Maintain all organic materials** (i.e. large woody debris, root wads, organic soils, etc.) on site to be brought back over the road surface when rehabilitating.
18. **Deactivate** (e.g. make impassable) at the road's point of commencement immediately after harvesting or planting activities have taken place.
19. Depending on site conditions, **licensees will plant where the road crosses riparian areas**, immediately post-harvest (including the area with in-block planting).

WASTE PILE GRINDING

Information regarding residual wood waste and fibre piling best practices were acquired from studies completed by FP Innovations (2018) as well as through a Forest Practices Board Complaint Investigation (2010). The following discussion provides an overview of common specifications, techniques, machinery, costs, productivity and limitations. Additional information has been provided in the Appendices.

The most common products include hog fuel, chips, firewood, and pellets. There are several different types of machinery that can be used based on the desired products, economics, and site specific circumstances. Equipment ranges from high productivity horizontal grinders with a companion loader to lower productivity tub grinders and portable chippers. The main techniques that have been utilized to

date in the province are grind to truck, grind to ground, residue chipping, and unprocessed collection. Residue composition can vary greatly due to a variety of factors, including merchantability specifications, harvest prescriptions, operator technique, species harvested, and terrain. The total composition of piles depends on whether you are harvesting a second growth or an old growth stand, and the piling formation depends on the end use, road grade, and the cut or fill slope.

Average costs and productivity can be broken down as shown in Table 4. These costs and productivity values are provided as a foundational understanding and actual costs are highly variable due to operator experience, machine size, moisture content, etc. Through an FP Innovations trail of best practices, licensees and operators reported piling costs were reduced by $2-3 per oven dried tonne, hoechucking costs were reduced by $10 per oven dried tonne, loading costs (unprocessed, chipping) were reduced by $10 per oven dried tonne, and grinding costs were reduced by $2 per oven dried tonne.

Table 4: Average Grinding and Chipping Costs and Productivity

	Grinding	**Chipping**
Average costs	$20-25 / oven dried tonne	$30 / oven dried tonne
Average productivity	25 oven dried tonnes / hour	15-25 oven dried tonnes / hour

Some limitations have been identified in this work, primarily due to road grades and cutslope height. Road grades can limit the areas accessible by secondary harvesters, and the cutslope height above a road or the fill slope below a road can determine whether secondary harvesting activities can occur. The following guidelines in Table 5 are provided to support planning but should be adjusted based on local conditions. The key to success is continual communication and working together to ensure objectives are managed for accordingly and the best practices are being implemented for that site.

Table 5: Piling Instructions by Road Grade and Cutslope Height

Road Grade	**Piling Instructions**
< 10%	Pile for grinding
10 – 15%	Pile with secondary harvester agreement only
> 15%	Pile for burning if pitches are longer than 50 m
Cutslope Height	**Piling Instructions**
< 3 m	Pile for grinding
3 – 5 m	Pile with secondary harvester agreement only
> 5 m	Pile for burning

The opportunity to utilize waste pile grinding in support of road rehabilitation efforts is largely captured pre-harvest during road development, where best practices can be implemented during road construction to allow for opportunities and efficiencies for waste fibre utilization. Assessments could also be made for road right of ways that are already built where fibre is still on site, however it is not likely the existing piles are sorted or set up for the most efficient fibre retrieval and therefore would require some work prior to bringing waste pile grinding equipment on site. Forest licensees identified future developments where there is a potential for waste pile grinding, however this needs to be reviewed further and discussions with local grinding operators held to better understand their specifications.

6 Tactical Funding Plan

The Tactical Funding Plan outlines what actions will be taken to achieve the goals and objectives established through the Crystal Lake Road Rehabilitation Plan (Table 6). The Tactical Plan is broken down by year and outlines what and how the next steps will be completed, who will be responsible, and what funding mechanisms are available. In addition, it identifies gaps in the current planning and policy environment, challenges identified through this collaborative process, and where funding is the main impediment to delivering the Road Rehabilitation Plan. A discussion is provided on potential cost-sharing opportunities, offsetting opportunities and alternative funding mechanism.

Table 6: Tactical Funding for the Crystal Lake Road Rehabilitation Plan

Item	Description
Section 1: Overview	
Objectives	1. Reduce road density 2. Improve biodiversity and wildlife habitat values 3. Improve access management practices
Strategies	• Rehabilitation – deactivate and plant • Deactivation – restrict access and address water drainage • Access management points – to support rehabilitation and/or deactivation activities
Section 2: Gaps & Challenges	
Data & Information Gaps	• Spatial road dataset requires updates to fully reflect current conditions • Waste pile grinding operations are still to be developed specific for road rehabilitation activities – best to plan for during timber development
Planning & Policy Gaps	• Appraisal system does not provide sufficient mechanisms for cost recovery on rehabilitated roads – identified as a key impediment to delivery • While the AMP provides guidance for access management, compliance is non-legal and therefore not enforced
Section 3: Priorities	
High Priority Areas *Priorities 1, 2, 6 and 7*	ESI Moose Winter Range ESI Biodiversity Target Areas
Medium Priority Areas *Priorities 3, 4, 8 and 9*	LRMP Access Management Objective: Functionally Non-Roaded (FNR) LRMP Access Management Objective: Semi-Primitive Non-Motorized (SPNM)
Low Priority Areas *Priorities 5 and 10*	LRMP Objective: Reduce Overall Road Density
Section 4: Funding Opportunities	
ESI	Funding has been provided through the Pathways Forward Agreement's Economic Development Fund which commits $70 million over a 4-year period (2019-2022) released on an annual basis ($15-20 million per year). Funding is accessible for resource management and stewardship as well as labour force development and enhancement. Funding could be utilized to support First Nations field crews to complete environmental monitoring and field assessments for road rehabilitation.

Item	Description
Habitat Conservation Trust Fund (HCTF)	Where rehabilitation supports wildlife and their habitat. May be most applicable within the ESI Moose 5 km buffer.
Forest Carbon Initiative (FCI)	Where rehabilitation supports carbon sequestration, meaning where merchantable species (i.e. pine) are planted. May be most applicable to areas outside of the ESI objectives where general road density reduction is desired.
Cost-Sharing (with forest licensees)	Opportunities to reduce costs by improving efficiencies with crews and equipment already on site or in adjacent areas.
	Set aside stumpage breaks for new roads. Temporary roads should be part of the Net Area to be Reforested (NAR) and therefore should qualify for basic silviculture allowances which may cover some costs associated with rehabilitation.
	Waste pile grinding and fibre utilization activities to offset rehabilitation costs.
Section 5: Next Steps/ Considerations	
Treatment prescriptions	Determine total length of road (km) and area (ha) for treatment in 2021
	Work with contractors/ operators to get cost estimates ($/km)
Funding	Engage with ESI to determine funding eligibility
	Engage with other funding sources to determine funding eligibility
	Prepare and submit funding applications to implement treatment prescriptions

7 Next Steps

The next steps for the Crystal Lake Road Rehabilitation Plan can be broken down into the following:

1. **Program Manager, Spring 2020** – It is recommended that a Program Manager be contracted to support implementation of this Plan. This individual would be responsible for coordinating and executing the steps described below, and to be the main point of contact for the committee, stakeholders, and government agencies.
2. **Continuing Engagement, Spring 2020** – More in-depth discussions are required with the mineral claim holder in order to finalize the Plan in the northeastern portion. Part of this engagement will include sharing the final Plan and maps with the key stakeholders that were engaged with during the planning phase of this work.
3. **Field Assessments, Spring/ Summer 2020** – Complete field assessments on all roads that present an opportunity (current and future). Field work will utilize the SERNbc field forms (provided under separate cover). This includes reviewing the TRAILS in support of updating the spatial database.
    a. Work with Saik'uz First Nation's Land and Resources Department to explore the opportunity to coordinate field work and assessments through the Nation. Saik'uz's Environmental Monitors will require training on road rehabilitation and prescription development through the SERNbc forms. With the support of the Program Manager, Canfor and Sinclar have committed at least 1 day each to train the monitors on the field assessment forms and what to look for in the field. Supervision may be required while field assessments are completed, however this will be determined after the training.
4. **Update Spatial Dataset, Summer 2020** – Any changes from the continuing engagement may result in new road classifications being designated. It is recommended any future changes be documented in the spatial dataset with a supporting rationale. New attributes should be created in the spatial dataset to capture any revisions after the field assessments are complete so that the final decision is captured with a rationale in addition to the classifications throughout the process to support transparent decision making. This may include working with the MFLNRORD to remove roads delineated as TRAILS in this project from the provincial road database. Field assessments should be completed to confirm these are trails and not roads prior to taking this action with the Ministry.
5. **Treatment Prescriptions, Summer/ Fall 2020** – With the data and information collected in the field assessment forms, treatment prescriptions can be developed for each road (or potentially by road segment if multiple treatments are recommended). Using the SERNbc field forms, multiple treatments are identified in order to prepare an efficient treatment plan (i.e. utilizing a certain piece of equipment that is already on site or nearby). This includes site preparation treatments as well as a planting prescription.
6. **Funding Applications, Fall/ Winter 2020** – Many of the funding sources have application deadlines in the fall/ early winter. Once field assessments are completed and a draft treatment prescription prepared, the funding sources identified in the Tactical Funding Plan (see section 6 "Tactical Funding Plan") should be engaged with to confirm this project meets each funders' objectives. Once the suitable funding sources have been identified funding applications can be prepared and submitted. For example, the Habitat Conservation Trust Fund (HCTF) will fund activities in support of wildlife and their habitats, and their application deadline is in November.

7. **Site Preparation Treatments, 2021** – Once funding is secured, coordinate for site preparation treatments on roads identified in the treatment prescriptions for this activity. Organize the work such that equipment is brought on site and all roads in the vicinity available as an opportunity are treated at the same time for operational efficiencies.
8. **Planting Treatments, 2022** – Depending on the species mixes and total trees, work with local nursery's to sow desired species or request for over-runs. Explore working with local native nursery's to source local, native tree and shrub species, particularly deciduous and berry-producing shrubs. Requests for trees should be made at least 1 year in advance of planting activities, ideally once treatment prescriptions are finalized and site preparation treatments are being prepared.

7.1 KEY FACTORS

A series of key factors will influence road rehabilitation success in the next 5 years:

- Ability of the current appraisal system to capture the additional costs of rehabilitation;
- Cost sharing or funding opportunities;
- Relationships with First Nations (i.e. longevity and success of ESI and government priorities);
- Timber supply implications and projections; and
- Climate change and forest health factors influencing the land base.

7.2 OWNERSHIP

Although initiated by and led by SERNbc, the Plan itself is a collaborative effort that will only provide value to road rehabilitation and management if the partners (the Steering Committee) continue to work together to respond to and implement the recommendations or information that comes to light through this process.

As the lead proponent, SERNbc will take on the responsibility, funding permitting, for the ongoing review and renewal of the Plan moving forward. A collaborative approach to road rehabilitation will continue to be critical to ensure meaningful restoration efforts are realized across the landscape over the long-term. Future collaboration and partnering with First Nations, tenure holders, private land owners and other stakeholders or groups that have expressed interest in access management planning is expected to ensure rehabilitation efforts are sustained over time.

Appendices

The following appendices have been provided under separate cover in support of the Crystal Lake Road Rehabilitation Plan:

- **A.** Data and Information Compendium
- **B.** Planning and Management Context
- **C.** Summary of Stakeholder Engagement
- **D.** Waste Pile Grinding Information

In addition, the following documents have each been provided under separate cover (3 documents total) as a component of this Road Rehabilitation Plan:

- Terms of Reference, including the Communication Strategy
- SERNbc Road Rehabilitation supporting documentation:
    - Field Assessment Form
    - Operational Guidance