Draft Tree Farm Licence 37 Forest Operations Plan

Area-Based Stewardship: Connected Planning in an Adaptive Management Framework

Part 3 of 3: Requirements for Forest Operations in Respect of Forest Practices, Silvicultural Systems, Stocking Standards, and Cutblocks and Roads for 2025 - 2029

July 25, 2025

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Welcome to the Forest Operations Plan

We are pleased to share the updated Forest Operations Plan (FOP) for the area of Tree Farm Licence 37 (TFL 37) within ‘Nam̱gis territory on northern Vancouver Island. We acknowledge and appreciate the support of the Province of British Columbia, who through the TFL 37 Pilot Project (TFL 37 pilot), provided an opportunity for the collaborative development of a local, relevant, and multi-generational focused Forest Landscape Plan (FLP) and FOP. It is rewarding to see the new predictability already being realized - supporting healthy ecosystems, communities, businesses, and forestry workers on northern Vancouver Island.

This is the third of three documents. For background information on the TFL 37 pilot, please reference the Companion Document to the draft Tree Farm Licence 37 Forest Landscape Plan and Forest Operations Plan. This FOP is consistent with the Gwa'ni Project and the Tree Farm Licence 37 Forest Landscape Plan.

Signed. See original hard copy.

July 25, 2025 - Rachel Dalton, RPF

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July 25, 2025 - Brian Svanvik,
Director of Natural Resources, ‘Namgis First Nation

Holders of the Forest Operations Plan

FPPR Section 4.04, 4.05, 4.06, 4.07, 4.08, and 4.09

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Plan Name: TFL 37 Forest Operations Plan

Applicable Licences: TFL 37 and FL A92106

Date of Submission: July 25, 2025

Date of Approval: To be updated upon approval.

Term: 5 years

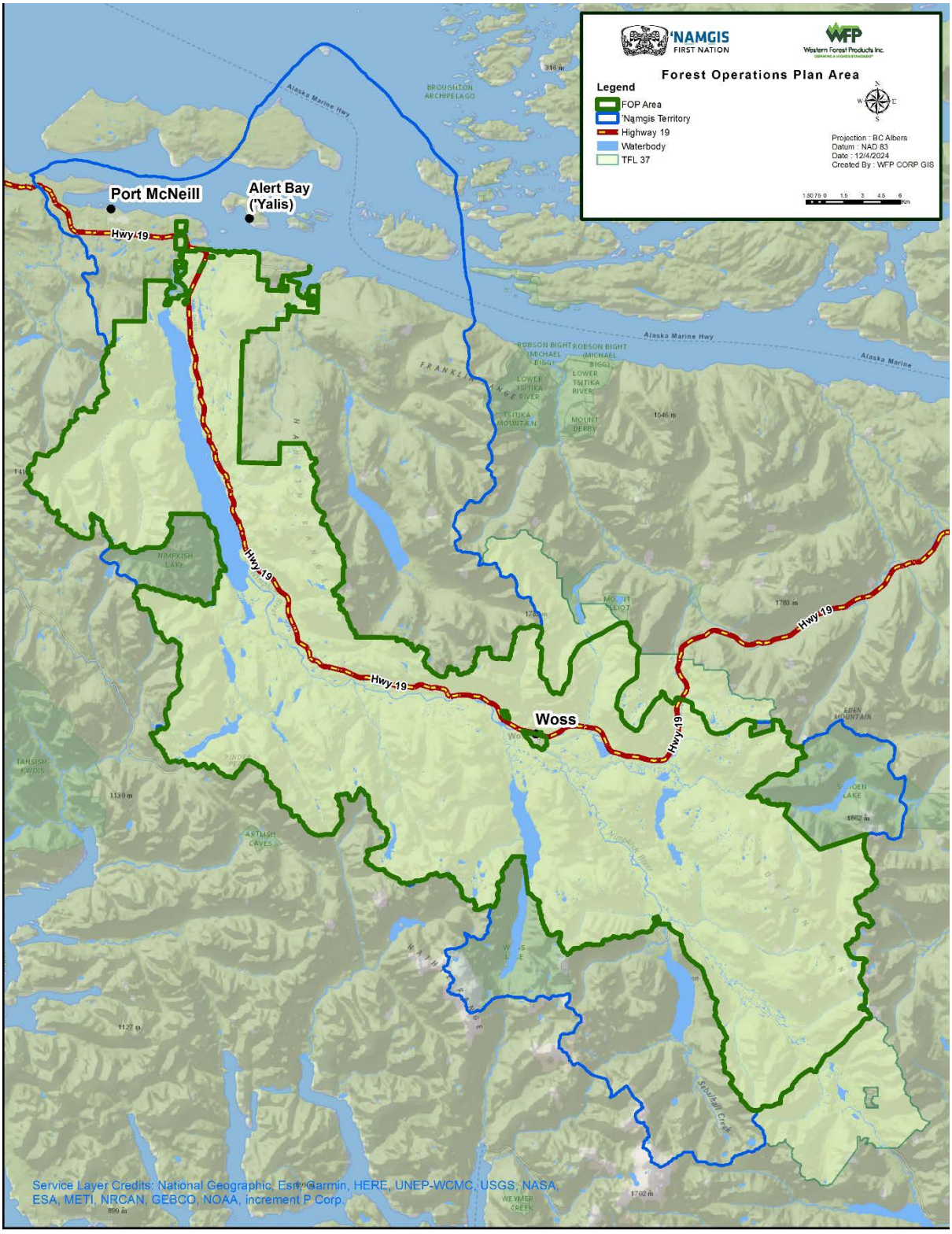
Plan Expiry Date: 5 years from the date of approval.

Forest Region: West Coast

Forest District(s): North Island Central Coast and Campbell River (148 ha only)

Map of the Forest Operations Plan Area

FRPA Section 2.36 (1) (a)



Stewardship Strategies for Forest Operations in Respect of Forest Practices and Silvicultural Systems

FRPA Section 2.36 (1) (b) and FPPR Section 4.39 (a)

This Forest Operations Plan includes 20 stewardship strategies that specify the requirements for forest practices and silvicultural systems respecting the matters referred to in Section 2.28 (2) (a) to (c) of the Forest and Range Practices Act (FRPA). Each stewardship strategy is an additional measure as defined in the Forest Planning and Practices Regulation (FPPR) Section 4.02. As part of the supporting documentation for each stewardship strategy, a detailed description is included of how the stewardship strategy supports the objectives set out in FRPA Section 2.22 as required by FRPA Section 2.36 (1) (b).

Each of the 20 stewardship strategies includes supporting information that is structured as follows:

- A table that identifies the individual Gwa'ni planning values that the stewardship strategy supports the stewardship of, along with whether it also supports climate change adaptation. The stewardship strategies are linked to Gwa'ni planning values reflecting a connected approach to planning that builds up from the stewardship of values to develop the desired future forest condition. The Companion Document provides additional details on the importance of connected planning and the associated benefits. The Gwa'ni planning values are summarized in Figure 3 of the Companion Document.

Supports the Stewardship of Gwa'ni Planning Values										
Supports Climate Change Adaptation										

- A table that identifies the objective from the Gwa'ni Project that are relevant to the stewardship strategies. There is only one objective from the Gwa'ni Project that is directly associated with a stewardship strategy which is SS 1. The other objectives are associated with future forest outcomes in the FLP.

Linked Gwa'ni Objective
Description of the objective.

- A table that identifies the future forest outcomes that the stewardship strategy supports the achievement of. In recognition that everything is connected in some way, the future forest outcomes listed are those most directly supported by the stewardship strategy.

Associated FLP Future Forest Outcomes
FF 1 Western Redcedar and Yellow Cedar

- A section titled **How the Stewardship Strategies Support Achievement of FLP Outcomes** includes a description of how the stewardship strategy supports achievement of the FLP outcomes as required by FRPA Section 2.36 (1) (b). Each one of the relevant future forest outcomes listed in the table are included in the description.

- A section titled **Stewardship Strategy** defines the stewardship strategy. Each stewardship strategy is written with the intention of being measurable and verifiable. These stewardship strategies have been developed, peer reviewed, and refined in collaboration with subject matter experts and those accountable to implement the plan. The opportunity to initiate implementation while the plan is draft, has enabled some minor wording refinements to be completed providing consistent and repeatable interpretation.

- A section titled **Exemptions to Practice Requirement** identifies the practice requirements from the FPPR that have an additional measure that addresses the matter referenced in FPPR Section 4.51.

- A section titled **Adaptive Management Indicators** identifies the adaptive management indicators that are being monitored in support of implementing the stewardship strategies. The indicators are summarized in the Figure 6 of the Companion Document.

SS 1 — 'NAMGIS CONSERVATION NETWORK INCLUDING RESERVES FOR WILDLIFE, BIODIVERSITY, AND CARBON

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Linked Gwa'ni Conservation Network Objective

Develop and manage a spatialized, multiple value, conservation network with emphasis on riparian function, climate resiliency, and carbon.

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 2** Stream Channel Condition
- **FF 3** Riparian Function
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

The 'Namgis Conservation Network, which is spatially delineated as shown in Appendix A, brings together 'Namgis knowledge with a range of modern datasets including Lidar, to create a carefully designed and interconnected web of Gwa'ni planning values. The network directly connects the physical location of values providing landscape-level retention that represents the full range of ecosystems in the Nimpkish valley. A detailed list of the elements integrated into the network are included in SS 1.

An essential element of broad biodiversity conservation is a landscape network of retained areas as a foundation of maintaining lesser-known species and ecological processes. The 'Namgis Conservation Network is designed in this context in conjunction with implementation of variable retention as defined in SS 8,

which becomes the harvested matrix between the landscape network. SS 1 and SS 8 function together to support species that require specific structural attributes. This approach is a fundamental premise of variable retention recognizing that more species will thrive when mature forest elements are distributed through-out the landscape, compared to the addition of an equivalent amount of mature forest into landscape retention.

The 'Namgis Conservation Network has also been designed to include the following popular TFL 37 recreation sites:

- Nimpkish Lake (Windsurfer Camp)
- Kinman Creek
- Anutz Lake
- Atluck Lake
- Woss Lake
- Lower Klaklakama and Self Interpretive Trail
- Upper Klaklakama

The Mount Cain Ski Area is located within the plan area. In coordination with the Mount Cain Alpine Park Society (MCAPS), the viewscape from the west ridge of Mount Cain, near the lower lift unload, has been integrated into a draft Conservation Network, recognizing that this viewscape itself, is outside of the plan area. The draft Conservation Network in this area will be respected until it is formally included in the TFL 37 Forest Operations Plan when it is amended to include this portion of TFL 37 in the future.

In recognition that forests and site level conditions are dynamic, the 'Namgis Conservation Network is designed with the understanding that it will be dynamic and modified in the context of the adaptive management framework. Road access across the network is required, and additions and deletions will be completed and tracked informed by site level conditions. Adaptive management modifications will be reflected in updated modelling maintaining alignment with the desired future forest condition. Situations envisioned where modifications will be required include road crossings, worker safety, and refinements for site level conditions such as riparian management, windthrow, and yarding deflection.

The 'Namgis Conservation Network supports achievement of all twelve of the future forest outcomes as follows:

FF 1 – Western redcedar and yellow cedar across all seral stages grow in the 'Namgis Conservation Network. As the network ages into an older seral stage forest, it will naturally contain a complex mix of tree ages and sizes including a greater proportion of very large trees. These trees are required for creating specific products such as canoes, large totems, and specialized construction materials. Recognizing that all seral stages contribute to the long-term presence of western redcedar and yellow cedar, the 'Namgis Conservation Network is complemented by the dynamic stewardship of western redcedar and yellow cedar in younger seral stages to achieve the outcome reflected in FF 1 which includes k'wa'xtlu and trees for bark harvest.

FF 2 and FF 3 – The ‘Namgis Conservation Network integrates an extensive riparian network including upland forest such as areas of connecting steep terrain. Riparian forest growing on active floodplains, active fans, and banks of the larger S1, S2, and S3 fish bearing streams, is generally recognized as being integral to maintaining channel bank stability through the root structure of trees and providing functional large wood inputs. The ‘Namgis Conservation Network contributes to maintaining channel bank stability and providing functional large wood inputs which contribute to improving the channel condition.

FF 4 –The ‘Namgis Conservation Network contributes to the forest mosaic by increasing the amount of older seral stages, complementing the dynamic stewardship of the Gwa’ni Special Management Zone. This dynamic stewardship includes a 120-year rotation in the małik, producing a diverse mix of log grades and the proportion of forest older than 120 years specified in the outcome.

FF 5 – Stands within the ‘Namgis Conservation Network will develop attributes of older forests, including horizontal and vertical structural complexity, tree species composition, and understory plant communities. Portions of the 'Namgis Conservation Network focus on the concentration of low elevation planning values, which spatially shifts the previous pattern of land use and creates greater ecosystem integrity along the major rivers of the Nimpkish watershed. The ‘Namgis Conservation Network complements the other stewardship strategies to achieve improved ecosystem integrity across the Nimpkish Valley.

FF 6 – The harvest flow reflects the ‘Namgis Conservation Network and associated values providing harvesting predictability.

FF 7 – The road network reflects the ‘Namgis Conservation Network and the cumulative effect of stewardship strategies. The network was designed recognizing that roads will be required through the network for access. Enabling efficient road access limits the potential for requiring proportionally more road to access the same harvest volume.

FF 8 – The characteristics of stands within the ‘Namgis Conservation Network directly support achievement of the forest habitat types. As stands within the ‘Namgis Conservation Network mature, they directly increase the amount of Type C3 habitat. The ‘Namgis Conservation Network therefore functions with the other stewardship strategies to achieve the distribution of habitat types.

FF 9 – Suitable habitat for marbled murrelet and the 12 Wildlife Habitat Areas (WHA) for northern goshawk are located within the ‘Namgis Conservation Network.

FF 10 – The ‘Namgis Conservation Network contains the diversity of all seral stages across all biogeoclimatic ecosystem variants. In recognition that the ‘Namgis Conservation Network will mature into older seral stages; it is complemented by the other stewardship strategies to achieve a diversity of seral stages.

FF 11 – Forest connectivity and forest interior conditions reflect the state of the forest at any given point in time. The ‘Namgis Conservation Network supports achievement of the outcome as it contributes to forest connectivity including forest with interior conditions. The network includes riparian and upland forest providing both lateral and vertical connectivity across the landscape.

FF 12 – The ‘Namgis Conservation Network was designed to include the full range of rare ecosystems to support achievement of the outcome. The integrity of these rare ecosystems improves as the proportion of older seral stages and associated plant communities increases. Integrity is also improved by the ‘Namgis Conservation Network which provides connectivity between the rare ecosystems.

Stewardship Strategy

1. Design and maintain a spatially delineated 'Namgis Conservation Network[1] with a focus on riparian connectivity integrating legally established reserves[2] and the following biophysical elements:
    - Nimpkish River and primary valley bottom tributaries
    - Active floodplains
    - Active fans
    - Lakes
    - Fish stream complexes
    - Steep terrain
    - Archaeological sites/features
    - Cultural sites
    - Western redcedar and yellowcedar
    - Rare ecosystems
    - Old forests
    - Big trees
    - Forest interior conditions
    - Bear dens
    - Bird nests
    - Marbled murrelet suitable habitat
    - Amphibian breeding ponds (wetlands)
    - Goshawk foraging habitat
    - Deer habitat
    - Elk habitat
    - Refugia
    - Karst
    - Recreation sites

2. Modifications can be made to the 'Namgis Conservation Network for road access and site level stewardship including worker safety, yarding deflection, windthrow management, etc., with the intent to maintain an updated spatial layer as cutblocks and roads are designed in the vicinity of the 'Namgis Conservation Network.

3. Track all additions and deletions to the 'Namgis Conservation Network. Any changes that include legally established reserves must follow the reserve alteration requirements applicable to the reserve. If a carbon offset project is established, any changes to the carbon reserve will need to follow the established protocol requirements.

Adaptive Management Indicators

AMI 16: Total area (ha) of the 'Namgis Conservation Network.

[1]Appendix A identifies the 'Namgis Conservation Network including the location of all legally established reserves and the carbon reserve.

[2] Legally established reserves (UWRs, WHAs and OGMAs) located within the 'Namgis Conservation Network are for wildlife habitat and biodiversity. These reserves were reviewed and updated in coordination with the Ministry of Forests and Ministry of Water, Lands and Resource Stewardship. The reserves reflect new inventory information and updated marbled murrelet suitable habitat targets in OGMAs and WHAs. These reserves have been submitted for government approval. Amendments to the legally established reserves must be completed as defined in each of the orders.

SS 2 — CARBON RESERVE

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 2** Stream Channel Condition
- **FF 3** Riparian Function
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

A carbon reserve has been spatialized where carbon is the objective for conservation consistent with the BC Greenhouse Gas Offset Protocol Forest Carbon (FCOP) dated April 18, 2024. This is in addition to areas conserved for wildlife habitat, riparian, cultural features, and legislated requirements. The carbon project is needed to assist with offsetting the cost of increased conservation, monitoring, and implementation. FCOP contains a protocol for implementing offset projects that reduce or remove greenhouse gas emissions within forest sinks and reservoirs and provides guidance associated with both projects. FCOP is established under Section 10 of the Greenhouse Gas Industrial Reporting and Control Act and specifies the legal requirements that the project proponents, validation bodies and verification bodies must follow to obtain the carbon offset units. Once established, the carbon reserve would limit harvest and generate offsets by increasing the long-term carbon storage in forests. The carbon reserve is spatially delineated within the 'Namgis Conservation Network supporting achievement of the outcome.

All the future forest outcomes associated with this stewardship strategy are listed except for Future Forest Outcome 9 – Species at Risk. This is because the spatial areas for species at risk are legislated and do not meet the additionality requirements of FCOP. The legislated portions of the other applicable future forest outcomes have also been removed from the carbon reserve.

Stewardship Strategy

1. Upon establishment of the carbon offset project, maintain the area of spatially delineated carbon reserve[3] in the 'Namgis Conservation Network as specified in the monitoring and maintenance requirements of the project.

Adaptive Management Indicators

AMI 17: Total area (ha) of the carbon reserve once the carbon offset project is established.

[3] Appendix A identifies the location of the draft carbon reserve.

SS 3 — RATE OF HARVEST IN AREAS OF SENSITIVITY

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

- FF 2 Stream Channel Condition
- FF 3 Riparian Function
- FF 6 Harvest Flow
- FF 7 Road Network

How the Stewardship Strategy Supports Outcomes in the FLP

Spatial areas of sensitivity have been identified in specific watersheds where a rate of harvest is being applied to limit the amount of steep terrain harvested over a specified period. The rate of harvest is specified using an Equivalent Clearcut Area (ECA) that assesses the hydrological recovery of all stands in the spatial area of sensitivity. An ECA is being used to control the rate of harvest in this context because it provides reasonable surrogate for the corresponding decrease in the potential for landslides to occur as the trees on the harvested area regrow.

The watersheds where a spatial area of sensitivity has been established were selected because they have high fish values or are high sediment generating watersheds.

The rate of harvest requirement is applied in conjunction with the landslide risk tolerance specified in SS 4 providing an integrated approach to landslide management. This stewardship strategy supports achievement of the future forest outcomes as follows:

FF 2 and FF 3 – All stream channels have a natural bedload which describes the particles in a stream that are being carried or transported along the streambed. All areas of steep terrain have the potential for landslides to occur. When landslides do occur, they can alter the bedload of the stream which influences the condition of the stream channel. Monitoring of the stream channel condition therefore helps to inform the appropriate rate of harvest in SS 3 and level of acceptable landslide risk in SS 4. This approach proactively addresses climate change impacts, such as higher intensity rainfall potentially leading to an increased frequency of landslides and disturbance of stream channels.

FF 6 – The harvest flow and the cutblocks identified on the FOP map reflect the rate of harvest applied in the areas of sensitivity.

FF 7 – The proposed roads identified on the FOP map reflect the rate of harvest applied in

the areas of sensitivity. The cutblock and road pattern was developed through spatially and temporally explicit modelling to ensure that the rate of harvest requirement is being met and that the road network is being used efficiently further limiting the potential for sediment delivery to streams.

Stewardship Strategy

1. Maintain a rate of harvest, defined through an ECA[4] of less than 25% averaged over 5 years, in the spatially delineated watershed areas of sensitivity[5] at the time of harvest commencement as defined in Figure 1.

Figure 1: Watershed areas of sensitivity by watershed grouping and management focus.

Watershed Grouping	Area of Sensitivity	Management Focus
Kaipit Kilpala Lukwa	Kaipit (4,150 ha) Kilpala (6,030 ha) Kilpala-Karmutzen (2,805 ha) Lukwa (2,250 ha)	Watersheds with significant fish values
Davie	Davie (6,170 ha)	Candidate Fisheries Sensitive Watershed
Kaipit Kiyu Maquilla Sutton	Kaipit – Canon (1,415 ha) Kiyu (1,585 ha) Maquilla (3,745 ha) Maquilla – Quilla (1,060 ha) Sutton (1,305 ha)	High sediment-generating watersheds to the Nimpkish River
Surprise	Surprise (1,150 ha)	Contribution of sediment to the Nimpkish River
Pink	Pink (500 ha)	Watershed with special fish significance

Adaptive Management Indicators

AMI 18: The current and forecast ECA (%) by area of sensitivity.

AMI 35: The number of annual rainfall events over 75mm in 12 hours or 100mm in 24 hours.

[4] Appendix B contains the ECA methodology.
[5] Appendix A identifies the watershed areas of sensitivity.

SS 4 — ACCEPTABLE LEVEL OF LANDSLIDE RISK

Supports the Stewardship of Gwa'ni Planning Values				
Supports Climate Change Adaptation				

Associated FLP Future Forest Outcomes

- **FF 2** Stream Channel Condition
- **FF 3** Riparian Function
- **FF 6** Harvest Flow
- **FF 7** Road Network

How the Stewardship Strategy Supports Outcomes in the FLP

Landslides[6] can affect public safety, worker safety, and the environment. Guidelines for the Management of Terrain Stability in the Forest Sector[7] provides guidance on a risk-based terrain stability management model for managing to an acceptable level of landslide risk[8] in relation to a specified planning feature[9] or value.

The acceptable level of landslide risk is defined by the potential for landslide occurrence[10] and sediment delivery potential[11] to the applicable planning feature. This enables terrain specialists[12] to complete a terrain stability assessment[13] in the context of the information required to support a consistent and logical application of the acceptable level of landslide risk.

This stewardship strategy defines the

[6] A landslide is a mass movement of rock, debris, or earth down a slope under the direct influence of gravity.
[7] https://www.egbc.ca/getmedia/684901d7-779e-41dc-8225-05b024beae4f/APEGBC-Guidelines-for-Terrain-Stability-Assessments.pdf.aspx
[8] The acceptable level of landslide risk is the chance of injury or loss as defined as a measure of the probability and the consequence of an adverse effect to health, property, the environment, or other things of value that is acceptable to secure certain net benefits, knowing that the risk is being properly controlled and further reduced when possible. It is defined by the combination of the potential for landslide occurrence and the sediment delivery potential.
[9] The planning feature is the value of interest that the potential for landslide occurrence and sediment delivery potential are being evaluated in relation to.
[10] The potential for landslide occurrence is the landslide hazard ranked from low to high.
[11] The sediment delivery potential is the potential for landslides to affect the planning feature considering the possible size ranges of the landslide and physical extent of possible landslides including the anticipated landslide travel path(s) and deposition zone(s).
[12] A terrain specialist is an individual that has appropriate levels of training and experience to conduct a terrain stability assessment.
[13] A terrain stability assessment is an assessment of landslide hazard, a landslide hazard analysis or a landslide risk analysis for terrain on or adjacent to which operations may be carried out. A terrain stability assessment may include options or recommendations to manage hazard or risk.

acceptable level of landslide risk that has been identified for four groupings of watersheds based on the characteristics of the watersheds and the planning feature of interest. A map of the watersheds is in Appendix A for the following for groupings:

Group 1 - These watersheds have a moderate to high level of channel disturbance and a low-moderate level of acceptable landslide risk is defined to limit the potential of contributing additional bedload to the stream channels.

Group 2 - These watersheds contain fans that are important sockeye spawning habitat. A low-moderate level of acceptable risk is defined to maintain the quality of spawning habitat.

Group 3 – These watersheds have a high level of natural bedload, and a low-moderate level of acceptable landslide risk is defined to limit the potential of contributing additional bedload to the channels that could transport through to the Nimpkish River.

Group 4 – These watersheds have a moderate level of acceptable landslide risk for moderate or high sensitivity fish habitat.

The acceptable level of landslide risk is applied in conjunction with the rate of harvest specified in SS 3 as a structured approach to limit the potential for landslides to occur. This stewardship strategy supports achievement of the FLP outcomes as follows:

FF 2 and FF 3 – Landslides can influence the condition of stream channels and channel bank stability which can affect fish habitat and populations. Managing the risk associated with landslides in relation to the planning features identified in Figure 1 helps to maintain a trend of improving stream channel condition.

FF 6 – The harvest flow reflects the level of acceptable landslide risk as it accounts for an estimate of the steep terrain that will not be harvested. Terrain stability assessments, informed by the level of acceptable landslide risk, will be completed for cutblocks on the Forest Operations Plan map which are located on steep terrain.

FF 7 – The road network reflects the level of acceptable landslide risk as it influences the spatial and temporal distribution of cutblocks. Terrain stability assessments, informed by the level of acceptable landslide risk, will be completed for new roads on the Forest Operations Plan map that are located on steep terrain.

Stewardship Strategy

1. Utilize a terrain specialist[12] to complete a terrain stability assessment[13] when planning new cutblocks or roads in areas of steep terrain to identify the potential for landslide occurrence[10] and sediment delivery potential[11] to the applicable planning feature[9].
2. Design cutblocks and roads consistent with the acceptable level of landslide risk[8] as defined by the combination of the potential for landslide occurrence[10] and sediment delivery potential[11] denoted with ■ in Figure 2 to 5, unless using a single stem harvest system that retains ≥ 70% of the basal area evenly dispersed.

Figure 2: Acceptable level of landslide risk for the planning feature in watershed group 1.

Watershed Group 1	Planning Feature: All Fish Habitat Acceptable Level of Landslide Risk: Low – Moderate					
Kaipit, Kilpala, Kilpala-Karmutzen, Lukwa	Potential for Landslide[14] Occurrence	Sediment Delivery Potential to All Fish Habitat				
		High[15]	Mod-High[16]	Moderate[17]	Low-Mod[18]	Low[19]
	High[20]					■
	Moderate[21]				■	■
	Low[22]	■	■	■	■	■
	Very Low[23]	■	■	■	■	■

[14] A landslide is defined as 500m2 (0.05ha) or larger.
[15] Landslide would directly enter a fish stream.
[16] Some landslide debris may enter a fish stream at the time of the event with a high potential to transport to a fish stream within the first season peak flows.
[17] Most landslide debris at the time of the event would deposit at breaks in gradient or slope breaks. Fine sediment may reach a fish stream. Coarse sediment would transport to fish streams over time via normal fluvial processes.
[18] Some suspended sediment or small wood debris may reach a fish stream. Coarse sediment would typically be stored in low gradient reaches, on fans, or on gentle slopes.
[19] Landslide debris is unlikely to reach fish stream.
[20] ≥ 5 landslides per 100 ha of harvested steep terrain.
[21] 3 to < 5 landslides per 100 ha of harvested steep terrain.
[22] 1 to < 3 landslides per 100 ha of harvested steep terrain.
[23] < 1 landslide per 100 ha of harvested steep terrain.

Figure 3: Acceptable level of landslide risk for the planning feature in watershed group 2.

Watershed Group 2	Planning Feature: Sockeye Spawning Fans Acceptable Level of Landslide Risk: Low – Moderate					
Noomas, Storey, Tlakwa, Woss-Fiddle, Woss-Torback, Kinman, Woss-Clint	Potential for Landslide Occurrence	Sediment Delivery Potential to Sockeye Spawning Fans				
		High	Mod-High	Moderate	Low-Mod	Low
	High					■
	Moderate				■	■
	Low	■	■	■	■	■
	Very Low	■	■	■	■	■

Figure 4: Acceptable level of landslide risk for the planning feature in watershed group 3.

Watershed Group 3	Planning Feature: Confluence of rivers in the Watershed Grouping with the Nimpkish River or Oktwanch River Acceptable Level of Landslide Risk: Low					
Kaipit-Canon Oktwanch-Alston Gold	Potential for Landslide Occurrence	Sediment Delivery Potential to River Confluence				
		High	Mod-High	Moderate	Low-Mod	Low
	High					
	Moderate					■
	Low			■	■	■
	Very Low	■	■	■	■	■

Figure 5: Acceptable level of landslide risk for the planning feature in watershed group 4.

Watershed Group 4[24]	Planning Feature: Moderate or High Sensitivity Fish Habitat[25] Acceptable Level of Landslide Risk: Moderate				
Noomas, Storey, Tlakwa, Woss-Fiddle, Woss- Torback, Kinman, Sutton, Woss-Clint, Eve-Kunnum, Gold, Kiyu, Kla'anch, Maquilla, Noomas, Surprise, Nimpkish Remainder – mid (Nimpkish Lake to Woss), Nimpkish Remainder – upper (upstream of Woss), Atluck – Woolfe, Atluck Remainder, Davie – Granite, Davie - Schoen North, Davie – Remainder, Kaipit – Canon, Maquilla – Quilla, Tlakwa, Woss – Clint, Woss – Fiddle, Woss – Remainder, Kokish – Tsulton. Tsitika – Elliott, Upper Tsitika, West Tsitika, Atluck – Marion, Atluck – Shannon, Atluck, Welch, Davie – Club, Davie – Croman, Davie – Klaklakama, Hump, Steele. Storey, Woodengle, Woss – Torback, Nimpkish – Lower, Theimer	Potential for Landslide Occurrence	Sediment Delivery Potential to All Fish Habitat				
		High	Mod-High	Moderate	Low-Mod	Low
	High				■	■
	Moderate			■	■	■
	Low	■	■	■	■	■
	Very Low	■	■	■	■	■

Adaptive Management Indicators

AMI 27: The five-year rolling average of the number of landslides per 100ha of logged steep terrain in the 15-year period following harvesting that impact the defined planning feature.

[24] Note: Kaipit, Kilpala, Kilpala-Karmutzen, Lukwa are not included in this table as they are included in a separate watershed grouping in relation to fish habitat. Noomas, Storey, Tlakwa, Woss-Fiddle, Woss-Torback, Kinman, Woss-Clint, Kaipit-Canon, Oktwanch-Alston, and Gold are included in this table as the planning feature referenced is different than the other tables.

[25] Moderate or high sensitivity fish habitat includes:

- high quality rearing and/or spawning habitat, pools essential for rearing or refuge, and reaches used by mainstem spawners such as Chinook.
- estuaries and herring spawning areas, shellfish beds, saltwater marsh areas, juvenile salmonid rearing or adult salmon holding areas.
- feeding and rearing areas but fish populations are limited by the type of stream type and condition. Streams may be perennial or seasonal.

SS 5 — RETENTION OF RIPARIAN FOREST – STREAMS

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 2** Stream Channel Condition
- **FF 3** Riparian Function
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat Types
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

Riparian forest occurs along the banks of streams, lakes, and wetlands and includes both the area dominated by continuous high moisture content and the adjacent upland vegetation. Riparian forests tend to be rich in planning values and have high levels of ecological diversity. Streamside vegetation helps protect water quality, stabilize streambanks, regulate water temperatures, and provides a source of large wood inputs to the stream channel. Organisms and organic material from overhanging vegetation enter streams to become the primary source that drives aquatic food webs. Riparian forests also provide habitat to a wide range of species and provide connectivity between hillside streams, upper headwaters, and valley bottoms. Riparian forests also help to mitigate the effects of climate change, acting as buffers against damage from major storms and floods, and their moist and cool conditions can help mitigate the risk of larger catastrophic fires.

The riparian forest is identified for each stream class through a Riparian Management Area (RMA) which is comprised of a Riparian Reserve Zone (RRZ) and a Riparian Management Zone (RMZ). The width of RMA, RRZ, and RMZ that is to

be retained is defined by stream class in Figure 6 based on a slope distance measurement from the high-water mark of the stream. For the RMZ, the area to be retained is based on a minimum equivalent proportion of the RMZ, providing flexibility in how it is distributed along the stream considering geomorphic and aquatic factors such as channel type, fish habitat, terrace edges, escarpments, brush sites, wet soils, bluffs, channel shading, and windthrow.

This stewardship strategy supports achievement of the FLP outcomes as follows:

FF 1 - Western redcedar and yellow cedar grow across all seral stages within the riparian forest of streams. The moister and cooler growing sites of the riparian forest tend to have a higher proportion of western redcedar and yellow cedar than the upland forest. It is also reasonable to expect that these areas remain relatively cooler and moister in a changing climate therefore providing increased resiliency and diversity across the landscape. FF 1 includes the diversity of stand ages forecast within the riparian areas which will contain both k'wa'xtlu and trees for bark harvest. Western redcedar and yellow cedar will be accessed from riparian areas for cultural use.

FF 2 and FF 3 – The retention of riparian forest, and particularly the first 10m adjacent to larger S1, S2, S3, and S5 streams, directly supports achievement of the outcome, as it is integral to maintaining channel bank stability through the root structure of trees and providing functional large wood inputs through windthrow and channel dynamics. The organic material that enters the streams also supports aquatic ecosystems including fish populations.

FF 4 – The retention of riparian forest contributes to the forest mosaic in the Gwa'ni Special Management Zone.

FF 5 – Retaining riparian forests enables them to develop attributes of older forests, including horizontal and vertical structural complexity, tree species composition, and understory plant communities. This directly supports improved ecosystem integrity and the desired shift of increased integrity at lower elevations and along the major rivers of the Nimpkish watershed. This is because riparian forest that was previously harvested is now being retained allowing these areas to grow into older seral stages.

FF 6 – The harvest flow reflects the spatial and temporal implementation of the retention of riparian forest.

FF 7 – The road network aligns with the harvest flow and reflects the cumulative impact of the spatial and temporal implementation of the retention of riparian forest.

FF 8 and FF 9 – The retention of riparian forest is reflected in the wildlife habitat types. The RMA associated with S1, S2, S3 streams is Type R habitat which supports Group 3 wetlands and riparian species identified in Appendix B of the FLP. Riparian forests also provide marbled murrelet habitat given the

largest trees, which generally contain a higher proportion of suitable nest platforms, are often associated within the more productive growing sites along S1, S2, and S3 streams.

FF 10 – Riparian forests contain a wide diversity of plants including species of specific interest for cultural, traditional, and recreational use such as young balsam bark, blueberries, cedar for bark harvest, cranberry, devils club, huckleberries, labrador tea, lady fern (fiddleheads), nettles, pacific crab apple, raspberry, spruce pitch, stink currant, and yew. Riparian forests are also enjoyed for fishing, wildlife viewing, and camping.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. Riparian forests provide a foundation for maintaining connectivity and forest interior conditions in conjunction with the other stewardship strategies. A riparian network that connects to upland forest areas supports both lateral and vertical connectivity across the landscape.

FF 12 – Riparian forests include many of the ecosystems identified as rare in this outcome. Given that riparian forests tend to be moister and richer, the most common rare ecosystems found in riparian areas are:

- CWHxm2 / 01, 05, 06, 07, 08, 09, 11, 12
- CWHmm1 / 01, 05, 06, 07, 09, 12
- CWHvm1 / 06, 07, 09, 10, 11, 14
- CWHvm2 / 06, 07

The retention of riparian forests contributes to the improvement in ecosystem integrity of rare ecosystems in the future.

Stewardship Strategy

1. Classify streams based on the stream width and classification criteria in Figure 6.
2. Retain riparian forest by stream class as identified in Figure 6 except as required for roads that cross, parallel, or end within the RMA of the stream.

Figure 6: Stream classification and riparian forest retention criteria by stream class.

Class	Classification			Management				
	Min width (m)	Max width (m)	Classifying Features	RMA[26] (m)	RRZ (m)	RMZ[27] (m)	Minimum (%) of RMZ Retention within the TAUP[28]	Strategy[29 30 31]
S1	> 20	—	fish present	70	50	20	100	See footnote 28 and 29
S2	≥ 5	≤ 20		50	30	20	50	See footnote 28 and 29
S3	≥ 1.5	< 5		40	20	20	50	See footnote 28 and 29
S4	—	< 1.5		30	0	30	33	See footnote 28 and 29
S5	> 3	—	Direct tributary > 500m upstream of fish	30	0	30	33	See footnote 28 and 29
S5u	> 3	—	Direct tributary ≤ 500m upstream of fish	30	0	30	50	See footnote 28 and 29
S6	—	≤ 3	Direct tributary > 30 m upstream of fish, or > 50 m upstream of fish if width ≥ 2m	20	0	20	—	See footnote 30
S6u	—	≤ 3	Direct tributary ≤ 50m upstream of fish	20	0	20	25	See footnote 28 and 29
FSZ	—	—	fish present	0	0	0	—	See footnote 31

[26] See FPPR Section1 (1) for the purpose of establishing the RMA, RMZ, and RRZ. The width of the RMA, RMZ, and RRZ is measured by slope distance from the high-water mark of the stream channel.

[27] Retain the RMZ immediately adjacent to the RRZ.

[28] The minimum % of the RMZ is intended to be retained on each side and along the length of the stream. The Total Area Under Prescription (TAUP) includes the net area to reforest (NAR), in block roads, and retention. The minimum % of the RMZ may be weighted to one side of the stream, or flexed along the length of the stream, to manage for detailed site level considerations such as windthrow hazard and consequence - see footnote 29).

[29] When locating the RMZ, consider site level factors such as channel type, bank stability, fish habitat, brush sites, wet soils, steep slopes, and windthrow. For example, it may be appropriate to weight more of the RMZ on the windward side of the stream or to locate the boundary targeting more windfirm trees.

[30] Prioritize high stumping and fall and yard away prescriptions considering the relative significance of each stream and yarding system being utilized. High-stumping is ideal for ground-based harvest systems providing a visual reference for yarding. Where streams are too closely spaced across a hillslope such that it is not operationally feasible for measures to be applied to each stream, then management measures should be prioritized according to stream significance with respect to safety, channel size, channel type, flow duration and distance to downstream fish habitat.

[31] Retain shrubs, high stump within the first 5m, and fall away from these features. Prioritize as biological anchors for variable retention.

Adaptive Management Indicators

AMI 19: The five-year rolling average width (m) of retention along S5u, S4, and S6u streams associated with harvested cutblocks.

AMI 28: The five-year rolling average of the estimated proportion (%) of windthrow at year one and five, after harvest completion, on a random sample of 10% of cutblocks harvested each year:

- within retention along S4, S5u, and S6u streams.
- within internal retention patches for retention silvicultural system cutblocks, in the windy portion of the Gwa'ni Special Management Zone and General Management Zone. The windy portion is identified spatially and is located within proximity to the ocean where the incidence of windthrow is higher.

SS 6 — RETENTION OF RIPARIAN FOREST – WETLANDS

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat Types
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

Riparian forest occurs next to the banks of streams, lakes, and wetlands. It includes both the area dominated by continuous high moisture content and the adjacent upland vegetation. Riparian forests tend to be rich in planning values and have high levels of ecological diversity. Wetlands are generally defined as open water[32], bog[33],


Photo Credit: Stuart Glen

[32] Shallow open water wetlands are intermittently or permanently flooded areas with open expanses of standing or moving water up to 2 m deep. Open water, with no emergent vegetation, covers 75 per cent or more of the wetland surface. These wetlands are commonly termed ponds or pools.

[33] Bog wetlands have organic soils with a water table at or near the surface. Soils are predominantly poorly to moderately decomposed sphagnum moss peats. The bog surface is usually unaffected by groundwaters and thus waters are generally acid and low in nutrients. Bogs are usually carpeted by sphagnum mosses and ericaceous shrubs. They may be treed or treeless. Bogs with an open growth of scrubby trees are commonly referred to as muskeg.

swamp[34], marsh[35], or fen[36] that supports natural vegetation that is distinct from the adjacent upland area because it grows in standing water or soils that are water-saturated for all or part of their growing season.

Most wildlife use wetland habitat at some point in their life cycle and many red and blue listed species are wetlands dependent. Wetlands also help to filter water, regulate water flows, and absorb fine sediments, and store carbon. Wetlands can help to mitigate the effects of climate change as the forests tend to be moister and cooler, help to recharge groundwater, act as buffers against damage from major storms and floods, provide corridors that can help with species migration, and mitigate the risk of larger catastrophic fires.

The riparian forest is identified for each wetland class through a Riparian Management Area (RMA) which is comprised of a Riparian Reserve Zone (RRZ) and a Riparian Management Zone (RMZ). The classification criteria for wetlands and the associated riparian forest retention requirements are defined in Figure 7. The width of RMA, RRZ, and RMZ that is to be retained is defined by wetland class based on a slope distance measurement from the edge of the wetland. For the RMZ, the area to be retained is based on a minimum equivalent proportion of the RMZ, providing flexibility in how it is distributed around the wetland considering geomorphic and aquatic factors such fish habitat, terrace edges, escarpments, brush sites, wet soils, bluffs, and windthrow.

This stewardship strategy supports achievement of the FLP outcomes as follows:

FF 1 - Western redcedar and yellow cedar grow across all seral stages within the riparian forest of wetlands. The moister and cooler growing sites of the riparian forest tend to have a higher proportion of western redcedar and yellow cedar than the upland forest. It is also reasonable to expect that these areas remain relatively cooler and moister in a changing climate therefore providing increased resiliency and diversity across the landscape. FF 1 includes the diversity of stand ages forecast within the riparian areas which will contain both k'wa'xtlu and trees for bark harvest. Western redcedar and yellow cedar will be accessed from riparian areas for

[34] Swamp wetlands have mineral or occasionally peat soils with a water table at or near the surface. There is pronounced internal water movement from adjacent mineral areas, making the waters nutrient rich. If peat is present, it is mainly well-decomposed wood and occasionally sedges. The vegetation is typically dominated by coniferous or deciduous trees or dense shrubs and herbaceous species.

[35] Marsh wetlands have mineral or sometimes well-decomposed peat soils. When peat soils are present, they are often enriched with mineral materials. Waters are nutrient rich with near-neutral to basic pH. Surface water levels typically fluctuate seasonally, with declining levels exposing matted vegetation or mudflats. Emergent vegetation includes grasses, cattails, sedges, rushes, and reeds which cover more than 25 per cent of the wetland surface.

[36] Fen wetlands have organic soils and a water table at or above the surface. Soils are primarily moderately to well-decomposed sedge and non-sphagnum moss peats. Waters are mainly nutrient rich with a near neutral to slightly acid pH. The vegetation consists primarily of sedges, grasses, reeds, mosses, and some shrubs. Scattered trees may be present.

cultural use.

FF 4 – The retention of riparian forest contributes to the forest mosaic in the Gwa'ni Special Management Zone.

FF 5 – Retaining riparian forests enables them to develop attributes of older forests, including horizontal and vertical structural complexity, tree species composition, and understory plant communities. This directly supports improved ecosystem integrity and the desired shift of increased integrity at lower elevations.

FF 6 – The harvest flow reflects the spatial and temporal implementation of the retention of riparian forest.

FF 7 – The road network aligns with the harvest flow and reflects the cumulative impact of the spatial and temporal implementation of the retention of riparian forest.

FF 8 and FF 9 – The spatial and temporal implementation of the retention of riparian forest is reflected in the wildlife habitat types. Wetlands support the life cycle needs of many amphibians. Ephemeral wetlands are particularly important because the absence of fish creates a safe environment for tadpoles to grow free from most predators. These wetlands are therefore identified as a new W6 classification and prioritized for inclusion in stand level retention as specified in Figure 7.

FF 10 – Riparian forests contain a wide diversity of plants including species of specific interest for cultural, traditional, and recreational use such as young balsam bark, blueberries, cedar for bark harvest, cranberry, devils club, huckleberries, labrador tea, lady fern (fiddleheads), nettles, pacific crab apple, raspberry, spruce pitch, stink currant, and yew.

FF 11 –Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The retention of riparian forest around wetlands and wetland complexes contributes to connectivity and forest interior conditions. Wetlands are often connected to the stream network and the retention of riparian forest provides important connections to upland forests providing both lateral and vertical connectivity across the landscape. This is particularly beneficial to amphibians that utilize both wetlands and upland forests for a portion of their life cycle.

FF 12 – Riparian forests around wetlands may include the rare ecosystems identified in the outcome. Given that riparian forests tend to be moister, the most common rare ecosystems found in wetland riparian areas are:

- CWHxm2 / 01, 11, 12
- CWHmm1 / 01, 12
- CWHvm1 / 06, 07, 11, 14
- CWHvm2 / 06, 07

There are no rare ecosystems identified in the MH.

Stewardship Strategy

1. Classify wetlands based on the area (ha) classification criteria in Figure 7.
2. Retain riparian forest associated with wetlands as identified in Figure 7 except as required for road access crossing a W5 wetland complex or paralleling a wetland.

Figure 7: Wetland classification and riparian forest retention criteria by wetland class.

Class	Classification			Management				
	Min area (ha)	Max area (ha)	Classifying Features	RMA[37] (m)	RRZ (m)	RMZ (m)	Minimum (%) of RMZ Retention within the TAUP[38]	Strategy[39 40]
W1	≥ 5	—	—	50	10	40	0	—
W2	≥ 1	≤ 5	When located in CWH xm or mm	30	10	20	0	—
W3	≥ 1	≤ 5	—	30	0	30	33	See footnote 39 and 40
W4	≥ 0.5	< 1	When located in CWH xm or mm	30	0	30		
W5	—	—	Wetland complex[41]	50	10	40	0	See footnote 40
W6	≥ 0.25	< 1	—	20	0	20	0	

Adaptive Management Indicators

AMI 20: The five-year rolling average width (m) of retention along W1, W2, W3, W4, W5, and W6 wetlands associated with harvested cutblocks.

[37] See FPPR Section1 (1) for the purpose of establishing the RMA, RMZ, and RRZ. The width of the RMA, RMZ, and RRZ is measured by slope distance from the edge of the wetland.

[38] The % of RMZ retention is based on the wetlands contained within the Total Area Under Prescription (TAUP) which includes the net area to reforest (NAR), in block roads, and retention.

[39] When locating the RMZ, consider site level factors such as fish habitat, brush sites, wet soils, steep slopes, and windthrow.

[40] Include as a biological anchor for variable retention.

[41] A wetland complex is met when:

- 2 W1 wetlands are ≤ 100 m apart; or
- a W1 and ≥ 1 W2, W3, or W4 wetlands are ≤ 80 m apart; or
- ≥ 2 W2, W3, or W4 wetlands are ≤ 60m apart; and
- The combined size of the wetlands; excluding upland areas is ≥ 5ha

SS 7 — RETENTION OF RIPARIAN FOREST – LAKES

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat Types
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

Riparian forest occurs next to the banks of streams, lakes, and wetlands and includes both the area dominated by continuous high moisture content and the adjacent upland vegetation. Riparian forests tend to be rich in planning values and have high levels of ecological diversity. Lakes are a body of water surrounded by land and are fed by springs, creeks, and rivers. Lakes provide important habitat including sockeye spawning on fans along the shoreline and help to buffer water flows to the connected river system in both the summer and winter.

This is particularly beneficial in helping to mitigate the effects of climate change as they provide a buffer against high peak flows during storms and help to filter out sediment being transported by the stream. In the summer, lakes help to maintain downstream water flows during periods of reduced precipitation and drought.

The riparian forest is identified for each lake class through a Riparian Management Area (RMA) which is comprised of a Riparian Reserve Zone (RRZ) and a Riparian Management Zone (RMZ). The width of RMA, RRZ, and RMZ that is to be retained is defined by lake class based on a slope distance measurement from the edge of the wetland. For the RMZ, the area to be retained is based on a minimum equivalent proportion of the RMZ, providing flexibility in how it is distributed around the lake

considering geomorphic and aquatic factors such fish habitat, terrace edges, escarpments, brush sites, wet soils, bluffs, and windthrow.

This stewardship strategy supports achievement of the FLP outcomes as follows:

FF 1 - Western redcedar and yellow cedar grow across all seral stages along lake shores. The moister and cooler growing sites of the riparian forest and increased availability of light from the lake edge, tend to have a higher proportion of western redcedar and yellow cedar than the upland forest. It is also reasonable to expect that these areas experience lower temperatures and remain relatively cooler given the moderating effect of the lake. In a changing climate this may provide increased resiliency across the landscape. The outcome includes the diversity of stand ages forecast within the riparian areas which will contain both k'wa'xtlu and trees for bark harvest. Western redcedar and yellow cedar will be accessed from riparian areas for cultural use.

FF 4 – The retention of riparian forest contributes to the forest mosaic in the Gwa'ni Special Management Zone

FF 5 – Retaining riparian forests enables them to develop attributes of older forests, including horizontal and vertical structural complexity, tree species composition, and understory plant communities. This directly supports improved ecosystem integrity and

the desired shift of increased integrity at lower elevations.

FF 6 – The harvest flow reflects the spatial and temporal implementation of the retention of riparian forest.

FF 7 – The road network aligns with the harvest flow and reflects the cumulative impact of the spatial and temporal implementation of the retention of riparian forest.

FF 8 and FF 9 – The spatial and temporal implementation of the retention of riparian forest around lakes is reflected in the wildlife habitat types.

FF 10 – Riparian forests contain a wide diversity of plants including species of specific interest for cultural, traditional, and recreational use such as young balsam bark, blueberries, cedar for bark harvest, cranberry, devils club, huckleberries, labrador tea, lady fern (fiddleheads), nettles, pacific crab apple, raspberry, spruce pitch, stink currant, and yew. Lakes also have a high level of recreational use, and the retention of riparian forest assists with maintaining the visual quality requirement specified in SS 19.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The retention of riparian forest around lakes contributes to connectivity and forest interior conditions. Lakes are connected to the stream network and the retention of riparian forest provides important connections to upland forests providing both lateral and vertical connectivity across the landscape.

FF 12 – Riparian forests grow on many of the rare ecosystems identified in this outcome. Given that riparian forests around lakes tend to be moister, the most common rare ecosystems found in lake riparian areas are:

- CWHxm2 / 01, 06, 07, 11, 12
- CWHmm1 / 01, 06, 07, 12
- CWHvm1 / 06, 07, 11
- CWHvm2 / 06, 07

Stewardship Strategy

1. Classify lakes based on the area (ha) classification criteria in Figure 8.
2. Retain riparian forest associated with lakes as identified in Figure 8 except as required for road access paralleling a lake.

Figure 8: Lake classification and riparian forest retention criteria by lake class.

Class	Classification			Management				
	Min area (ha)	Max area (ha)	Classifying Features	RMA[42] (m)	RRZ (m)	RMZ (m)	Minimum (%) of RMZ Retention within the TAUP[43]	Strategy[44 45]
L1A	> 1000	—	—	25	0	25	100	See footnote 44
L1B		< 1000	—	20	10	10	100	
L2	≥ 1	≤ 5	When located in CWH xm or mm	30	10	20	—	
L3	≥ 1	≤ 5	—	30	0	30	17	
L4	≥ 0.5	< 1	When located in CWH xm or mm	30	0	30	—	See footnote 44 and 45

Adaptive Management Indicators

AMI 21: The five-year rolling average width (m) of retention along L1A, L1B, L2, L3, and L4 lakes associated with harvested cutblocks.

[42] See FPPR Section1 (1) for the purpose of establishing the RMA, RMZ, and RRZ. The width of the RMA, RMZ, and RRZ is measured by slope distance from the high water mark of the lake or edge of an immediately contiguous wetland.
[43] The % of RMZ retention is based on the riparian forest for the lake retained within the Total Area Under Prescription (TAUP) which includes the net area to reforest (NAR), in block roads, and retention.
[44] When locating the RMZ, consider site level factors such as brush sites, wet soils, steep terrain, visuals, and windthrow.
[45] Include as a biological anchor for variable retention.

SS 8 — VARIABLE RETENTION

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- FF 1 Western Redcedar and Yellow Cedar
- FF 2 Stream Channel Condition
- FF 4 Forest Mosaic in the Gwa'ni Special Management zone
- FF 5 Ecosystem Integrity
- FF 6 Harvest Flow
- FF 7 Road Network
- FF 8 Wildlife Habitat Types
- FF 9 Species at Risk
- FF 10 Cultural, Traditional, and Recreational Use
- FF 11 Forest Connectivity and Forest Interior Conditions
- FF 12 Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

Variable retention retains mature forest structures at the time of harvesting to produce forest stands that more closely resemble conditions that develop after natural disturbance, thereby maintaining greater diversity of habitats for a variety of organisms over the long-term. This approach has been utilized on the coast of British Columbia for over twenty years and a review of its implementation and effectiveness for biodiversity conservation was completed in 2019[46]. As part of this review, a growing number of studies are documenting significant benefits of the variable retention approach (e.g., Baker et al. 2013[47], 2015[48]). A meta-analysis of 78 studies comparing retention harvests with clearcuts found that retention cutblocks

[46] Beese, W.J., Deal, J., Dunsworth, B.G.,Mitchell, S.J., & Philpott, T.J. (2019). Two decades of variable retention in British Columbia: A review of its implementation and effectiveness for biodiversity conservation. Ecological Processes, 8, 1-22. DOI: 10.1186/s13717-019-0181-9

[47] Susan C. Baker, Thomas A. Spies, Timothy J. Wardlaw, Jayne Balmer, Jerry F. Franklin, Gregory J. Jordan. The harvested side of edges: Effect of retained forests on the re-establishment of biodiversity in adjacent harvested areas. Forest Ecology and Management, Volume 302, 2013, Pages 107-121. https://doi.org/10.1016/j.foreco.2013.03.024.

[48] Susan C. Baker, Charles B. Halpern, Timothy J. Wardlaw, Rodney L. Crawford, Richard E. Bigley, Graham J. Edgar, Shelley A. Evans, Jerry F. Franklin, Gregory J. Jordan, Yuliya Karpievitch, Thomas A. Spies, Russell J. Thomson. Short and long-term benefits for forest biodiversity of retaining unlogged patches in harvested areas. Forest Ecology and Management, Volume 353, 2015, Pages 187-195. https://doi.org/10.1016/j.foreco.2015.05.021.

supported higher richness and greater abundance of forest species than clearcuts (Fedrowitz et al. 2014[49]); however, retention cutblocks had negative impacts on some species compared to uncut forests. Variable retention includes the more static landscape-level retention spatialized through the 'Namgis Conservation Network in SS 1 and the more dynamic stand level retention defined in this stewardship strategy.

Variable retention utilizes a range of silvicultural systems to achieve stand level retention including shelterwood systems, selection systems, or the retention silvicultural system. This stewardship strategy focuses on the use of the retention silvicultural system which has three key requirements:

- Retained trees - distributed over the area of the cutblock;
- Retention - maintained for at least one rotation; and
- Distribution of retention – located to achieve > 50% forest influence which is the area surrounding a tree or forest edge with a radius equal to the tree height.

This stewardship strategy retains forest structure at the stand level consistent with the requirements of the retention silvicultural system. Achieving the retention silvicultural system is not mutually exclusive of the 'Namgis Conservation Network and retention patches may be identified at the stand level within the 'Namgis Conservation Network and edge influence from the 'Namgis Conservation Network will extend into the adjacent cutblock. Stand level retention prioritizes a range of biological anchors such as:

- k'wa'xtlu
- big trees and veteran trees
- rare and culturally significant species
- bear dens
- nest trees
- forested swamps
- wetlands and breeding ponds
- clusters of snags
- rock bluffs
- karst features
- clumps of understory western redcedar and yellow cedar
- riparian areas

Retaining these features results in a complex mix of forest structures being retained across the landscape. Stand level retention complements the landscape level retention of the 'Namgis Conservation Network to support achievement of the FLP outcomes as follows:

FF 1 - Western redcedar and yellow cedar grow across all seral stages. Retaining mature forest structures at the time of harvest contributes to the retention of these species across the landscape. This is enhanced by prioritizing the retention of k'wa'xtlu and understory western redcedar and yellow cedar. Retaining clumps of understory western redcedar and yellow cedar that are

[49] Fedrowitz, K., Koricheva, J., Baker, S.C., Lindenmayer, D.B., Palik, B., Rosenvald, R., Beese, W., Franklin, J.F., Kouki, J., Macdonald, E., Messier, C., Sverdrup-Thygeson, A. and Gustafsson, L. (2014), REVIEW: Can retention forestry help conserve biodiversity? A meta-analysis. J Appl Ecol, 51: 1669-1679. https://doi.org/10.1111/1365-2664.12289

generally not yet merchantable, supports the expedited recruitment of older seral stages compared to starting from planting.

The outcome reflects implementation of the retention silvicultural system averaged across all cutblocks recognizing that it is not known which cutblocks will utilize the retention silvicultural system and where retention patches will be located until site level planning is completed.

Western redcedar and yellow cedar may be accessed from retention patches for cultural use.

FF 2 – SS 5, SS 6, and SS 7 all reference the use of the retention silvicultural system as riparian forests are good biological anchors. Riparian forests tend to have good structural complexity and biological richness, however additional care must be taken when managing for windthrow as soils tend to be wetter and riparian features are linear corridors which have an increased windthrow hazard. Variable retention directly supports achievement of the outcome as it helps to maintain channel bank stability through the root structure of trees and providing functional large wood inputs. The organic material that enters the streams also directly supports fish populations.

FF 4 – Retaining mature forest structures at the time of harvesting produces forest stands that more closely resemble conditions that develop after natural disturbance, contributing to the forest mosaic in the Gwa'ni Special Management Zone.

The outcome reflects implementation of the retention silvicultural system averaged across all cutblocks recognizing that it is not known which cutblocks will utilize the retention silvicultural system and where retention patches will be located until site level planning is completed.


Photo Credit: Mike Green

FF 5 – Variable retention complements the 'Namgis Conservation Network to improve ecosystem integrity across the Nimpkish valley. In addition to the natural successional trajectory of all stands reflected in the forecast of ecosystem integrity, retaining structural elements of the existing stand through variable retention hastens the structural development and diversity of the regenerating stand (Bunnell and Dunsworth

2009[50]). Structural legacies retained through variable retention are included in the ecosystem integrity forecast through a measure called the standard deviation of rumple. In simple terms, this is a lidar derived metric that is a three-dimensional measure of canopy structural heterogeneity (Kane et al. 2010a, 2010b) that recognizes the variation in structure within a polygon (stand). Stands where structural legacies have been retained have higher rumple standard deviation values compared to harvest areas with no retention.

FF 6 – The spatial and temporal harvest flow reflects the implementation of variable retention. Growth rates of trees growing within the forest influence area have been adjusted down to reflect the impact of increased shading on the growth rate of the trees.

FF 7 – The road network reflects the implementation of variable retention and the cumulative effect of the stewardship of the planning values.

FF 8 and FF 9 – The spatial and temporal implementation of variable retention is included in the forecast of wildlife habitat types and is of particular relevance to Group 3 species which have a strong dependence on specific habitat elements such as snags, breeding ponds, or understory vegetation. Variable retention prioritizes the retention of these habitat elements increasing the structural complexity of the forest supporting a wide range of species.

FF 10 – Variable retention retains a diversity of plants at the time of harvest which are associated with the existing forest. This includes species of specific interest for cultural, traditional, and recreational use such as young balsam bark, blueberries, cedar for bark harvest, cranberry, devils club, huckleberries, labrador tea, lady fern (fiddleheads), nettles, pacific crab apple, raspberry, spruce pitch, stink currant, and yew. Over multiple rotations, variable retention is expected to increase the diversity of plants given the wide range of age classes present across the landscape.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The 'Namgis Conservation Network functions along with the full suite of stewardship strategies, including variable retention, to create connectivity and forest interior conditions throughout the Nimpkish valley. Variable retention further enhances connectivity as retention through the harvested matrix increases the ability for many species to move from patch to patch across the forest. Variable retention also enables some species to disperse into adjacent harvested areas more readily as they regrow.

FF 12 – Variable retention contains many of the rare ecosystems identified in this outcome, increases the diversity of stand ages across the range of rare ecosystems.

[50] Bunnell, F. L., Dunsworth, G. B. (eds.) 2009. *Forestry and Biodiversity: Learning How to Sustain Biodiversity in Managed Forests*. Vancouver: University of British Columbia Press.

Stewardship Strategy

1. Meet or exceed the five-year rolling average for the proportion of Retention Silvicultural System[51] cutblocks and amount of stand level retention to be retained by Forest Stewardship Zone[52] as specified in Figure 9.
2. Prioritize biological anchors in retention patches when available including: k'wa'xtlu[53], veteran trees, rare and culturally significant species[54], dens[55], nest trees[56], forested swamps[57], riparian including wetlands[58] and breeding ponds[59], clusters of snags, rock bluffs, karst features[60], and clumps of immature understory cedar.
3. When harvesting in the vicinity of Mount Cain, Mount Hapush, Mount Abel, Shoen Lake Park, and the nearby Sutton Range, utilize variable retention to maintain travel corridors and link routes for sustained alpine adventure. The thoughtful design of cutblocks and roads can maintain the integrity of these routes as travel in summer and winter can be difficult in regenerating and younger forests.
4. Stand level retention in Figure 9 and Wildlife Tree Retention Area (WTRA) criteria in Figure 10 can be located within the 'Namgis Conservation Network.
5. Record the type of biological anchor located within the retention patch.
6. Identify and maintain the WTRA until the next rotation unless harvesting is required to salvage windthrow and the WTRA is relocated to a similar stand type.

[51] Retention Silvicultural System is designed to:
- Retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation.
- Leave more than half of the harvest area within one tree height from the base of a tree or group of trees, whether or not the group of trees is inside the cutblock (>50% forest influence).

[52] See Appendix A for the location of each Forest Stewardship Zone.
[53] Refer to SS 12 - K'wa'xtlu Retention Criteria.
[54] White pine, pacific yew, crab apple, black cottonwood, cascara, devils club.
[55] Refer to SS 20 – Wildlife Features (Bears, Raptors, and Great Blue Heron).
[56] Refer to SS 20 – Wildlife Features (Bears, Raptors, and Great Blue Heron).
[57] CWH xm 12, CWH mm1 12, CWH vm1 14.
[58] Refer to SS 5, SS 6, and SS 7 – Retention of Riparian Forest.
[59] Breeding ponds are determined by the presence of water in the summer or presence of egg masses or tadpoles.
[60] Refer to SS 18 – Karst Features.

Figure 9: Stand level retention criteria by Forest Stewardship Zone.

Forest Stewardship Zone		
	SMZ[61]	GMZ
Proportion of Retention Silvicultural System[62](%)	100%	Windy 40%
		Basic 60%
		Dry 70%
Amount of stand level retention[63] (%)	25%	Windy 20%
		Basic 20%
		Dry 25%

Figure 10: Wildlife Tree Retention Area criteria by landscape unit and biogeoclimatic subzone.

Landscape Unit	Biogeoclimatic Subzone	Percent Wildlife Tree Retention Area (%)
Lower Nimpkish	CWHxm	11%
	CWHvm	9%
	MHmm	7%
Upper Nimpkish	CWHxm	13%
	CWHmm	14%
	CWHvm	9%
	MHmm	7%

Adaptive Management Indicators

AMI 22: The proportion (%) of internal stand level retention patches that contain western redcedar or yellow cedar trees as recorded during cutblock layout.

AMI 23: The five-year rolling average proportion (%) of the retention silvicultural system utilized in the Gwa'ni Special Management Zone and General Management Zone.

AMI 24: The five-year rolling average proportion (%) of stand level retention in the Gwa'ni Special Management Zone and General Management Zone

Exemptions to Practice Requirement

Section 67: This stewardship strategy provides the criteria for when harvesting of a WTRA can occur.

[61] If a portion of harvest area for the cutblock is inside the Gwa'ni SMZ then follow the SMZ criteria.
[62] Proportion of retention silvicultural system is based on total Harvest Area (ha) which is the sum of the Net Area to reforest (NAR) and area of in block roads. This is not the Total Area Under Prescription (TAUP).
[63] Stand-level Retention Percentage = Total Retention (ha)/Harvest Area(ha) x 100%.

SS 9 — HARVEST CRITERIA

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

- FF 1 Western Redcedar and Yellow Cedar
- FF 4 Forest Mosaic in the Gwa'ni Special Management zone
- FF 5 Ecosystem Integrity
- FF 6 Harvest Flow
- FF 7 Road Network
- FF 8 Wildlife Habitat Types
- FF 9 Species at Risk
- FF 10 Cultural, Traditional, and Recreational Use
- FF 11 Forest Connectivity and Forest Interior Conditions
- FF 12 Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

A rotation age specifies how old trees must grow before they are harvested. Growing stands within the mąłik portion of the Gwa'ni Special Management Zone to a minimum of 120 years old before being harvested supports achievement of the FLP outcomes as follows:

FF 1 – Growing western redcedar and yellow cedar across a diverse range of diameters can be enhanced by active stewardship. Purposefully growing larger western redcedar and yellow cedar on a 120-year rotation within the mąłik portion of the Gwa'ni Special Management Zone increases the overall diversity of ages and sizes. This diversity is further enhanced though variable retention to create a complex mosaic of western redcedar and yellow cedar throughout the Gwa'ni Special Management Zone.

FF 4 – A 120-year rotation within the mąłik portion of the Gwa'ni Special Management Zone increases the average age of the forest. A 120-year rotation was applied to the mąłik portion of the Gwa'ni Special Management Zone recognizing that the full suite of stewardship strategies function together to influence the average overall rotation age. Harvesting tied directly to a defined rotation age creates an age class pattern that emulates the harvest pattern of the past. A specific rotation age was only applied within the mąłik portion of the Gwa'ni Special Management Zone to create the desired age-class distribution across the entire

Gwa'ni Special Management Zone.

FF 5 – A 120-year rotation within the mąłik portion of the Gwa'ni Special Management Zone complements the full suite of stewardship strategies including the 'Namgis Conservation Network to improve ecosystem integrity across the Nimpkish valley. As stands develop along a successional trajectory they increase in attributes associated with older seral stage forests. Harvesting on a 120-year rotation increases ecosystem integrity as the stands are older and have increased structural complexity and associated plant communities.

FF 6 – The spatial and temporal harvest flow reflects the 120-year rotation in both the forecast harvest level and corresponding log grades being produced. This is the final phase of full rotation management.

FF 7 – The road network reflects the implementation of the 120-year rotation and the cumulative effect of the stewardship strategies.

FF 8 and FF 9 – A 120-year rotation age increases the amount of Type C2 habitat which is associated with species such as the black-throated gray warbler, evening grosbeak, western wood-pewee, and brown creeper. A longer rotation also contributes to the overall diversity and quality of winter thermal cover for ungulates and the improved canopy complexity is anticipated to increase the amount of understory vegetation available, complementing forage in recently harvested areas and the 'Namgis Conservation Network. The overall structural complexity of the forest also improves which contributes to increased diversity and resilience supporting habitat for a wide range of species.

FF 10 – As regenerating stands develop along a successional trajectory, they develop attributes of older stands, including height, horizontal and vertical structural diversity, species composition and cover, and forest floor development. A 120-year rotation enhances the seral stage distribution of the each biogeoclimatic (BEC) variant to maintain a range of seral stages across all biogeoclimatic ecosystem variants. All the BEC variants are present in the mąłik, but given it is focused on the lower elevation ecosystems, it only contains ~80ha of the higher elevation MHmm1. This ensures a diverse mix of overstory and understory species are maintained across the landscape supporting biodiversity and ecosystem health while sustaining a wide variety of cultural, traditional, and recreational uses.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The 'Namgis Conservation Network functions with the other stewardship strategies, including the 120-year rotation in the mąłik portion of the Gwa'ni Special Management Zone, to create a pattern of connectivity and forest interior conditions throughout the Nimpkish valley. The 120-year rotation enhances connectivity across the forest in stands at the upper end of the 61–140 years old category.

FF 12 – A 120-year rotation within the mąłik portion of the Gwa'ni Special Management Zone complements the other stewardship strategies, including the 'Namgis Conservation Network, to improve the integrity of rare ecosystems. The 120-year rotation increases the average age of the forest increasing structural complexity and seral stage diversity improving the integrity of the rare ecosystems.

Stewardship Strategy

1. Harvest stands older than the age specified in Figure 11 at the time of falling commencement.

Figure 11: Minimum harvest criteria for the Gwa'ni Special Management Zone.

	Portion of Gwa'ni Special Management Zone
	mąłik
Minimum Harvest Criteria[64] (years)	≥ 120[65]

Adaptive Management Indicators

AMI 25: The average stand harvest age (years) in the mąłik.

[64] Except stands can be harvested in the mąłik that are < 120 years old when:
- They are deciduous leading (≥ 50% by species) stands; or
- a stand by itself would not enable a future cutblock of ≥5 ha and is ≤ 25% of the total cutblock NAR including the stands ≥ 120 years old. The intent is not to harvest in the mąłik until stands are ≥ 120 years old and that this will be of limited application.
- the cutblock straddles the mąłik, and ≤ 1ha of stands that are < 120 years old, can be harvested to maintain logical cutblock boundaries considering windthrow, future road access, safety etc. The intent is not to harvest in the mąłik until stands are ≥ 120 years old and that this will be of limited application.

[65] Stand age is defined by the most current Western Forest Products inventory in effect at the time of falling commencement.

SS 10 — CUTBLOCK SIZE AND GREEN-UP CRITERIA

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- **FF 4** Forest Mosaic in the Gwa'ni Special Management zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 11** Forest Connectivity and Forest Interior Conditions

How the Stewardship Strategy Supports Outcomes in the FLP

Cutblock size limits and green-up criteria function with the other stewardship strategies including the 'Namgis Conservation Network and variable retention at the stand level, to create a spatial and temporal pattern of harvesting in a managed forest, that more generally mimics patterns of natural disturbance. The cutblock size limits also reflect the priority of the Gwa'ni Special Management Zone to focus on the many planning values concentrated in this area. The criteria for cutblock size were iteratively refined based on the spatial and temporal outcomes of ecosystem integrity, connectivity, forest interior conditions, and the associated harvest pattern.

Green-up heights were increased to 6m and the cutblock size reduced to 10ha in the Nimpkish Lake Travel Corridor to reduce the rate of harvest and maintain a visually appealing landscape in this highly visible area from the highway along Nimpkish Lake.

The cutblock size limit is defined through the Net Area to Reforest (NAR) or the total area where reforestation will occur following harvesting. This excludes the area of roads and any retention or Wildlife Tree Retention Areas (WTRA) retained as part of the cutblock. Green-up applies to the total NAR that has not yet achieved the minimum green-up height even if the areas were harvested at different periods of time.

The spatial and temporal patterns influenced by the cutblock size limits and green-up criteria are reflected in the FLP outcomes and the FOP map of cutblocks and roads. Cutblock size and green-up criteria support achievement of the FLP outcomes as follows:

FF 4 – Cutblock size and green-up criteria compliment the other stewardship strategies to produce a harvest pattern with a lighter

presence in the Gwa'ni Special Management Zone. The criteria also create a landscape with variability and structure that more closely resembles conditions that develop after natural disturbance. The pattern of smaller harvest areas surrounded by an older forest matrix located along the natural feature of the Nimpkish River, also has the associated benefit of increased wildfire resilience providing a landscape level approach for managing a larger more catastrophic fire should it occur in the future.

FF 5 – One of the attributes of ecosystem integrity is landscape context. NatureServe and the BC Conservation Data Centre include landscape context as a measure of fragmentation or patchiness and a measure of genetic connectivity. Landscape context reflects the condition of the surrounding landscape including development/maturity, species composition and biological structure, ecological processes, and abiotic and physical/chemical factors. The spatial and temporal harvest pattern including the retention of structural elements during harvesting has a direct influence on the long-term forecast of ecosystem integrity. By connecting the spatial and temporal harvest pattern to the outcome, it is possible to assess ecosystem integrity inclusive of multiple attributes which is an improvement over a patch size analysis type approach that evaluates landscape patterns based on stand age of contiguous polygons.

FF 6 – The harvest flow and associated log profile reflects the spatial and temporal application of cutblock size and green-up criteria inclusive of the full suite of stewardship strategies.

FF 7 – The road network reflects the spatial and temporal application of cutblock size and green-up criteria inclusive of the full suite of stewardship strategies.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. Cutblock size and green-up therefore influence connectivity and forest interior conditions as smaller harvest areas can reduce forest interior conditions over multiple harvest rotations. This outcome was therefore carefully evaluated, and the full suite of stewardship strategies complement each other to achieve the desired spatial and temporal pattern of connectivity and forest interior conditions reflected in FF 11.


Photo Credit: Mike Green

Exemptions to Practice Requirement

Section 65 (2): This stewardship strategy provides the criteria for the purposes of achieving Section 65 (2).

Stewardship Strategy

1. At the time of falling commencement, cutblocks must not exceed the maximum Net Area to Reforest (NAR) requirements specified in Figure 12.

Figure 12: Cutblock size and green-up criteria for the Gwa'ni Special Management Zone.

	Gwa'ni SMZ[66]			GMZ
	Nimpkish Lake Travel Corridor[67]	mąłik[68]	dzą'wąn[69]	
Maximum Net Area to Reforest (NAR) (ha)	10		25	40
Minimum Height[70,71] (m)	6	3	3	3

Adaptive Management Indicators

AMI 29: The proportion (%) of contiguous stands < 21 years old in the mąłik by size category.

[66] Utilize the Retention Silvicultural System for any cutblocks partially contained in the SMZ.

[67] A map of Nimpkish Lake Travel Corridor is in Appendix A. The following criteria can be utilized when harvesting along the boundary of the Nimpkish Lake travel corridor:

- If ≥ 1 ha of the NAR for a cutblock is inside the Nimpkish Lake Travel Corridor, then follow the Nimpkish Visual Area criteria for cutblock size.
- If < 1 ha of the NAR for a cutblock in an adjacent zone extends into the Nimpkish Lake Travel Corridor, then follow the criteria for that zone, except if in the GMZ the NAR must be ≤ 25ha.

[68] The following criteria can be utilized when harvesting along the boundary of the mąłik:

- If ≥ 3 ha of the NAR for the cutblock is inside the mąłik then follow the mąłik criteria for cutblock size.
- If < 3 ha of the NAR for a cutblock in an adjacent zone extends into the mąłik, then the total NAR must be ≤ 25 ha.

[69] The following criteria can be utilize when harvesting along the boundary of the dza̱'wa̱n:

- If ≥ 6 ha of the harvest area for the cutblock is inside the dza̱'wa̱n then follow the dza̱'wa̱n criteria.

[70] Green-up is achieved when at least 75% of the NAR of the existing cutblock is stocked with an average minimum height of the of the tallest 100 trees per ha or is stocked with at least 500 trees per ha of species listed in the stocking standard that are at least the minimum height. [This replaces FPPR Section 65 (3)].

[71] The portions of adjacent cutblocks that do not yet achieve the minimum height requirements contribute to the maximum NAR that can be harvested.

SS 11 — K'WA'XTLU RETENTION CRITERIA

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 4** Forest Mosaic in the Gwa'ni Special Management zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat Types
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

K'wa'xtlu are large cedar trees, and the retention criteria ensure that large wilkw or western redcedar and dixw or yellow cedar remain present across the forested landscape. These large trees are of special ecological and cultural significance, and it is important that k'wa'xtlu remain available for future cultural needs.

This stewardship strategy is implemented through the practice of variable retention as described in SS 8 as part of retaining mature forest structures at the time of harvesting. K'wa'xtlu are an anchor for variable retention and are an important element of developing forest stands that more closely resemble conditions that develop after natural disturbance. K'wa'xtlu not harvested for cultural purposes at the time of the cutblock, will be integrated into stand level retention within patches or as single trees, considering cutblock design factors such as safety, windthrow, distribution of trees to be retained, yarding, and access. The quality criteria are intended to enable the identification of high-quality trees that are required to produce the desired products. K'wa'xtlu retention criteria support achievement of the FLP outcomes as follows:

FF 1 – Forests are dynamic and retaining k'wa'xtlu at the time of harvest complements the 'Namgis Conservation Network and the reforestation and stand tending strategy, to ensure the full range of sizes of both wilkw

and dixw are present over the long-term.

FF 4 – The retention of individual k'wa'xtlu is an aspect of retaining mature forest structures at the time of harvesting to produce forest stands that more closely resemble conditions that develop after natural disturbance. K'wa'xtlu tend to be structurally complex contributing to the genetic diversity and resilience of the forest mosaic in Gwa'ni Special Management Zone.

FF 5 – Retention of k'wa'xtlu contributes to older seral stages and increases the structural complexity of the forest canopy. Canopy complexity and variable retention both contribute to ecosystem integrity. Retaining and growing k'wa'xtlu increases the diversity, richness, and genetic complexity of forest stands over multiple harvest rotations providing increased resilience against a changing climate. This dynamic approach to stewardship helps to ensure that should a particular seral stage of wilkw or dixw be disproportionately impacted by climate change, there are opportunities to grow k'wa'xtlu and trees for bark harvest over the long-term.

FF 6 – The spatial and temporal harvest flow reflects the retention of k'wa'xtlu through the implementation of variable retention and reflects the dynamic pattern of stands that are suitable for bark harvest.

FF 7 – The road network reflects the implementation of variable retention and the cumulative effect of stewardship strategies. The road network provides access to retained k'wa'xtlu into the future and supports the bark harvest opportunities identified in SS 13.

FF 8 and FF 9 – K'wa'xtlu are retained as part of the 'Namgis Conservation Network and through the spatial and temporal implementation of variable retention which is directly reflected in the wildlife habitat types. The retention of k'wa'xtlu is of particular relevance to Group 3 species which have a strong dependence on specific habitat elements such as large veteran trees. K'wa'xtlu also provide marbled murrelet habitat given they are large trees and can have suitable nesting platforms. The retention of k'wa'xtlu increases the structural complexity of the forest supporting nesting, denning, and foraging for wide range of species.

FF 10 – A perpetual supply of k'wa'xtlu and trees for bark supports a broad range of cultural and traditional uses. The presence of large wilkw and dixw adds value to the recreational experiences of indigenous and non-indigenous peoples alike. The retention of k'wa'xtlu through variable retention and purposefully growing stands for bark harvest as part of the future harvest pattern, contributes to the diversity of plants available for cultural, traditional, and recreational use.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The retention of k'wa'xtlu through the 'Namgis Conservation Network and variable retention contribute to connectivity and forest interior conditions throughout the Nimpkish Valley. The retention of k'wa'xtlu in

stand level retention further enhances the connectivity described in FF 11 as the retention of structurally complex trees through the harvested matrix increases the ability for many species to move from patch to patch across the forest. Variable retention also enables some species to disperse into adjacent harvested areas more readily as these areas mature through time.

FF 12 – K'wa'xtlu grow within many of the rare ecosystems identified in this outcome and the retention of k'wa'xtlu as biological anchors will naturally increase the diversity of stand ages across the range of rare ecosystems. Plant communities retained in association with k'wa'xtlu will continue to age, increasing the potential for the development of late seral stage elements.

Stewardship Strategy

1. Retain individual k'wa'xtlu as identified in Figure 13.
2. Tag each tree identified and record the specified attributes attached to a unique tree number.

Figure 13: K'wa'xtlu retention criteria for wilkw and dixw.

K'wa'xtlu	Retention Criteria[72]		
	Diameter (cm)	Quality	Retention[73] (%)
wilkw (western redcedar)	≥ 300	—	100
	150 - 299	Minimum 6m sections, round, sound, straight, surface relatively clear of knots on at least 3 sides.	90
	120 - 149		50
	100 - 119		33
dixw (yellow cedar)	≥ 210	—	100
	150 - 209	Minimum 6m sections, round, sound, straight, surface relatively clear of knots on at least 3 sides.	90
	120 - 149		50
	100 - 119		33

Adaptive Management Indicators

AMI 33: The total inventory (#) of k'wa'xtlu by diameter category.

[72] Integrate k'wa'xtlu not being utilized for cultural purposes at the time of cutblock harvest, into stand level retention within patches, or as single trees considering cutblock design factors such as safety, windthrow, distribution of trees to be retained, yarding, and access.

[73] Percentage is based on trees identified in and/or around the cutblock or road right of way (full scope of the area being assessed for harvesting including riparian areas etc.) Where 'Namgis and Western determine that meeting a retention target is best achieved across a suite of cutblocks, the outcome will be documented in the applicable Site Level Plan(s).

SS 12 — REFORESTATION AND STAND TENDING

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- FF 1 Western Redcedar and Yellow Cedar
- FF 5 Ecosystem Integrity
- FF 6 Harvest Flow
- FF 7 Road Network
- FF 8 Wildlife Habitat Types
- FF 9 Species at Risk
- FF 10 Cultural, Traditional, and Recreational Use

How the Stewardship Strategy Supports Outcomes in the FLP

Reforestation and stand tending are important phases of full rotation management. This stewardship strategy details the current reforestation and stand tending strategies that contribute to maintaining healthy and diverse natural forests with consideration to the risks of a changing climate.

The details in this stewardship strategy are supported by extensive monitoring observations, analysis, and experience gained over many years. This stewardship strategy is integral to sustaining biodiversity and ecosystem health and considers the forecast changes in climate, ecosystems, and species suitability.

As part of adapting to the predicted changes in climate, Climate Based Seed Transfer is being implemented which matches seedlings to the future (projected) climate of the planting site. To achieve this, the spatial and temporal forecast of the harvest pattern is utilized to predict the future seed supply needs through a 25-year Seed Orchard Management Plan at the Saanich Forestry Centre.

The forecast of the spatial and temporal harvest pattern, and associated log grades, are also integrated with the manufacturing facilities on Vancouver Island enabling investments aligned with the future log profile. This integrated approach to planning from seed to manufacturing, in the context of full rotation management, is key to the stewardship of the area-based tenure over the long-term.

As part of implementation in an adaptive management framework, our intent is to continue to explore opportunities for additional stand tending treatments in the

context of achieving specific objectives. At this time, the primary stand tending treatment being implemented is late rotation fertilization, which will now be scheduled in coordination with the spatial and temporal harvest pattern associated with the FLP and FOP. The connected approach to planning that is the basis of the FLP and FOP, provides the ideal approach for evaluating stand tending opportunities as it integrates the latest cultural, biological, ecological, operational, and economic data. This ensures that stand tending activities are planned and delivered in alignment with the 12 future forest outcomes. This stewardship strategy supports achievement of the FLP outcomes as follows:

FF 1 – Prioritizing reforestation of wilkw and dixw, while monitoring and adapting to climate change risks, helps to ensure that these species will continue to be present across a wide range of ages and sizes over the long-term. It is necessary to prioritize the planting of wilkw and dixw because other species such as western hemlock have abundant natural regeneration which can change the landscape distribution of species. This strategy maintains a diversity of stands that include wilkw and dixw with k'wa'xtlu and trees for bark harvest over the long-term.

FF 5 – One of the attributes of ecosystem integrity is species diversity. The reforestation strategy is designed to grow natural forests with a diverse mix of ecological suited species adapted to the climate envelopes of the future. The diversity of species being reforested contributes to improved ecosystem integrity.

FF 6 – The spatial and temporal harvest flow is inclusive of this stewardship strategy and long-term investments being made into area-based tenures which includes research into seed and seedling selection, planting to higher densities to maximize volume and grades, silvicultural systems, and late rotation fertilization treatments. As future fertilization projects are completed, they will be reflected in the harvest flow as part of ongoing adaptive management modelling. Modelling details for the reforestation and stand-tending strategy are in Appendix C.

FF 7 – The total length of the road network reflects the reforestation and stand tending strategy and the cumulative effect of all stewardship strategies. As stand tending activities such as juvenile spacing or commercial thinning are evaluated in the future, it can be completed in the context of the road network and associated access costs.

FF 8 and FF 9 – The wildlife habitat types reflect the spatial and temporal implementation of the reforestation and stand tending strategy. Reforesting natural forests and maintaining a deciduous component as part of the future forest contributes to Type H habitat associated with species such as the great blue heron and pacific-slope flycatcher.

FF 10 – Growing natural forests that include a wide diversity of native species supports a diverse mix of overstory and understory species across the landscape supporting biodiversity and ecosystem health while sustaining a wide variety of cultural, traditional, and recreational uses.

Stewardship Strategy

1. Prioritize reforestation with wilkw and dixw where it will become the long-term species, consistent with the stocking standard in Appendix C and by planting:
   - 1,000 stems/ha including planted, well-spaced naturals, and non-productive sites.
   - 1,200 stems/ha where >85% of the planting unit is wilkw or dixw.
2. Prescribe ecologically suitable species in the Site Level Plan considering:
   - Land Management Handbook 28: A Field Guide for Site Identification and Interpretation for the Vancouver Forest Region and Reference Guide for Forest Development Stocking Standards[74].
   - Climate change adaptation and Climate Based Seed Transfer.
   - Biotic and abiotic factors that pose risks to species.
   - Maintaining the diversity of species across the landscape through a pattern of stands that prioritize the planting of either wilkw, dixw, and Douglas-fir or through species mixes where ecologically suitable.
3. Increase wildfire resilience, species diversity, and structural complexity by increasing the presence of deciduous tree species as follows:
   - Planting 1,200 stems/ha of conifers including planted, well-spaced naturals, and non-productive on high elk use sites and retaining red alder at free growing consistent with the stocking standard in Appendix C.
   - Managing for red alder sawlogs on a portion of suitable sites by planting 1400 -1600 stems/ha of red alder including planted, well-spaced naturals, and non-productive sites where it will become the long-term species consistent with the stocking standard in Appendix C.
   - Retaining red alder adjacent to sitka spruce during brushing treatments to mitigate the potential for spruce weevil (Pissodes strobi) damage. The sitka spruce can be counted as a crop tree tree.
4. Where it is unlikely that the stocking standard in Appendix C will not be reasonably achieved with manual brushing treatments, contact the 'Namgis Natural Resource Department to explore options for utilizing herbicides or to accept the resulting natural stand.
5. Identify and schedule stands for Forest Investment Program fertilization treatments considering the forecast of future cutblocks.

[74] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/stocking-standards

Adaptive Management Indicators

AMI 13: The five-year rolling average of the total number (stems/ha) of western redcedar and yellow cedar trees at the time of free growing where these species were planted as defined by the inventory label.

AMI 14: The five-year rolling average of the change (%) in the density (stems/ha) of western redcedar and yellow cedar at the time of free growing compared to the density at planting.

AMI 15: The five-year rolling average of the change (%) in the density (stems/ha) of western redcedar and yellow cedar at the next harvest compared to the density at free growing.

AMI 36: The proportion (%) of area (ha) that requires replanting.

AMI 37: The proportion (%) of stands with incidence of significant forest health agents at the time of free growing.

SS 13 — CULTURAL INVENTORY OF PLANTS

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

FF 7 Road Network

FF 10 Cultural, Traditional, and Recreational Use

How the Stewardship Strategy Supports Outcomes in the FLP

Engagement with 'Namgis members consistently indicated the community's desire to access plants for food and medicine. This stewardship strategy proactively develops a cultural inventory of plants that can be integrated with the spatial and temporal harvest pattern to encourage and facilitate use of the forest's resources by 'Namgis members. A cultural inventory of plants supports achievement of the FLP outcomes as follows:

FF 7 – The road network in TFL 37 provides critical access to forest resources, including opportunities to gather plants of cultural interest. Feedback during the review and comment period of the FLP and FOP consistently identified the benefits of having the spatial and temporal harvest linked to the future forest outcomes. This approach enables opportunities to be proactively identified in alignment with the forecast change in the harvest pattern across the landbase. This will inform a Plant Harvest Opportunities Map that displays plant inventory information along with the harvest pattern, specific to needs at the time.

FF 10 – Increasing the active collection, stewardship, and sharing of information about plants of cultural interest will help to further inform the relationships between the plants and the diversity of seral stages across all biogeoclimatic ecosystem variants. Over multiple generations, this inventory will also be informative of whether changes are being observed in the location of plants due to climate change.

Stewardship Strategy

1. Maintain an inventory of plants of cultural interest[75] in collaboration with 'Namgis Natural Resource Department.
2. Produce a 1:50,000 georeferenced Plant Harvest Opportunities Map in collaboration with the 'Namgis Natural Resource Department dependent on the needs at the time.

[75] The list of plants of cultural interest will be maintained in coordination with 'Namgis.

SS 14 — COORDINATED BARK HARVEST

Supports the Stewardship of Gwa'ni Planning Values

Associated FLP Future Forest Outcomes

FF 7 Road Network

FF 10 Cultural, Traditional, and Recreational Use

How the Stewardship Strategy Supports Outcomes in the FLP

Engagement with 'Namgis members consistently indicated the community's desire to access wilkw and dixw for bark harvest. This stewardship strategy proactively addresses this interest by identifying opportunities for bark harvest integrated with the spatial and temporal harvest pattern to encourage and facilitate use of the forest's resources by 'Namgis members. A coordinated approach to bark harvest supports achievement of the FLP outcomes as follows:

FF 7 – The road network in TFL 37 provides critical access to forest resources, including opportunities for bark harvest. Feedback during the review and comment period of the FLP and FOP consistently identified the benefits of having the spatial and temporal harvest linked to the future forest outcomes. This approach enables bark harvest opportunities to be proactively identified in alignment with the forecast harvest pattern across the landbase. This will enable a Bark Harvest Opportunities Map to be produced that identifies cutblocks that contain trees suitable for bark harvest that have road access during the optimal season for bark harvest.

FF 10 – Increasing the active collection, stewardship, and sharing of information about bark harvest will help to further inform the relationships between bark harvest and the range of biogeoclimatic ecosystem variants. Both wilkw and dixw bark may be used for a variety of textile products relating to cultural and traditional uses. Continued utilization of bark will be served through maintaining the presence of wilkw and dixw within appropriate age range and facilitating access to such trees.

Stewardship Strategy

1. Annually produce a 1:50,000 georeferenced Bark Harvest Opportunities Map of potential wilkw and dixw bark harvest areas that are feasible to access within the 'Namgis Conservation Network.
2. Produce a 1:5,000 georeferenced Bark Harvest Opportunities Map(s) showing cutblocks that have been collaboratively identified for bark harvest during the optimal bark harvest season prior to falling commencement.

SS 15 — INVASIVE PLANTS

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- **FF 2** Stream Channel Condition
- **FF 3** Riparian Function
- **FF 7** Road Network
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

Invasive plants are alien or exotic species that have been introduced to the Nimpkish Valley and have a negative impact on the environment, people, or the economy. Management actions for invasive species are prioritized at a provincial scale using a science-based risk assessment process. Further refinement of priorities is completed at a regional scale depending on resources and treatment methods.

Preventing the initial introduction, establishment, and spread of invasive plants is the single most effective method of invasive plant control. There are five management categories that have been developed by the BC Inter-Ministry Invasive Species Working Group and the Provincial Government's Invasive Species Specialists:

- Prevent - Management objective is to prevent the introduction and establishment.
- Provincial early detection and rapid response – Management direction is eradication.
- Provincial containment – Management objective is to prevent further expansion into new areas.
- Regional containment/control – Management objective is to prevent further expansion into new areas within the region.
- Management – Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.

This stewardship strategy prioritizes management actions aligned with these five management strategies and contributes to achievement of the FLP outcomes as follows:

FF 2 and FF 3 – There are four species of knotweed (*Polygonum* spp.) found in coastal

British Columbia. Knotweed thrives in riparian areas, along stream banks, and in other areas with high soil moisture. Knotweed spreads rapidly through root systems that may extend from a parent plant up to 7 meters laterally and up to 3 meters in depth. Knotweed can be dispersed by water and is of particular concern in riparian areas as knotweed roots break off and float downstream to form new infestations. This means they can quickly dominate stream banks replacing native species leading to bank instability and increased soil erosion. 'Namgis, Western, and the Provincial Invasive Species Specialist have therefore diligently and intensively treated knotweed where it is located along the Nimpkish River in an effort to eradicate the species. Eradicating knotweed will help to maintain stable stream banks and channel conditions supporting achievement of the outcome.

FF 7 – Road networks are readily accessible and are recognized as a primary pathway for invasive plant spread. Invasive plants along road right of ways can spread into regenerating forests, destabilize slopes, degrade riparian areas, reduce sight lines, and increase fire hazards. Invasive plants can also contaminate gravel pits which is subsequently spread during road construction and reactivation activities. This stewardship strategy is designed to mitigate the potential for the introduction and spread of invasive plants through education and proactive control measures for both road construction and road maintenance activities which are part of a road network provided for a wide variety of uses.

FF 10 – By definition, invasive plant species have the potential to out-compete native plant species and disrupt natural plant communities. This can affect the quality of cultural, traditional and recreational uses. This stewardship strategy is designed to mitigate the potential for the introduction and spread of invasive plants through education and proactive control measures for both road construction and road maintenance activities helping to sustain a wide range of cultural, traditional, and recreational uses.

FF 12 – When invasive plants outperform native plant species, the structure of natural plant communities can be disrupted. While the risk of displacing native species is generally low for the older seral stage associated with rare ecosystems, proactively mitigating the potential for the introduction, and spread of invasive plants can help to reduce risks to rare ecosystems. This includes, reducing the overall fire hazard of the landscape and reducing the risk of climate change where growing conditions for invasive species could become more favourable than native species into the future.

Stewardship Strategy

1. Report instances of priority invasive species[76] into Western's spatial database and through Report-a-Weed or similar technology to the Invasive Alien Plant Program[77].
2. Provide annual training to staff and contractors on the identification of priority invasive species.
3. Mitigate the potential for the introduction and spread of priority invasive species through the following:
   - Revegetation of disturbed areas where priority invasive species1 are present.
   - Not brushing or mowing where priority invasive species are present.
   - Inspecting and cleaning equipment prior to bringing it into the TFL.
   - Inspecting and cleaning equipment after working in an affected area.
4. Maintain a plan for controlling Knotweed along the Nimpkish River in coordination with 'Namgis, Western, and the Provincial Invasive Species Specialist[78].

[76] Priority Invasive species are grouped into five categories:
- Prevent: Yellow Star Thistle
- Provincial EDRR: Perennial Pepperweed
- Provincial Containment: Giant Hogweed, Rush Skeletonweed
- Regional Containment/Control: Blueweed, Common Tansy, Field Scabious, Hoary Alyssum, Hoary Cress, Knotweeds (Japanese, Giant, Bohemian, Himalayan), Leafy Spurge, Marsh Plume Thistle, Orange Hawkweed, Puncture Vine, Scotch Broom, Spotted Knapweed, Teasel, Yellow Flag Iris
- Management: Gorse, Purple Loosestrife, Scentless Chamomile, Scotch Thistle, Sulphur Cinquefoil, Tansy Ragwort

[77] https://ssisc.ca/resources/provincial-programs/invasive-alien-plant-program/

[78] https://www2.gov.bc.ca/gov/content/transportation/transportation-environment/invasive-species-roadside/contacts

SS 16 — EROSION CONTROL TREATMENTS

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

FF 2 Stream Channel Condition

FF 7 Road Network

How the Stewardship Strategy Supports Outcomes in the FLP

Erosion is a naturally occurring process that constantly molds and alters landforms, removing soil material from one place and depositing it downstream or downslope. Erosion of soil materials associated with roads can, however, have a negative impact on the environment including polluting surface water and degrading streams and aquatic habitat.

One of the most effective ways to mitigate erosion is to control water runoff through effective runoff management which often reduces erosion potential and minimizes the need for sediment management. Effective runoff management limits the concentration of water flowing through a site, decreases the velocity of surface run-off, and diverts flows to less erodible areas. This stewardship strategy focuses on the application of erosion control treatments at the time of harvest completion, commensurate with the return period of when the road will be required for harvest access again in the future. Roads that are not permanently deactivated, are inspected to determine if maintenance of the erosion control treatments is required. The stewardship strategy contributes to achievement of the FLP outcomes as follows:

FF 2 – When the run-off of material from roads is significant enough, it can potentially alter the natural bedload and sediment balance of a stream, leading to a change in the channel condition. In recognition that climate change may lead to increased rainfall intensity and potentially higher peak flows and rain on snow events, erosion control treatments are designed to limit the potential for run-off to directly enter the stream channel. This is accomplished through both vegetative and physical means such as altering ditchlines and the running surface of the road. The application of erosion control treatments considers the return period of using the road again for harvest access as applying unnecessary erosion control treatments, such as removing and reinstalling culverts, damages the established road running surface and can unintentionally increase erosion. Applying erosion control treatments limits erosion supporting

achievement of the outcome.

FF 7 – The road network is integral to economically accessing the long-term harvest flow while concurrently providing access to a wide range of public uses. The road network is an important aspect of cumulative effects and was therefore closely evaluated for both the total length of the road network and the efficiency of the road network on a volume of harvest per lineal meter of road. This is important because a different suite of stewardship strategies results in a different road network pattern that directly influences ongoing maintenance and the application of erosion control treatments corresponding with the harvest flow. The total length of the road network and pattern of use therefore reflects the balance across all stewardship strategies.

One of the recreational areas of interest is the alpine area in the vicinity of Mount Cain, Mount Hapush, Mount Abel, and the nearby Sutton Range. In recognition of how much access to the alpine is valued in this area, the stewardship strategy prioritizes the application of erosion control treatments following harvest in a way that maintains 4-wheel drive access, where environmentally appropriate and structures are not required for use elsewhere.

One of the real benefits of connected planning that has emerged and was consistently recognized in comments received during the comment and review period, is the benefit of having the spatial and temporal pattern of roads concurrent with the outcomes they are a part of. This approach improves recreational use as the public now has context for specific sections of road considering the long-term spatial and temporal forecast which informs the application of erosion control treatments including where roads may be deactivated. This enables informed discussions on how the pattern of access will change into the future including access over time into alpine areas.

Stewardship Strategy

1. Classify roads planned for construction at the time of the Site Level Plan into one of the following three categories with consideration to the inactive period of the road[79]:
   - seasonal water management[80]
   - suspended use[81]

[79] Inactive period is the length of time in years until the road is expected to be needed again for a timber harvesting purpose.
[80] Seasonal water management are roads that will not be used for more than one winter season, but access is being maintained for harvesting, silviculture, and the public.
[81] Suspended use are roads that will not be used for more than one winter season, but access is being maintained for harvesting, silviculture, and the public for a 4-wheel drive vehicle.

- permanent deactivation[82]

2. Identify the year of deactivation on the Forest Operations Plan map for roads classified as permanent deactivation as required by FPPR Section 4.22 (b).
3. Apply erosion control treatments[83] on seasonal water management and suspended use roads with consideration to the following:
   - stream crossings location and proximity to fish
   - road prism factors such as cut slope, grade, and parent material
   - field observations such as evidence of erosion
   - licensed water intakes
   - access requirements
4. Complete road inspections on roads that are not permanently deactivated at least once every 36 months with consideration to the following:
   - category of road
   - stream crossings and proximity to fish
   - road prism factors such as cut slope, grade, and parent material
   - field observations such as evidence of erosion
   - licensed water intakes
5. In recognition of the local interest of access to subalpine environments, when applying erosion control treatments in the vicinity of Mount Cain, Mount Hapush, Mount Abel, and the nearby Sutton Range, maintain 4-wheel drive access where environmentally appropriate and the structures are not required for use elsewhere.

Adaptive Management Indicators

AMI 26: The proportion (%) of the road network that is not deactivated that is inspected at least once every three years.

AMI 32: A review of erosion control treatments at year one and five, after harvest completion, on a random sample of 10% of cutblocks harvested each year.

[82] Permanent deactivation are roads returned to a self-maintaining state with the road removed from road permit and includes techniques such as dirt berms/barricades (vehicle access control), cross-ditches, water bars, bridge removals, replacing cross-drain culverts with cross-ditches, log-culvert removals, and outsloping/insloping of the road surface.

[83] Erosion control treatments include:
- Vegetative along roadsides (grass seeding, planting, straw matting, surface roughening)
- Natural drainage pattern and road prism modifications (armoring, check dams, cross-ditches, cross-drains, ditch blocks)
- Road pullback, re-contouring, ballasting, crowning or sloping
- Installation of water bars

SS 17 — PREDETERMINED SALVAGE PROCESS

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

FF 6 Harvest Flow

FF 7 Road Network

How the Stewardship Strategy Supports Outcomes in the FLP

As the climate changes, it is predicated that the level of natural disturbance from a variety of factors may increase, as is currently being realized in the interior of British Columbia, as hotter and drier weather leads to larger and more frequent wildfires. Learnings have identified that the response to natural disturbance needs to be administratively efficient and timely. An effective way to achieve this is through the establishment of a salvage strategy before the damage occurs. This predetermined process can then be readily implemented when the damage occurs, without the need for additional approvals when a timely and cost-effective response is required.

In coastal British Columbia, one of the primary factors of natural disturbance are seasonal wind and rainstorms generally associated with atmospheric rivers[84] or cyclone[85] storms. These storms are predicted to intensify with climate change and in November 2021 significant damage occurred in parts of coastal British Columbia from a stalled atmospheric river. There is also the potential for other types of natural disturbance to increase from events such as wildfires, drought, and pest infestations. A predetermined salvage process supports achievement of the FLP outcomes as follows:

FF 6 – An effective strategy for mitigating the impacts of natural disturbance on the harvest flow is the salvage of damaged timber before it is attacked by pests or begins to rot. This stewardship strategy identifies a limited amount of salvage that can occur consistent with FLP outcomes and stewardship strategies under a pre-approved Salvage Permit without requiring a Site Level Plan or individual Cutting Permit application. This approach has proven to be very effective in

[84] Atmospheric rivers are long narrow flows of moisture-laden air that are often thought of as "rivers in the sky". These storms originate in the tropical and sub-tropical Pacific Ocean, sometimes carrying water vapour from as far away as Hawaii. Atmospheric rivers carry significant water vapour and bring heavy winds and when they stall in a particular area can cause significant wind and water damage.

[85] Cyclones are a counterclockwise rotating system of winds and rain rotating inward to an area of low pressure. The prevailing direction of winds along the coast therefore tends to be from the southeast.

enabling patches of damaged trees to be salvaged on an ongoing basis as equipment is moving around the TFL through the normal course of business. This enables the damaged timber to be salvaged in a timelier way, at a lower cost, while also maintaining log value. This minimizes value losses from ambrosia beetles (*Gnathotrichus sulcatus*) which fly and infect dead trees twice every year and whose damage has a direct impact on log value. Experience has also shown that after significant windthrow in Douglas-fir stands, outbreaks of the Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) predictably occur within the next three years which can lead to significant incremental damage well beyond the initial windthrow event.

Damaged timber can be dangerous to work in and this approach enables mechanized equipment to be utilized while it is in enroute to other locations. The strategy works because equipment can be offloaded as needed during transport, the timber processed, and then loaded out with a self-loading log truck as part of active hauling operations. This significantly reduces the cost of salvaging damaged timber and in combination with maintaining log values, helps to increase the ability to economically salvage smaller patches of damaged timber.

This stewardship strategy directly supports achievement of the outcome as damaged timber that is scaled contributes to achievement of the harvest flow.

FF 7 – Maintaining good road access is an important aspect of mitigating the effects of climate change. Roads not only enable the timely response to events such as wildfire, which minimizes the scope and scale of damage, but they also provide the access needed for the subsequent salvage further minimizing the impact of the natural disturbance event. Applying erosion control treatments, without deactivating the road, mitigates environmental risks and maintains a road network enabling the opportunity to implement an effective predetermined salvage process.

Stewardship Strategy

1. To mitigate, prevent, and adapt to impacts caused by significant disturbances to forests and forest health, patches of damaged trees[86] can be salvaged without the need for a Site Level Plan under the TFL 37 Damaged Timber Salvage Permit[87] for up to 1.0ha or 1,000m^3 where no new road construction is required[88].
2. Prior to salvage, contact 'Nąmgis Natural Resource Department for a review of the stand type and archaeological information.
3. Plant the salvaged area consistent with SS 12 and the Stocking Standard in Appendix C.

Adaptive Management Indicators

AMI 40: The total volume (m^3) salvaged under the TFL 37 Damaged Timber Salvage Permit timbermark.

[86] Damaged trees include those affected by windthrow, fire, pests, and live trees that are required to be felled in order to safely remove the damaged trees.
[87] The TFL 37 Damaged Timber Salvage Permit will be applied for following approval of the FOP.
[88] Where road construction is required, other than temporary access structures, a road permit will be submitted for approval.

SS 18 — KARST FEATURES

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	☀

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 2** Stream Channel Condition
- **FF 3** Riparian Function
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat Types
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Supports Outcomes in the FLP

Karst is a distinctive topography that results from the dissolving action of water on soluble bedrock. The Nimpkish Valley is recognized as an important area for karst landscapes and a planning level inventory has been completed identifying where karst features are likely to exist. This inventory assisted with the design of the 'Namgis Conservation Network enabling karst terrain to be integrated into the network at a landscape scale. The inventory classifies karst terrain into a range of vulnerability classes and the 'Namgis Conservation Network focused on integration of the highest vulnerability classes.

Karst terrain and features are also managed at the site level which is the focus of this stewardship strategy. British Columbia has a well-established Karst Management Handbook[89] (KMH) which assists with the development of appropriate management when conducting forest operations on karst terrain. This handbook is designed to be used in conjunction with the results of a

[89] https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/silviculture/training-modules/karst-mgmt-handbook-web.pdf

Karst Field Assessment[90] (KFA) as described in the Karst Inventory Standards and Vulnerability Assessment Procedures for British Columbia[91] (KISVAP). Depending on the complexity of the karst topography in a particular cutblock or road, implementation of the handbook relies on the experience of a Qualified Professional or Karst Specialist[92], to support development of site level management practices. This stewardship strategy utilizes this well-established approach as a basis for supporting achievement of the FLP outcomes as follows:

FF 1 – Western redcedar and yellow cedar grow on both karst and non-karst terrain, yet both types of landscapes have distinct geological formations and biological compositions. Through the 'Namgis Conservation Network and management of karst features at a site level, western redcedar and yellow cedar are present across a variety of landscapes considering all seral stages providing for biodiversity and increased resilience.

FF 2 and FF 3 - Portions of the Nimpkish River system receive water which has flowed through karst systems and exposed karst bedrock is present under significant reaches of the middle Nimpkish River. The process for water infiltration and flow in karst landscapes is distinctly different from other landscapes as the water infiltrates downwards through the soil and bedrock until it reaches a zone of saturation forming a groundwater aquifer. This can help to mitigate high water flows during intense storms and results in groundwater that is chemically quite distinct because of the solutional processes and chemical reactions. Research indicates that karst can therefore help to increase fish productivity by buffering acidic streams and providing cooler and more even stream temperatures and water flows throughout the year.

FF 4 and FF 5 – Portions of the Gwa'ni SMZ exist over karst landscapes, especially around Nimpkish Lake and the middle section of the Nimpkish River. Karst is located within the 'Namgis Conservation Network in this area, and in combination with site level management that includes locating karst features within stand level retention, contributes to improved ecosystem integrity. This directly supports achievement of the outcome as retaining mature forest structures associated with karst terrain and features produces forest stands that more closely resemble conditions that develop after natural disturbance, contributing to the forest mosaic in the Gwa'ni Special Management Zone. This also contributes to achievement of FF 5 and the spatial and temporal pattern of ecosystem integrity which reflects differences in ecosystem structure and vegetation characteristics which can be different in karst

[90] A Karst Field Assessment (KFA) evaluates the karst attributes of a relatively small area of interest like a cutblock or road. Karst field assessments determine karst vulnerability to guide forest management practices. The KFA also identifies significant karst features so management areas with practices can identified for the karst feature.
[91] https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nr-laws-policy/risc/karst_risc.pdf
[92] A Qualified Professional or Karst Specialist is an individual that has appropriate levels of training and experience to conduct a Karst Field Assessment.

landscapes. These differences are reflected through the assessment of canopy complexity and tree species diversity. The landscape and stand level retention on karst landscapes therefore directly contributes to achievement of the outcome.

FF 6 – The spatial and temporal harvest flow reflects the implementation of karst stewardship. Growth rates of trees growing within the forest influence of variable retention, have been adjusted down to reflect the impact of increased shading on the growth rate of the trees.

FF 7 – The road network reflects the implementation of karst stewardship through variable retention and the cumulative effect of the stewardship strategies. Roads are designed at the site level consistent with the results of the KFA.

FF 8 and FF 9 – The spatial and temporal implementation of variable retention associated with the stewardship of karst is reflected in the wildlife habitat types and is of particular relevance to Group 3 species which have a strong dependence on specific habitat elements. A wide diversity of wildlife utilize karst features for habitat including large carnivores for shelter and resting and birds and small mammals for nesting. Elk and deer commonly bed down in the vicinity of cave entrances in the summer when air from caves is cooler and during the winter when air from the cave is generally warmer than surrounding temperatures. Bats also utilize caves and depend on them for roosting and hibernation. There is also a karst dependent species of crustacean found on Vancouver Island known as a troglobite, which lives exclusively in total darkness. There are also species of salamanders, spiders, and crickets called trogophiles, which live inside and outside of caves for parts of their life cycle.

FF 9 – Habitat for both marbled murrelet and northern goshawk are located on karst landscapes. An estimated 451 ha of habitat in FF 9 is located on karst landscapes based on the TFL 37 planning level karst inventory directly contributing to achievement of the outcome.

FF 10 – Karst ecosystems support a diversity of plant species including some species of ferns and mosses which prefer growing on limestone and are adapted to growing in the cool moist twilight conditions of cave entrances. The ‘Namgis Conservation Network and variable retention retains this diversity of plants which includes species of specific interest for cultural, traditional, and recreational use such as young balsam bark, blueberries, cedar for bark harvest, cranberry, devils club, huckleberries, labrador tea, lady fern (fiddleheads), nettles, pacific crab apple, raspberry, spruce pitch, stink currant, and yew.

Karst features attract human attention, and a range of cultural, traditional, and recreational uses are all common in association with karst.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The stewardship of karst features as part of variable retention functions along with the suite of stewardship strategies to create a

pattern of connectivity and forest interior conditions throughout the Nimpkish Valley. The site level integration of karst as part of variable retention further enhances the connectivity described in FF 11 as retention through the harvested matrix increases the ability for many species to move from patch to patch across the forest. Variable retention also enables some species to disperse into adjacent harvested areas more readily as they mature through time.

FF 12 – Karst landscapes are associated with some of the rare ecosystems identified in this outcome. Karst features are unique on the landscape and there are some species of ferns and mosses that prefer and, in some cases, require a limestone substrate to grow on. Other fern species have adapted to grow in the cool, moist, and twilight conditions of cave entrances. The most common rare ecosystems found on karst landscapes are:

- CWHxm2 / 01, 06, 07, 11, 12
- CWHmm1 / 01, 06, 07, 12
- CWHvm1 / 06, 07, 11
- CWHvm2 / 06, 07

Stewardship Strategy

1. Utilize a qualified professional or karst specialist[92] to complete a Karst Field Assessment, when planning new cutblocks or roads in karst terrain.
2. Establish management areas with practices around karst caves, karst features, and areas with high or very high karst vulnerability informed by the management strategies, control measures, or recommendations from the Karst Field Assessment[90] and Karst Management Handbook.

SS 19 — VISUAL QUALITY

Supports the Stewardship of Gwa'ni Planning Values 

Associated FLP Future Forest Outcomes

FF 6 Harvest Flow

FF 7 Road Network

FF 10 Cultural, Traditional, and Recreational Use

How the Stewardship Strategy Supports Outcomes in the FLP

The Nimpkish Valley is extremely scenic and includes magnificent snow-covered mountains and lush green forested hillsides. An inventory was completed in 1998 to determine the most visible and sensitive landscapes in the valley. Visual Quality Objectives (VQO) were established from this inventory for areas where visual design techniques are used when designing cutblocks and roads so that harvest openings look more natural and in scale with the natural landscape. We reviewed this inventory as part of developing the FLP and FOP and have identified five additional areas for management to a VQO. These areas were identified by the technical team given our knowledge of increased use, since the original inventory was completed. The five areas are, Klaklama Lakes, Kaipit Lake, Huson Lake, Woss Lake, and the north end of Nimpkish Lake.

The visual quality polygons, where visual design techniques are used to achieve the Category of Visually Altered Landscape[93] for each Visual Quality Objective (VQO), are included in Appendix A. Within each of these visual quality polygons, a Visual Impact Assessment[94] (VIA) is completed, when required, to document how the proposed cutblock and roads will be consistent with the VQOs. There is a helpful Visual Impact Assessment Handbook[95] that provides best practices for completing VIAs. This stewardship strategy supports achievement of the FLP outcome as follows:

FF 6 – The visual design of cutblocks and roads influences the spatial and temporal pattern of harvest within visual polygons. Given the application of the retention silvicultural system, the maximum estimated amount of harvest that can occur by Category of Visually Altered Landscape was included in the modeling to maintain a rate of harvest reflecting the VQO for each visual polygon.

[93] As defined in FPPR s.1.1. There are five categories of visually altered forest landscapes which are Preservation, Retention, Partial Retention, Modification, and Maximum Modification.

[94] A VIA is a set of procedures and criteria that are applied to a proposed landscape alteration(s) to estimate the level of visual impact and determine consistency with visual quality objectives.

[95] https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/visual-resource-mgmt/visual_impact_assessment_handbook.pdf

This creates a spatial and temporal pattern of cutblocks in the future forest outcome aligned with the harvest flow in FF 6 supporting achievement of the outcome.

FF 7 – The road network reflects the spatial and temporal pattern of cutblocks associated with the stewardship of visual quality and the full suite of stewardship strategies. Managing for visual quality tends to increase the amount of road required for the corresponding harvest flow and generally requires multiple harvest entries influencing the application and removal of erosion control treatments in SS 16.

FF 10 - Managing the design of cutblocks and roads so they are visually appealing can increase enjoyment when participating in cultural, traditional, and recreational activities. This stewardship strategy supports achievement of the outcome as it maintains the spectacular natural beauty of the Nimpkish Valley while supporting a harvest flow and corresponding road network, providing access to a diverse mix of cultural, traditional, and recreational uses.

Stewardship Strategy

1. Meet the applicable Category of Visually Altered Forest Landscape[92] for each landform[96] with a visual quality objective polygon in Appendix A when developing new cutblocks and roads.
2. If it is not practicable to meet the Category of Visually Altered Forest Landscape because the cutblock is associated with the harvesting of trees damaged by fire, insects, wind, drought, flooding, or other factor, document the details of the decision in the Site Level Plan.

[96] A landform is a distinct topographic feature, is three-dimensional in form, and is generally defined by ridges, valleys, shorelines, and skylines.

SS 20 — HABITAT FEATURES - BEARS, RAPTORS, AND GREAT BLUE HERON

Supports the Stewardship of Gwa'ni Planning Values	
Supports Climate Change Adaptation	

Associated FLP Future Forest Outcomes

- **FF 1** Western Redcedar and Yellow Cedar
- **FF 4** Forest Mosaic in the Gwa'ni Special Management Zone
- **FF 5** Ecosystem Integrity
- **FF 6** Harvest Flow
- **FF 7** Road Network
- **FF 8** Wildlife Habitat Types
- **FF 9** Species at Risk
- **FF 10** Cultural, Traditional, and Recreational Use
- **FF 11** Forest Connectivity and Forest Interior Conditions
- **FF 12** Rare Ecosystems

How the Stewardship Strategy Support Outcomes in the FLP

Wildlife habitat features are important as they support one or more of the life history requirements of a particular species and special management is required to ensure that the feature remains functional. Three wildlife habitat features for special management have been identified in the Nimpkish Valley, while recognizing that the suite of stewardship strategies all contribute to the conservation of wildlife habitat features across the landscape. The wildlife habitat features with special management are for black bears, eagles, and great blue heron.

Most black bear dens are located within cavities of large diameter trees, predominantly western redcedar and yellow cedar. They also occur in stumps, logs, and under root masses, especially in younger forests. Dens are dry, have cavities (ideal size is ~110-150 cm diameter) and small entrances (ideal size is that of a record album, 30x35 cm), but generally range from 25-45 cm wide and 30-60 cm tall. After bears emerge from their dens, trees within 150m are required for security and escape purposes, especially for a mother bear with cubs.

Most bald eagle nests are located within 1 km of a major waterbody, in larger trees (commonly Douglas-fir, Sitka spruce, western redcedar and black cottonwood)

and in the top 23 m of the tree. Golden eagles usually nest on cliffs, but occasionally use higher elevation Douglas-fir.

The great blue heron is the largest wading bird on Vancouver Island and most rookeries are located at lower elevations in proximity to the ocean with a particular emphasis on estuaries, tidal mudflats, and wetlands. Rookeries can be found across all seral stages of forest and the most common tree species include red alder, black cottonwood, big leaf maple, Sitka spruce, and Douglas-fir. Breeding is initiated between February and April and colonies are often recognized through loud pre-historic type cries.

The stewardship of habitat features for black bears, eagles, and great blue heron supports achievement of the FLP outcomes as follows:

FF 1 – Retaining existing black bear dens through variable retention and the 'Namgis Conservation Network while continuing to grow large diameter western redcedar and yellow cedar ensures that trees large enough to support black bears dens will be sustained into the future.

FF 4 – Retaining wildlife habitat features through variable retention directly supports achievement of the outcome as retaining mature forest structures at the time of harvesting, produces forest stands that more closely resemble conditions that develop after natural disturbance, contributing to the forest mosaic in the Gwa'ni Special Management Zone. The pattern in the Gwa'ni Special Management Zone also increases connectivity, cover, and escape trees within the vicinity of the Nimpkish River where black bears concentrate their feeding during the annual salmon spawn.

FF 5 – Retaining wildlife habitat features through variable retention contributes to improved ecosystem integrity. Increasing ecosystem integrity and the characteristics associated with older forests helps to support species that require older structural habitat elements.

FF 6 – The spatial and temporal harvest flow reflects the implementation of variable retention which includes the stewardship of habitat features. Growth rates of trees growing within the forest influence area have been adjusted down to reflect the impact of increased shading on the growth rate of the trees.

FF 7 – The road network reflects the implementation of variable retention which includes the stewardship of wildlife habitat features and the cumulative effect of all stewardship strategies.

FF 8 and FF 9 – Wildlife habitat features suitable for use by black bears and eagles are more likely to be found in association with Type C3 habitat which is conifer stands > 140 years old. Retaining these features through variable retention is reflected in the wildlife habitat types increasing the structural complexity of the forest supporting a wide range of species.

FF 10 – The retention of wildlife habitat features through variable retention retains a diversity of plants associated with the existing forest which includes species of specific interest for cultural, traditional, and recreational use such as young balsam bark, blueberries, cedar for bark harvest, cranberry, devils club, huckleberries, labrador tea, lady fern (fiddleheads), nettles, pacific crab apple, raspberry, spruce pitch, stink currant, and yew. Over multiple rotations, variable retention is expected to increase the diversity of plants given the wide range of age classes present across the landscape. Black bears, eagles, and great blue herons are of special significance to 'Namgis and improve the recreational experience of visitors and residents.

FF 11 – Forest connectivity and forest interior conditions are dynamic and reflect the current state of the forest at any given point in time. The 'Namgis Conservation Network functions along with the other stewardship strategies, including the retention of wildlife habitat features through variable retention, to create a pattern of connectivity and forest interior conditions throughout the Nimpkish Valley. Variable retention further enhances the connectivity described in FF 11 as retention through the harvested matrix increases the ability for many species to move from patch to patch across the forest. Variable retention also enables some species to disperse into adjacent harvested areas more readily as they mature through time.

FF 12 – The retention of wildlife habitat features through variable retention captures many of the rare ecosystems identified in this outcome increasing the diversity of stand ages across the range of rare ecosystems.

Stewardship Strategy

1. Retain basal[97], root-bole[98], or log bear dens within a contiguous forest area, retention patch ≥ 0.3ha within 150m from a mature[99] or old forested edge, or retention patch ≥ 1ha if a mature/old forested edge is not available within 150m.
2. Retain arboreal[100] dens within a contiguous forest area, a retention patch ≥ 0.5 ha within 150m from a mature/old forested edge, or a retention patch ≥ 1ha if a mature/old forested edge is not available within 150m.
3. Retain eagle nests within a contiguous forest area or retention patch ≥ 0.75ha that is ≤30m from a harvested edge.
4. Retain heron nests within a contiguous forest area or retention patch with a 300m radius.
5. Where these strategies are not feasible due to safety, critical road control points, or other factors, contact a Wildlife Specialist[101] to develop site specific measures and document in the Site Level Plan.

Adaptive Management Indicators

AMI 34: The total number (#) of bear dens, raptor nests, and great blue heron nests protected.

[97] Basal den - den with an entrance at the base of the tree.

[98] Root-bole den – cavity that can provide shelter for bears during the winter months that meets the following general parameters:

- Tree DBH: ≥ 100cm
- Entrance dimensions: ≥ 25 cm wide x ≥ 30cm tall
- Chamber is dry
- Chamber height : ≤60cm unless evidence of activity is present
- Chamber width: ≤60cm unless evidence of activity is present

[99] Mature forest – trees ≥ 120 years old based on WFP forest cover.

[100] Arboreal den – den with an above ground entrance, the base of which is ≥ 1.3m.

[101] A Wildlife Specialist is an individual that has appropriate levels of training and experience in managing wildlife habitat features considering habitat needs and legislation.

Requirements for Forest Operations in Respect of Stocking Standards

FRPA Section 2.36 (1) (b) and FPPR Section 4.14

The stocking standards in this Forest Operations Plan are provided for the purposes of evaluating the legislated free growing requirements. The holders of this Forest Operations Plan implement reforestation and stand tending consistent with the principles of full rotation management as outlined in the Reforestation and Stand Tending stewardship strategy.

Situation or Circumstances that Determine whether Free Growing is Assessed on a Cutblock or Across Cutblocks Basis

FPPR Section 44 (1) applies in all situations or circumstances under the Forest Operations Plan where a free growing stand is required to be established under FRPA Section 29 consistent with FPPR Section 4.14 (1).

Stocking and Related Standards for Stands to which Free Growing Obligations Apply

There may be relatively uniform conditions or mosaics (ecosystem complexes), transitional ecosystem sites, and varying site conditions within an area. The area will be stratified into standards units (SU) of similar characteristics for the purposes of stocking standards to the extent the delineation and mapping of site series into separate SU is practicable to meet stratification principles. The two options for assignment of standards to the SU are:

- The assessment area will be classified at the entire SU based on the applicable standard from Appendix C, and the dominant site series in the SU will be used to assign the stocking standard for species, Target Stocking Standards (TSS), Minimum Stocking Standards (MSS), Minimum Horizontal Inter-Tree Distance (MITD), and free growing heights; or
- The Assessment Area (AA) will be classified at each plot based on the applicable standard from Appendix C, and the dominant site series in each plot will be used to assign the stocking standard for species, TSS, MSS, MITD, and free growing heights for the AA, and used to summarize the SU.

Species

Species selection to determine compliance with Section 44(1) of the FPPR will be based on the ecosystem classification and be evaluated at the AA level. Species which are ecologically suitable and commercially valuable for each site series are listed in Appendix C.

Stocking For Even-Aged Stands

For Even-Aged Stands:

- TSS listed in Appendix C will be used to assess the achievement of an acceptable stocking level on an AA.
- MSS listed in Appendix C will be used to assess the achievement of an acceptable stocking level on an AA.
- MITD listed in Appendix C will be used to ensure that stocking distribution is considered when assessing stocking levels in the AA.

Regeneration Date

Regeneration date is 6 years.

Free Growing Date

Free growing date is 20 years.

Minimum Free Growing Height

Minimum free growing heights listed in Appendix C will be used to demonstrate that the trees are adapted to the site, are growing well, and can reasonably be expected to continue to do so.

Minimum free growing height will be assigned at the AA level based on the AA's ecosystem classification based on the dominant site series of the AA.

Hardwood Management

For Hardwood Management:

- At least 80% of the total stocking will be alder, and
- The TSS is 1500 stems per hectare and the MSS is 1000 stems per hectare, except 20% of an SU may have an MSS of 800 stems per hectare.

Elk Habitat Management

For Elk Habitat Management:

- Red alder will be considered a crop tree at the time of free growing on nutrient medium to very rich, well to imperfectly drained sites; and
- The TSS is 1200 stems per hectare and the MSS is 250 stems per hectare.

Intermediate Cutting (FPPR Section 16 (1) and Section 44 (1)

Where commercial thinning, removal of individual trees, a similar type of intermediate cutting, or harvesting of special forest products consistent with FPPR Section 44 (3) (h-i) occurs, the residual basal area within each harvest unit will be maintained above 40 m^2/ha for a period of at least 12 months after harvest completion.

Intermediate cutting rules apply to conifer management only and openings greater than 0.25 ha will be managed using even-aged stocking standards. Where intermediate cutting is applied, the residual stand will consist of ecologically suitable species that will be viable for future harvest opportunities.

Stocking standard ID's will be created via the RESULTS[102] system and additional site series will be added to the standard, as required.

[102] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/silviculture-reporting-results

Cutblocks and Roads

FRPA Section 2.36 (2), FPPR Section 4.11, 4.12, 4.19, 4.2, 4.21, and 4.22

Connected planning improves public transparency by sharing the forecast of cutblocks and roads in the Forest Operations Plan concurrent with the outcomes in the Forest Landscape Plan. By embedding the future cutblocks and roads as part of the FLP outcomes, the public can visualize the cumulative effect of all cutblocks and roads as part of the desired future forest condition.

Cutblocks and Roads Consistent with Future Forest Outcomes

Connected planning in an adaptive management framework eliminates the potential for cutblocks and roads in the Forest Operations Plan to be inconsistent with the future forest outcomes in the Forest Landscape Plan.

Connected planning integrates cutblocks and roads as part of the future forest outcomes in the FLP. This integration ensures that new cutblocks and roads amended into the Forest Operations Plan are consistent with the Forest Landscape Plan as contemplated in FRPA Section 2.4 (1) and (3) as they are explicitly included in the outcome.

Proposed and Existing Cutblocks and Roads

The Forest Operations Plan map identifies the approximate location of each proposed cutblock and road for the next five years. These cutblocks are identified with a unique number as required by FPPR Section 4.19 (2). The cutblocks and roads are also colour coded to provide an estimate of the year of harvest, year of road construction, and whether Western Forest Products or Aɬɬi will harvest the cutblock or build the road as required by FPPR Section 4.19 (1) (a), (3) and 4.21. If the proposed year of activity changes, or which holder of the FOP will harvest a particular cutblock or road, , it will be updated in the annual Forest Development Schedule.

The information on the map is also included in a table in Appendix D as required by FPPR Section 4.11 (1) (2), and (3). The table includes the unique number, estimate of the year of harvest, and an estimate of who will harvest the timber on the cutblock or construct the road.

Amendments to this information will inevitably be required during implementation of the plan and will be completed consistent with FPPR Section 4.43.

The Forest Operations Plan map also

includes the location of each existing cutblock that is less than 20 years old as required by FPPR Section 4.19 (3), (4), (6) and 4.2. The map also identifies the location of existing roads as required by FPPR Section 4.22 (1) and the holder of the road permit as required by FPPR Section 4.22 (3). These cutblocks and roads are also included in a table in Appendix D as required by FPPR Section 4.11 (1).

Road Deactivation

All of the roads on the Forest Operations Plan Map are shown as permanent roads consistent with FPPR Section 4.22 (2) (a). This is because the roads in TFL 37 are an asset that is integral to achieving the future forest outcomes in the Forest Landscape Plan. There are circumstances however, where roads are deactivated in recognition of environmental risks, or they are no longer required for future access. These circumstances are outlined in Stewardship Strategy 16. The intent of deactivation is to return the road to a self-maintaining state. In these situations, techniques are used such as dirt berms/barricades (vehicle access control), cross-ditches, water bars, bridge removal, replacing cross-drain culverts with cross-ditches, log-culvert removal, and outsloping/insloping of the road surface. Where deactivation is planned, the Forest Operations Plan map will be amended to indicate the location and year of deactivation as required by FPPR Section 4.22 (2) (b) and (c).

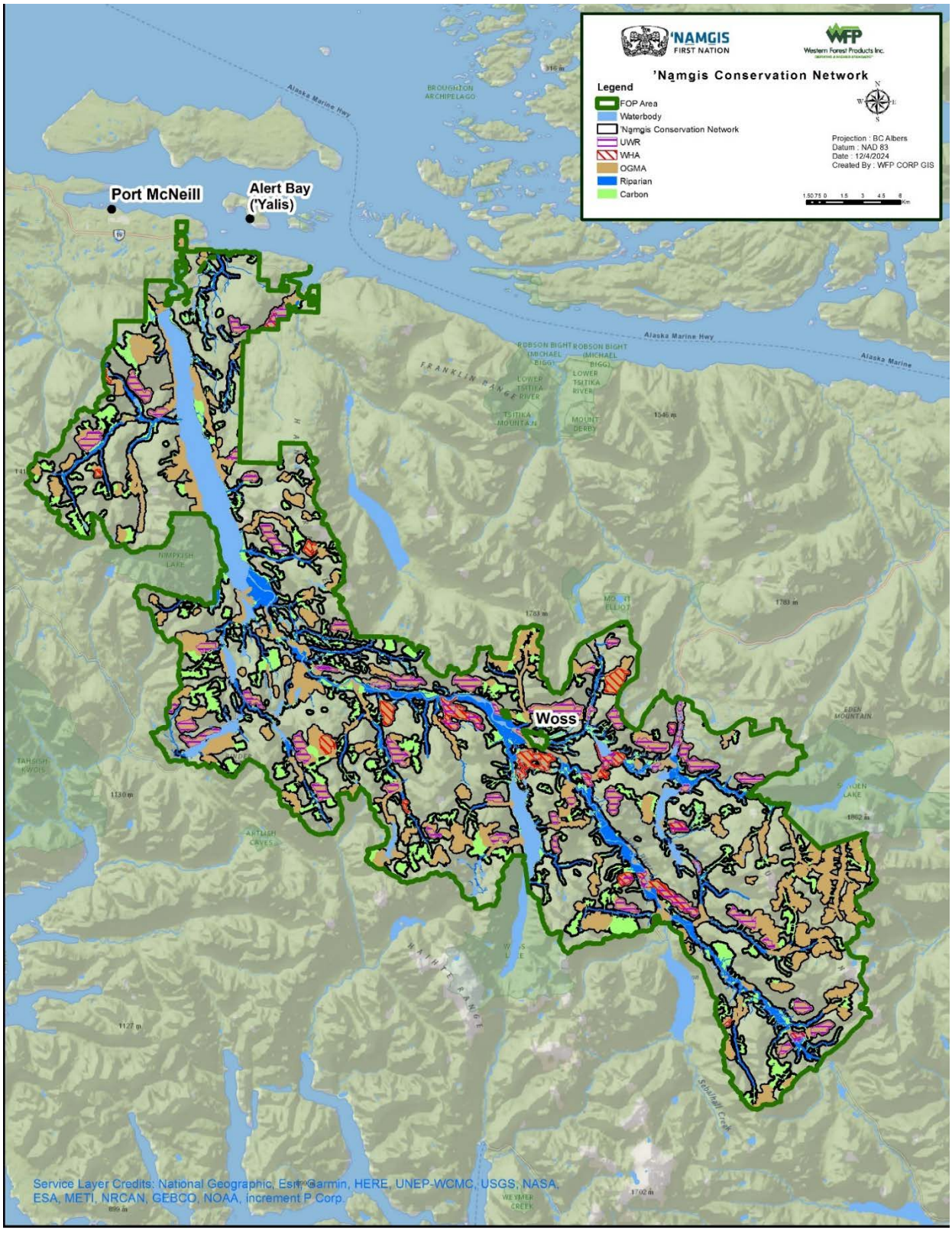
Retention Silvicultural System Cutblocks

The Forest Operations Plan map identifies the location of the landscape level 'Namgis Conservation Network which is complemented at the site level by the retention silvicultural system. As described in Stewardship Strategy 8, landscape and stand level retention are not mutually exclusive. This means that retention at the stand level will often be located as part the 'Namgis Conservation Network. Stewardship Strategy 1 also recognizes that road access is required within the 'Namgis Conservation Network and that additions and deletions will be completed based on detailed site level information. Cutblocks and roads on the Forest Operations Plan map may therefore be shown to overlap the 'Namgis Conservation Network.

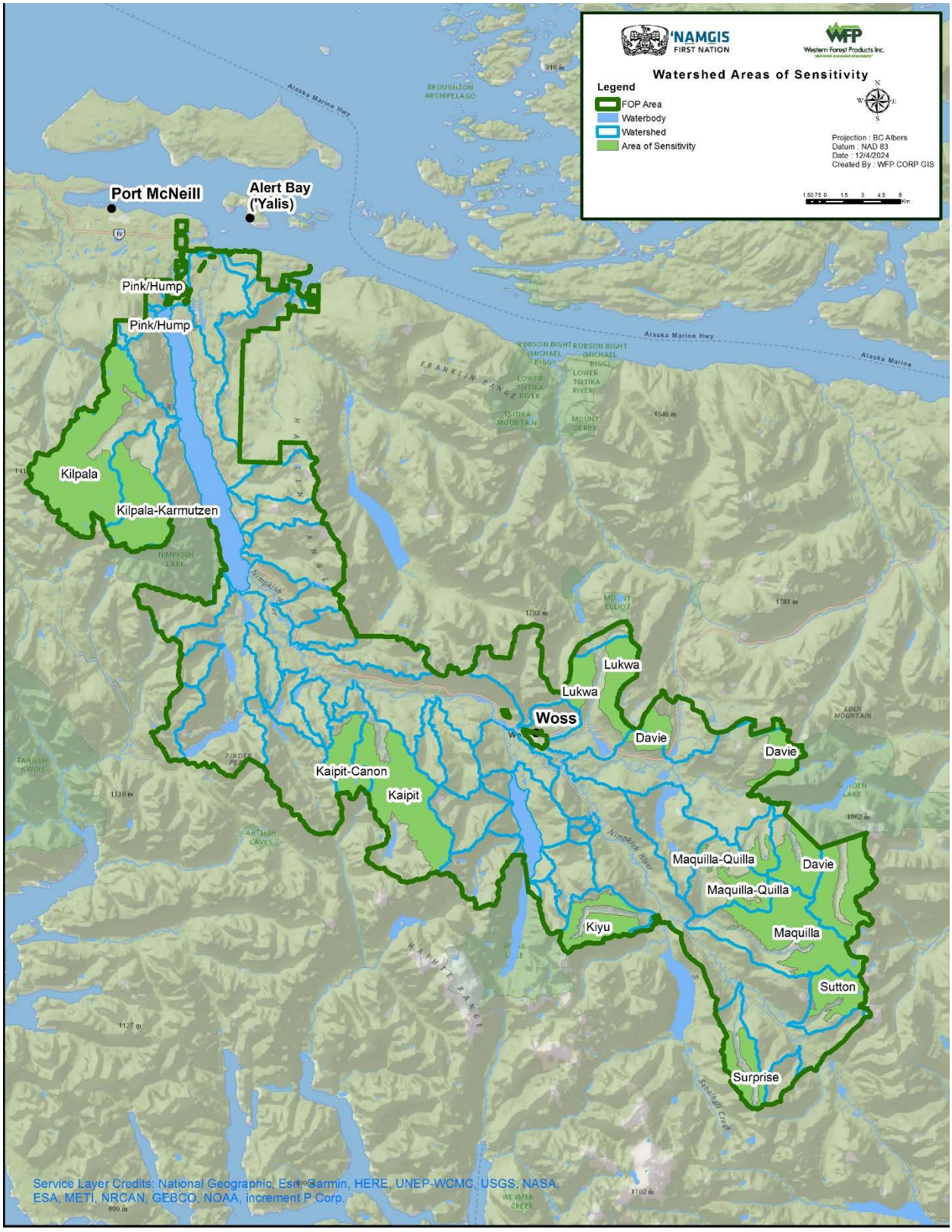
Photo Credit: Rachel Dalton

Appendix A

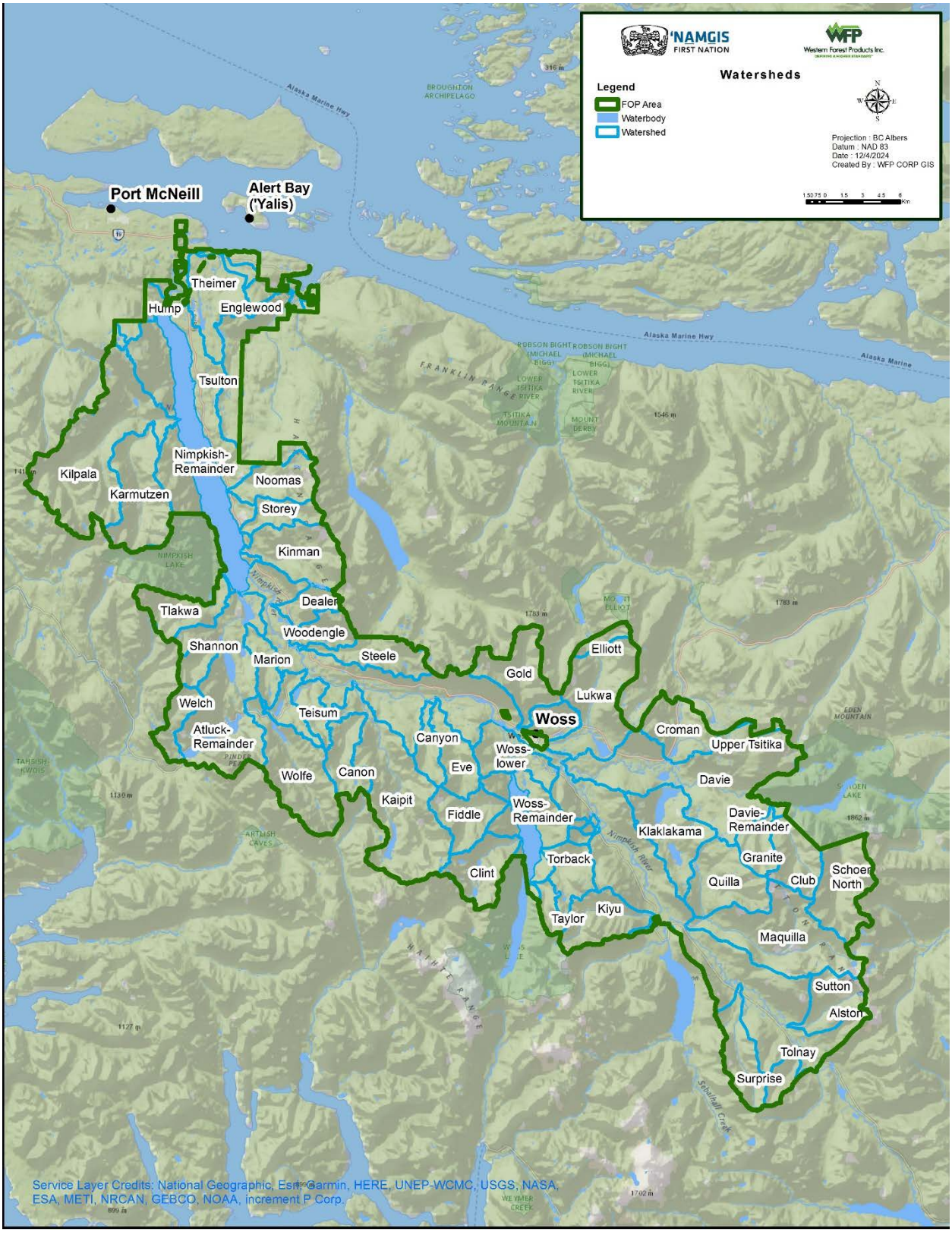
Map A: ‘Na̱mgis Conservation Network including Reserves for Wildlife, Biodiversity, and Carbon



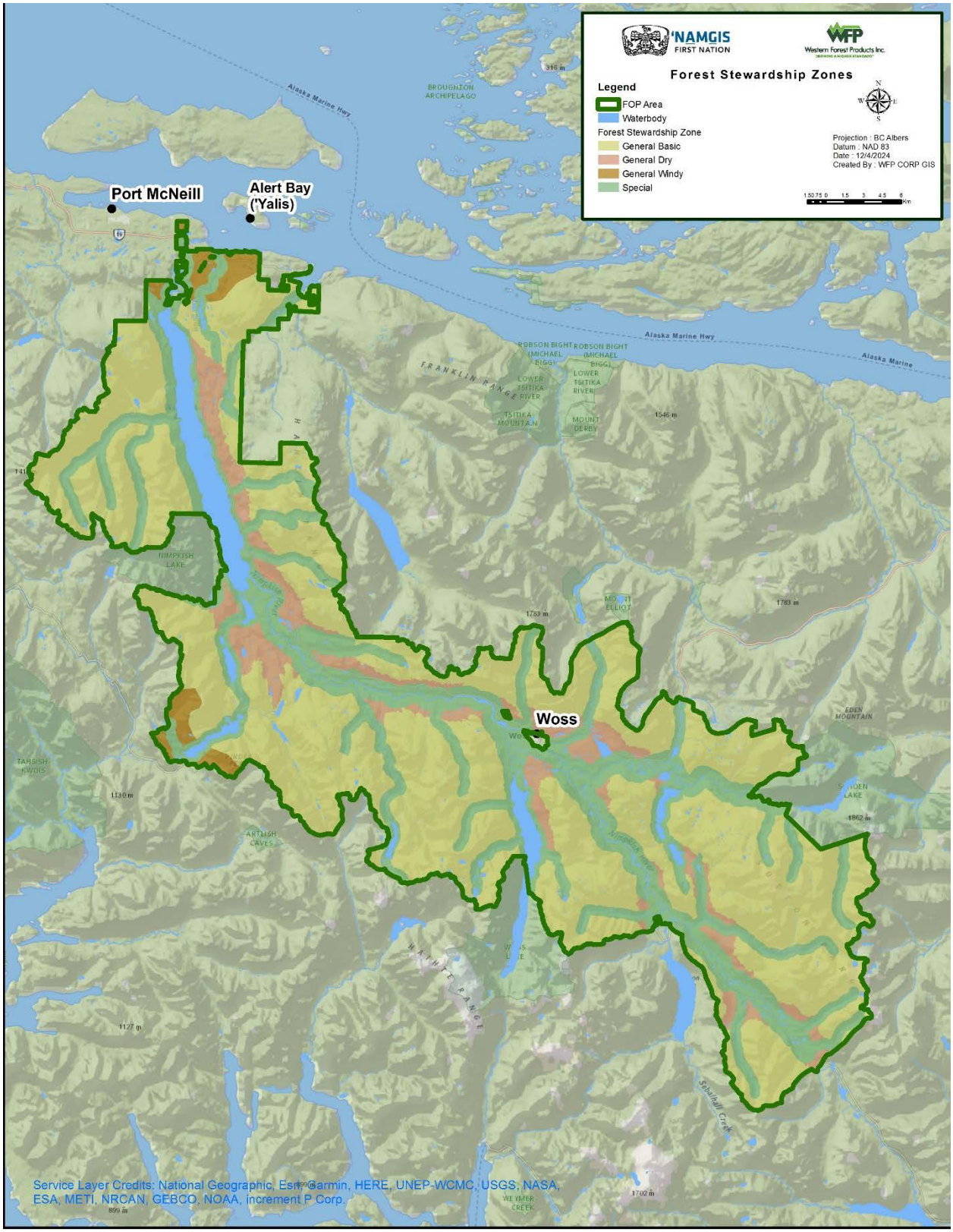
Map B: Watershed Areas of Sensitivity



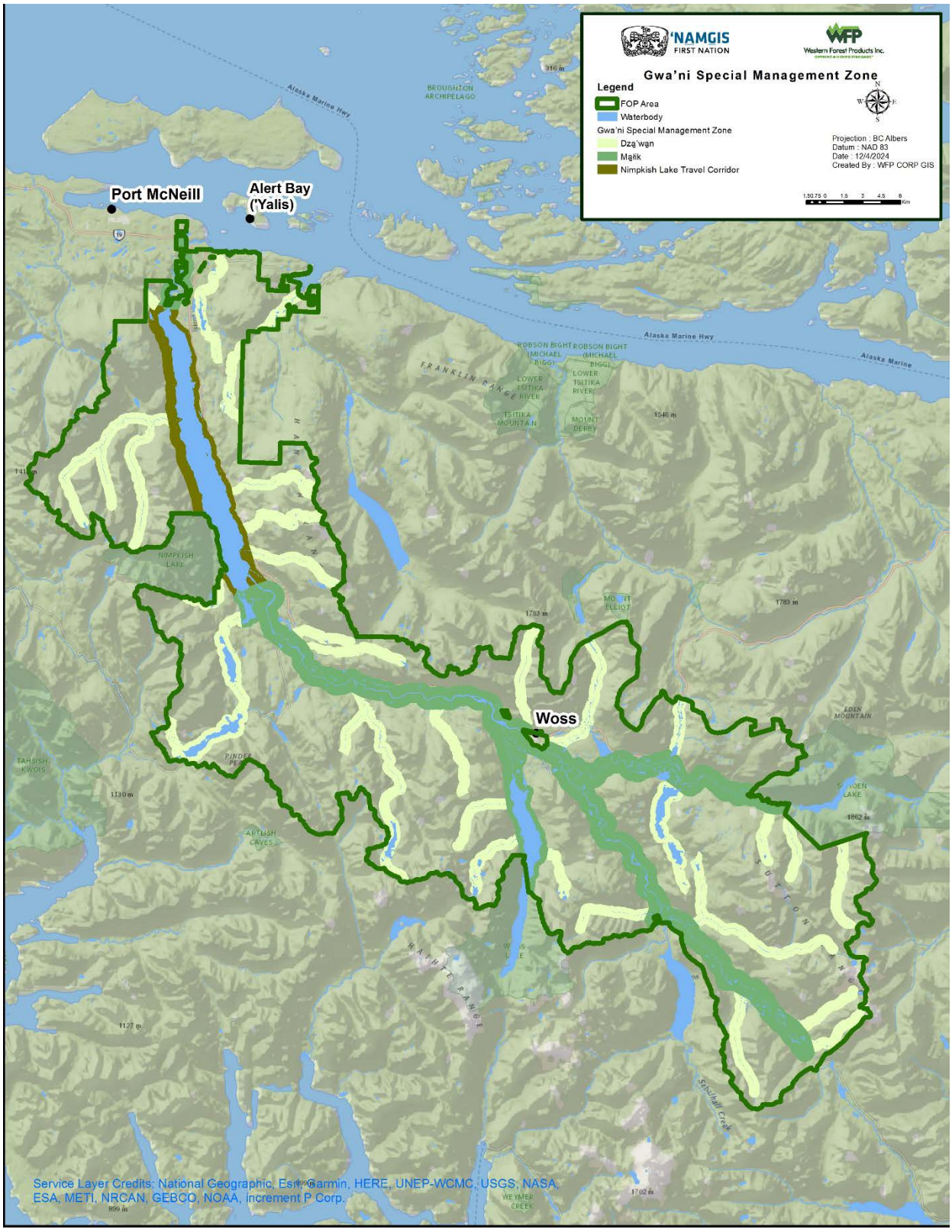
Map C: Watersheds



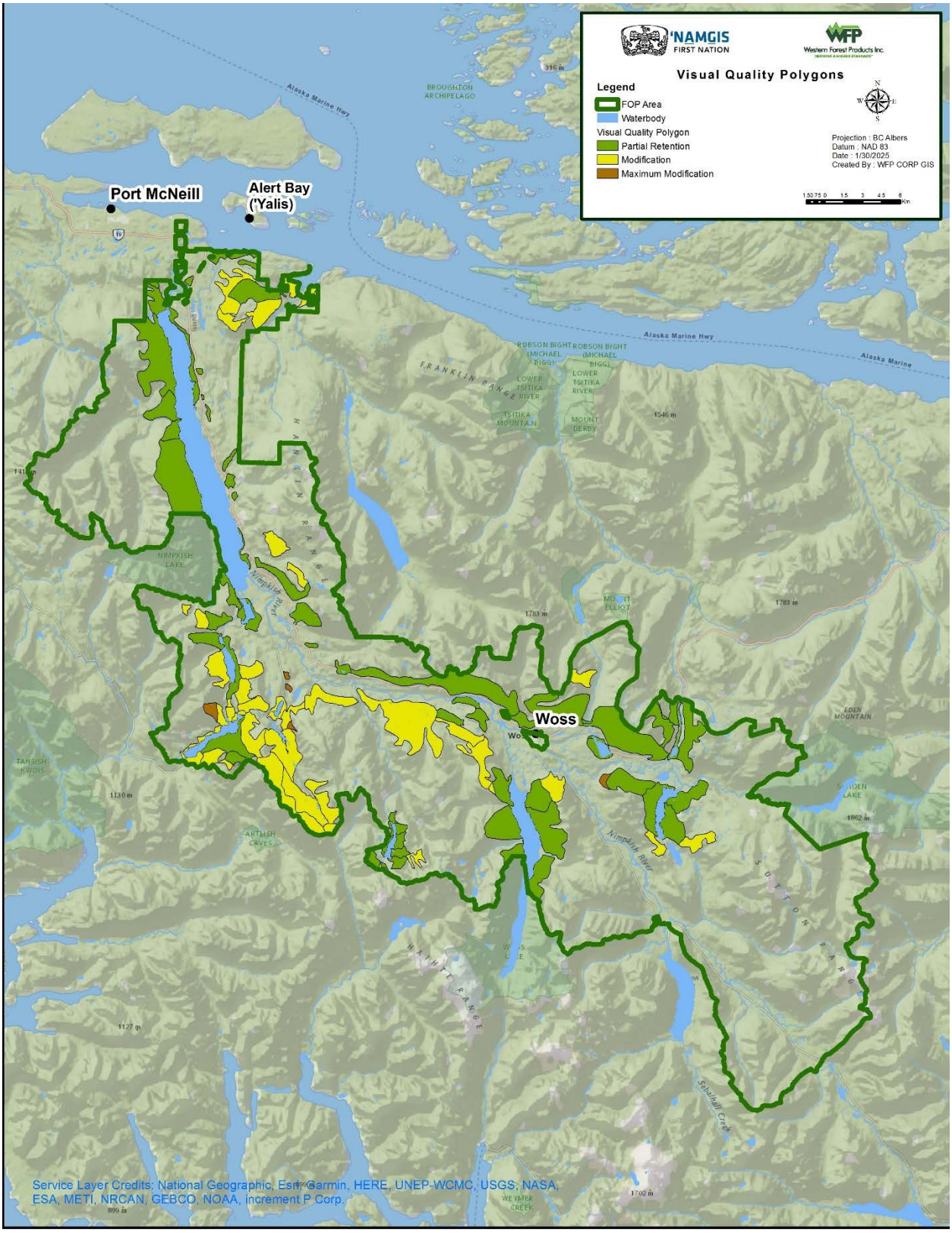
Map D: Forest Stewardship Zones



Map E: Gwa’ni Special Management Zone including the Nimpkish Lake Travel Corridor, Mąɬik, and Dzą̱’wą̱n



Map F: Visual Quality Polygons



Appendix B

ECA Methodology

Equivalent Clearcut Area (ECA) is used in Stewardship Strategy 3 to control the rate of harvest. From collaboration with Glynnis Horel, Peng, it was recommended to use equation R1b from Coast Forest Region Technical Report 32[103] for calculating ECAs for the rate of harvest in areas of sensitivity.

Equation R1b describes high elevation fall-winter recovery and is most applicable to sites where rain-on-snow events are the main cause of peak flows. The equation is:

Recovery R1b: $R=100(1-e^{-0.189(Ht-T)})^{1.25}$

where:

T = tree height threshold (equates to snow depth)

Ht = stand height

Based on data from now monitoring sites, the recommendation was to use T= 4m for the zones of sensitivity. Figure 15 summarizes the hydrologic recovery factors. For comparison purposes the recovery percent from applying the CWAP Guidebook is presented.

Figure 14: Hydrologic Recovery Factors

Stand height	Recovery %	CWAP Recovery %
m	T=4 m	
0	0	0
1	0	0
2	0	0
3	0	25
4	0	25
5	11	50
6	24	50
7	35	75
8	45	75
9	54	90
10	62	90
11	68	90
12	73	90
13	78	90
14	81	90
15	85	90
16	87	90
17	89	90

Stand height	Recovery %	CWAP Recovery %
m	T=4 m	
18	91	90
19	93	90
20	94	90
21	95	90
22	96	90
23	97	90
24	97	90
25	98	90
26	98	90
27	98	90
28	99	90
29	99	90
30	99	90
31	99	90
32	99	90
33	99	90
34	100	90
35	100	90

[103] Hudson, R., and G. Horel. 2007. An operational method of assessing hydrologic recovery for Vancouver Island and south coastal BC. Res. Sec., Coast For. Reg., BC Min. For., Nanaimo, BC. Technical Report TR-032/2007. Available at library.nrs.gov.bc.ca/digipub/cr-tr032.pdf

Appendix C

Species Selection and Stocking Targets

Figure 15: Species Selection, and Minimum Free Growing Height by Biogeoclimatic Ecosystem Classification (FPPR Section 4.14 (b)

BEC	Site Series	TSS	MSS	Species Selection	Minimum Free Growing Heights
CWHmm1	01	1000	500	Ba[1 6], Bp, Cw, Fd, Hw[2], Pw, Ss, Yc	Ba-0.7, Bp-2.5, Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0, Yc-1.5
	02	800	400	Cw, Fd, Pl, Pw, Yc	Cw-1.0, Fd-2.0, Pl-1.2, Pw-2.5, Yc-1.0
	03	800	400	Cw, Fd, Hw[2], Pl, Pw, Yc	Cw-1.0, Fd-2.0, Hw-1.7, Pl-1.2, Pw-2.5, Yc-2.0
	04	1000	500	Cw, Fd, Hw, Pw, Yc	Cw-1.0, Fd-2.0, Hw-1.7, Pw-2.5, Yc-1.0
	05	1000	500	Ba[1], Bg, Bp, Cw, Fd, Hw, Pw, Ss, Yc	Ba-0.7, Bg-3.0, Bp-2.5, Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0, Yc-1.5
	06	1000	500	Ba[1], Cw, Fd[4], Hw, Pw, Ss, Yc	Ba-0.7, Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0, Yc-1.5
	07	1000	500	Ba[1], Bg, Cw, Fd, Hw, Pw, Ss, Yc	Ba-1.0, Bg-3.5, Cw-2.0, Fd-4.0, Hw-2.5, Pw-2.5, Ss-4.0, Yc-2.0
	08	1000	500	Ba[1], Bg, Cw, Fd, Ss, Yc	Ba-1.0, Bg-3.5, Cw-2.0, Fd-4.0, Ss-4.0, Yc-2.0
	09	1000	500	Ba[1], Bg, Cw, Hw, Ss, Yc	Ba-1.0, Bg-3.5, Cw-2.0, Hw-2.5, Ss-4.0, Yc-2.0
	11	400	200	Cw, Hw, Pl, Yc	Cw-1.0, Hw-1.7, Pl-1.2, Yc-p1.0
	12	800	400	Cw, Hw[9], Pl, Ss, Yc	Cw-1.0, Hw-1.7, Pl-1.2, Ss-2.0, Yc-1.0
CWHmm2	01	1000	500	Ba[1], Bp[3], Cw, Fd[5], Hm[6], Hw, Pw[9], Yc	Ba-0.7, Bp-1.5, Cw-1.0, Fd-2.2, Hm-1.0, Hw-1.2, Pw-2.5, Yc-1.0
	02	800	400	Cw, Fd, Hm, Hw, Pl, Pw, Yc	Cw-0.7, Fd-1.5, Hm-0.7, Hw-1.0, Pl-1.2, Pw-2.5, Yc-0.7
	03	800	400	Cw, Fd, Hm[6], Hw, Pl, Pw, Yc	Cw-0.7, Fd-1.5, Hm-0.7, Hw-1.0, Pl-1.2, Pw-2.5, Yc-0.7
	04	1000	500	Cw, Fd, Hm[6], Hw, Pl, Pw, Yc	Cw-0.7, Fd-1.5, Hm-0.7, Hw-1.0, Pl-1.2, Pw-2.5, Yc-0.7
	05	1000	500	Ba[1], Bp[5], Cw, Fd[5], Hm[6], Hw, Pw, Yc	Ba-0.7, Bp-1.0, Cw-1.0, Fd-2.2, Hm-1.2, Hw-1.2, Pw-2.5, Yc-1.0
	06	1000	500	Ba[1], Cw, Fd[5], Hm[6], Hw, Pw, Yc	Ba-0.7, Cw-1.0, Fd-2.2, Hm-1.2, Hw-1.2, Pw-2.5, Yc-1.0
	07	1000	500	Ba[1], Cw, Fd, Hm[6], Hw, Pw, Yc	Ba-0.7, Cw-0.7, Fd-1.5, Hm-0.7, Hw-1.0, Pw-2.5, Yc-0.7
	08	1000	500	Ba[1], Cw, Fd[5], Hm[6], Hw, Yc	Ba-1.0, Cw-1.2, Fd-3.0, Hm-1.2, Hw-1.7, Yc-1.2
	09	800	400	Cw, Hm, Hw, Pl, Pw, Yc	Cw-0.7, Hm-0.7, Hw-1.0, Pl-1.2, Pw-2.5, Yc-0.7
	10	800	400	Cw, Hm[6], Hw, Pl, Pw, Yc	Cw-0.7, Hm-0.7, Hw-1.0, Pl-1.2, Pw-2.5, Yc-0.7

BEC	Site Series	TSS	MSS	Species Selection	Minimum Free Growing Heights
CWHvm1	01	1000	500	Ba[1], Bp, Cw, Fd[5], Hw, Pw, Ss[4], Yc[6]	Ba-1.7, Bp-2.5, Cw-1.5, Fd-3.0, Hw-3.0, Pw-2.5, Ss-3.0, Yc-1.5
	02	800	400	Cw, Fd, Hw, Pl, Yc	Cw-1.0, Fd-2.0, Hw-2.0, Pl-1.2, Yc-1.0
	03	800	400	Ba[1,2], Cw, Fd[5], Hw, Pl, Pw, Ycv	Ba-1.2, Cw-1.0, Fd-2.0, Hw-2.0, Pl-1.2, Pw-2.5, Yc-1.0
	04	1000	500	Ba[1,2], Bp, Cw, Fd[5], Hw, Pw, Ss[4], Ycv	Ba-1.7, Bp-2.5, Cw-1.5, Fd-3.0, Hw-3.0, Pw-2.5, Ss-3.0, Yc-1.5
	05	1000	500	Ba[1,2], Bp, Cw, Fd[5], Hw, Pw, Ss4, Yc[6]	Ba-1.7, Bp-2.5, Cw-1.5, Fd-3.0, Hw-3.0, Pw-2.5, Ss-3.0, Yc-1.5
	06	1000	500	Ba[1], Cw, Fd[5], Hw, Pw, Ss[4], Yc[6]	Ba-1.7, Cw-1.5, Fd-3.0, Hw-3.0, Pw-2.5, Ss-3.0, Yc-1.5
	07	1000	500	Ba[1], Cw, Fd[5], Hw, Pw, Ss[4], Yc6	Ba-2.2, Cw-2.0, Fd-4.0, Hw-4.0, Pw-2.5, Ss-4.0, Yc-2.0
	08	1000	500	Ba[1], Cw, Fd, Hw, Ss[4], Yc[6]	Ba-2.2, Cw-2.0, Fd-4.0, Hw-4.0, Ss-4.0, Yc-2.0
	09	1000	500	Ba[1], Cw, Fd, Hw, Ss[4], Yc[6]	Ba-2.2, Cw-2.0, Fd-4.0, Hw-4.0, Ss-4.0, Yc-2.0
	10	1000	500	Ba[1], Cw, Hw, Ss[4]	Ba-2.2, Cw-2.0, Hw-4.0, Ss-4.0
	12	1000	500	Cw, Hw, Pl, Yc	Cw-1.0, Hw-2.0, Pl-1.2, Yc-1.0
	13	400	200	Cw, Fd, Hw, Pl, Pw, Yc[6]	Cw-1.0, Fd-2.0, Hw-2.0, Pl-1.2, Pw-2.5, Yc-1.0
	14	800	400	Ba, Cw, Fd, Hw, Pl, Pw, Ss, Yc[6]	Ba-1.7, Cw-1.5, Fd-3.0, Hw-3.0, Pl-2.0, Pw-2.5, Ss-3.0, Yc-1.5
CWHvm2	01	1000	500	Ba, Bp[3], Cw, Fd, Hm[6], Hw, Pw, Ss, Yc	Ba-1.7, Bp-2.0, Cw-1.5, Fd-2., Hm-1.0, Hw-2.5, Pw-2.5, Ss-3.0, Yc-1.5
	02	800	400	Cw, Fd, Hm[6], Hw, Pl, Yc	Cw-1.0, Fd-1.5, Hm-0.7, Hw-1.7, Pl-1.2, Yc-1.0
	03	800	400	Ba[6], Cw, Fd, Hm[6], Hw, Pw, Yc	Ba-1.5, Cw-1.0, Fd-1.5, Hm-1.7, Hw-1.7, Pw-2.5, Yc-1.0
	04	1000	500	Ba, Bp, Cw, Fd, Hm[6], Hw, Pw, Yc	Ba-1.5, Bp-1.5, Cw-1.0, Fd-1.5, Hm-1.7, Hw-1.7, Pw-2.5, Yc-1.0
	05	1000	500	Ba, Bp[3], Cw, Fd[5], Hm, Hw, Ss, Yc	Ba-1.7, Bp-1.7, Cw-1.5, Fd-2.2, Hm-1.0, Hw-2.5, Ss-4.0, Yc-1.5
	06	1000	500	Ba, Cw, Fd[5], Hm[6], Hw, Yc	Ba-1.7, Cw-1.5, Fd-2.2, Hm-1.0, Hw-2.5, Yc-1.5
	07	1000	500	Ba, Cw, Fd[5], Hm[6], Hw, Ss, Yc	Ba-2.2, Cw-2.0, Fd-3.0, Hm-1.0, Hw-3.5, Ss-4.0, Yc-2.0
	08	1000	500	Ba, Cw, Fd[5], Hm[6], Hw, Yc	Ba-2.2, Cw-2.0, Fd-3.0, Hm-1.0, Hw-3.5, Yc-2.0
	09	800	400	Ba, Cw, Fd, Hm, Hw, Pl, Yc	Ba-1.5, Cw-1.0, Fd-1.5, Hm-0.7, Hw-1.7, Pl-1.2, Yc-1.0
	10	400	200	Hm, Hw, Pl, Yc	Hm-0.7, Hw-1.7, Pl-1.2, Yc-1.0
	11	800	400	Ba, Cw, Fd, Hm, Hw, Ss, Yc	Ba-1.5, Cw-1.0, Fd-1.5, Hm-0.7, Hw-1.7, Ss-2.0, Yc-1.0

BEC	Site Series	TSS	MSS	Species Selection	Minimum Free Growing Heights
CWHxm	01	1000	500	Cw, Fd, Hw, Pw, Ss	Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0
	02	400	200	Fd, Pl, Pw	Fd-2.0, Pl-1.2, Pw-2.5
	03	800	400	Cw, Fd, Hw, Pl, Pw	Cw-1.0, Fd-2.0, Hw-1.2, Pl-1.2, Pw-2.5
	04	1000	500	Cw, Fd, Hw[4], Pw	Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5
	05	1000	500	Bg[1], Cw, Fd, Hw, Pw, Ss[7]	Bg-3.5, Cw-2.0, Fd-4.0, Hw-1.7, Pw-2.5, Ss-4.0
	06	1000	500	Bg, Cw, Fd, Hw	Bg-3.0, Cw-1.5, Fd-3.0, Hw-2.0
	07	1000	500	Bg1, Cw, Fd, Hw, Ss[9]	Bg-3.5, Cw-2.0, Fd-4.0, Hw-1.7, Ss-4.0
	08	1000	500	Bg, Cw, Fd[5], Ss	Bg-3.5, Cw-2.0, Fd-4.0, Ss-4.0
	09	1000	500	Bg, Cw, Ss	Bg-3.5, Cw-2.0, Ss-4.0
	11	400	200	Cw, Pl	Cw-1.0, Pl-1.2
	12	800	400	Cw, Hw, Pw, Ss	Cw-1.0, Hw-1.5, Pw-2.5, Ss-1.5
	13	1000	500	Bg, Cw, Fd, Ss[9]	Bg-3.5, Cw-2.0, Fd-4.0, Ss-4.0
	14	1000	500	Bg, Cw, Ss[9]	Bg-3.5, Cw-2.0, Ss-4.0
	15	800	400	Cw	Cw-2.0
MHmm1	01	1000	500	Ba, Bp[3], Hm, Hw, Yc	Ba-0.6, Bp-1.2, Hm-1.0, Hw-1.0, Yc-1.0
	02	800	400	Ba, Hm, Hw[5], Yc	Ba-0.6, Hm-0.7, Hw-1.0, Yc-0.7
	03	800	400	Ba, Bp[3], Hm, Hw, Yc	Ba-0.6, Bp-1.2, Hm-1.0, Hw-1.0, Yc-1.0
	04	1000	500	Ba, Bp[3], Hm, Hw, Yc	Ba-0.6, Bp-1.2, Hm-1.0, Hw-1.0, Yc-1.0
	05	1000	500	Ba, Bp[3], Hm, Hw, Yc	Ba-0.6, Bp-1.2, Hm-1.0, Hw-1.0, Yc-1.0
	06	800	400	Ba, Hm, Hw[5], Yc	Ba-0.6, Hm-0.7, Hw-1.0, Yc-0.7
	07	1000	500	Ba, Hm, Hw[5], Yc	Ba-0.6, Hm-0.7, Hw-1.0, Yc-0.7
	08	800	400	Ba, Hm, Hw[5], Yc	Ba-0.6, Hm-0.7, Hw-1.0, Yc-0.7
	09	800	400	Ba, Hm, Hw[5], Yc	Ba-0.6, Hm-0.7, Hw-1.0, Yc-0.7

Figure 16: Species Selection and Stocking Targets (Hardwood Management)

BEC	Site Series	TSS	MSS	Species Selection	Minimum Free Growing Heights
CWHmm1, CWHvm1, CWHxm	01, 06	1500	1000	Dr[4]	Dr-4.0
	05, 07, 08, 09	1500	1000	Dr, Mb	Dr-4.0, Mb-4.0

Figure 17: Species Selection and Stocking Targets (Elk Habitat)

BEC	Site Series	TSS	MSS	Species Selection	Minimum Free Growing Heights
CWHmm1	01	1200	250	Ba[1,6], Bp, Cw, Fd, Hw[2], Pw, Ss, Yc, Dr[4]	Ba-0.7, Bp-2.5, Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0, Yc-1.5
	05	1200	250	Ba[1], Bg, Bp, Cw, Dr, Fd, Hw, Pw, Ss, Yc	Ba-0.7, Bg-3.0, Bp-2.5, Cw-1.5, Dr-4.0, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0, Yc-1.5
	07	1200	250	Ba[1], Bg, Cw, Dr, Fd, Hw, Pw, Ss, Yc	Ba-1.0, Bg-3.5, Cw-2.0, Dr-4.0, Fd-4.0, Hw-2.5, Pw-2.5, Ss-4.0, Yc-2.0
	08	1200	250	Ba[1], Bg, Cw, Dr, Fd, Ss, Yc	Ba-1.0, Bg-3.5, Cw-2.0, Dr-4.0, Fd-4.0, Ss-4.0, Yc-2.0
CWHvm1	01	1200	250	Ba[1], Bp, Cw, Fd[5], Hw, Pw, Ss[4], Yc[6], Dr[4]	Ba-1.7, Bp-2.5, Cw-1.5, Fd-3.0, Hw-3.0, Pw-2.5, Ss-3.0, Yc-1.5
	05	1200	250	Ba[1,2], Bp, Cw, Dr, Fd[5], Hw, Pw, Ss, Yc[6]	Ba-1.7, Bp-2.5, Cw-1.5, Dr-4.0, Fd-3.0, Hw-3.0, Pw-2.5, Ss-3.0, Yc-1.5
	07	1200	250	Ba[1], Cw, Fd[5], Dr, Hw, Pw, Ss, Yc[6]	Ba-2.2, Cw-2.0, Dr-4.0, Fd-4.0, Hw-4.0, Pw-2.5, Ss-4.0, Yc-2.0
	08	1200	250	Ba[1], Cw, Fd, Dr, Hw, Ss, Yc[6]	Ba-2.2, Cw-2.0, Dr-4.0, Fd-4.0, Hw-4.0, Ss-4.0, Yc-2.0
CWHxm	01	1200	250	Cw, Fd, Hw, Pw, Ss, Dr[4]	Cw-1.5, Fd-3.0, Hw-2.0, Pw-2.5, Ss-3.0
	05	1200	250	Bg[1], Cw, Fd, Dr, Hw, Pw, Ss[7]	Bg-3.5, Cw-2.0, Dr-4.0, Fd-4.0, Hw-1.7, Pw-2.5, Ss-4.0
	07	1200	250	Bg[1], Cw, Dr, Fd, Hw, Ss	Bg-3.5, Cw-2.0, Dr-4.0, Fd-4.0, Hw-1.7, Ss-4.0
	08	1200	250	Bg, Cw, Dr, Fd[5], Ss	Bg-3.5, Cw-2.0, Dr-4.0, Fd-4.0, Ss-4.0

Notes for Figure 16, Figure 17, and Figure 18

[1] Ba - Risk of balsam woolly adelgid. Ba or Bg will be counted last in a survey for the silviculture layer.
[2] Hw - Suitable on cool aspects.
[3] Bp - Suitable on warm aspects, nutrient medium to very rich soils.
[4] Dr, Ss- Suitable on nutrient medium sites.
[5] Fd, Bp - Suitable at lower elevations or warm aspects.
[6] Ba, Yc, Hm - Suitable at upper elevations or cool aspects.
[7] Ss - Suitable on fresh sites.
[8] Elevated microsites only.
[9] Pw, Ss - Viable option where ungulate browse is a factor.

General Species Notes

Bp - Initial regeneration of Bp (noble fir) is restricted to nutrient medium sites or better. Northerly aspects are to be avoided. Initial regeneration of Bp will not comprise more than a 20% component, to mitigate risk.
Pw - Use seed which has been selected to be resistant to Cronartium ribicola. Use major gene resistant stock when available, especially below 1000 m elevation. Pw will be planted at not more than 200 trees per ha, evenly distributed. Use caution regarding the use of Pw for browse resistance, since ungulates may select other crop trees, increasing the reliance on Pw for stocking.
Pl - Refers to Plc. The use of Pl to meet the MSS is limited to 20%.
Ss - If Ss is from seed sources selected for high resistance to Pissodes strobi, the use of Ss to meet the MSS is unlimited in areas of moderate and high risk of spruce weevil damage; otherwise, the use of natural Ss to meet the MSS is limited to 20% in moderate-high spruce weevil risk areas.
Bg - Restricted to Upper Nimpkish area of the CWH mm, not acceptable in other CWH mm areas. The natural distribution of grand fir extends into the Upper Nimpkish according to The Distribution and Synopsis of Ecological and Silvical Characteristics of Tree Species of British Columbia's Forest (2000). The Upper Nimpkish was classified as CWHxm until 2000. The area was reclassified as CWHmm1 by R.N. Green in 2000. MoF map dated April 2003 still shows the area as CWHxm. Grand fir is required for fill-planting where shade tolerance is required due to brush and where Cw cannot be used due to elk and deer browsing.
Hm - Where this species is encountered outside of the MHmm1, Hm is a viable crop tree in areas transitional to the montane zone or in cold air drainages.

Figure 18: Minimum Horizontal Inter-Tree Distance MITD assigned at the AA level as defined below.

MITD (m)	Site Series
1.0	"b" (lithic/fragmental) phases.
1.5	▪ < 20 metres from road centreline; ▪ immediately adjacent to any: ♦ stream – riparian area; ♦ natural non-productive area; ♦ unplantable slash; or ▪ on any: ♦ talus site, landslide or avalanche track ♦ hygric or wetter site; ♦ very harsh site where protected microsites are critical; ♦ area where stump avoidance is necessary on a root rot site; ♦ area extensively utilized for elk, deer or other wildlife habitat or browse (heavy elk use areas) for survival and to utilize slash; or ♦ microsites that are preferable given the tree species or damaging agents, to those sites existing at regular 2.0 meters spacing. ▪ in SUs that are being managed for a target stocking of 1500 stems per hectare.
2.0	All other sites.

Appendix D

Aẗłi Resources Proposed Cutblocks

Figure 19: Cutblocks proposed for harvesting by Aẗłi Resources with Cutblock ID and estimated harvest year.

Year	Cutblock ID
2025	161
	168
	174
	179
2026	34
	47
	48
	51
2027	163
	177
	37
2029	195

Western Forest Products Proposed Cutblocks

Figure 20: Cutblocks proposed for harvesting by Western with Cutblock ID and estimated harvest year.

Year	Cutblock ID	Year	Cutblock ID	Year	Cutblock ID
2025	104	2026	1	2026	27
	11		10		272
	111		100		277
	12		105		278
	121		107		281
	129		109		283
	131		110		288
	146		112		289
	147		117		290
	165		132		291
	173		134		292
	175		135		293
	181		138		295
	182		139		296
	200		145		299
	203		149		30
	21		157		300
	213		16		314
	22		160		315
	220		162		316
	223		17		317
	231		170		320
	235		172		325
	239		176		327
	24		180		33
	244		183		330
	253		184		341
	276		186		350
	279		194		351
	29		197		354
	298		198		358
	304		2		362
	312		208		363
	313		209		364
	328		210		366
	337		217		39
	340		218		4
	342		221		40
	361		222		43
	50		226		49
	59		227		54
	6		229		58
	61		232		62
	67		234		83

Year	Cutblock ID	Year	Cutblock ID	Year	Cutblock ID
2025	70	2026	237	2026	88
	77		238		92
	78		247		93
			249		96
			25		
			263		

Year	Cutblock ID	Year	Cutblock ID	Year	Cutblock ID
2027	113	2027	297	2028	268
	114		3		275
	115		318		28
	118		326		285
	119		344		294
	125		345		301
	14		346		303
	140		348		305
	143		44		306
	144		53		307
	15		55		309
	154		63		310
	158		7		311
	159		74		319
	164		81		32
	167		87		322
	171		90		323
	19		94		329
	191		95		331
	192	2028	106		332
	193		108		333
	199		122		334
	20		123		35
	202		126		353
	205		13		357
	206		136		359
	211		137		365
	216		141		38
	225		142		42
	228		148		46
	240		150		5
	242		151		56
	246		166		66
	250		185		68
	257		187		71
	258		188		72
	259		204		73
	262		207		8
	264		214		80
	265		224		89

Year	Cutblock ID
2027	266
	267
	271
	273
	274
	280
	282
	284
	286
	287

Year	Cutblock ID
2028	23
	230
	236
	241
	245
	252
	254
	255
	26
	261

Year	Cutblock ID
2028	91
	97
	-
	-
	-
	-
	-
	-
	-
	-

Year	Cutblock ID
2029	101
	102
	103
	116
	120
	127
	130
	133
	156
	178
	190
	201
	212
	215
	219
	248
	256
	260
	269
	270
	302
	308
	31
	321
	324
	339
	36
	360
	41
	45
	52
	57
	60
	64
	65
	69

Year	Cutblock ID
2029	75
	76
	79
	82
	85
	9
	98
	245
	252
	254
	255
	26
	261

Aɬɬi Resources Existing Cutblocks

Figure 21: Cutblocks harvested since 2005 or harvesting has started (under Cutting Permit) by Aɬɬi Resources.

Cutblock ID	Status
ATL-1	Harvested
CC001	Harvested
CC002	Harvested
CC003	Harvested
CC004	Harvested
CC005	Harvested
DA902	Under Permit
DA903	Under Permit
DA904	Under Permit
DA905	Under Permit
DA950	Under Permit
DA951	Under Permit
DA952	Under Permit
KC162	Harvested
KH443A	Harvested
KH443B	Harvested
KH443C	Harvested
KIN1	Harvested
KIN10	Harvested
KIN2	Harvested
KIN3	Harvested
KIN4	Harvested
KIN5	Harvested
KIN6	Harvested
KIN7	Harvested
KIN8	Harvested
KIN9	Harvested
ME027	Harvested
MQ498	Under Permit
MQ905	Harvested
P024	Under Permit
SC007	Harvested
SC008	Harvested
SC012	Harvested
SC099	Harvested
ST-1	Harvested
ST105A	Harvested
ST105B	Harvested
ST105C	Harvested
ST105D	Harvested
ST-2	Harvested
ST200-1	Harvested
ST200-2	Harvested
UN102	Under Permit
UN557	Under Permit
UN900	Under Permit
UN901-1	Under Permit
UN901-2	Under Permit
UN905	Under Permit
UN910	Under Permit
UN912	Under Permit
WP096	Under Permit
WP900	Under Permit
WP950	Under Permit

Western Forest Products Existing Cutblocks

Figure 22: Cutblocks harvested since 2005 or harvesting has started (under Cutting Permit) by Western.

Cutblock ID	Status
5609	Harvested
AT223	Harvested
BC005	Harvested
BC006	Harvested
BC007	Harvested
BC017	Under Permit
BC070	Harvested
BC073	Harvested
BC077	Harvested
BC081	Under Permit
BC099	Harvested
BC101	Harvested
BC103	Harvested
BC104	Harvested
BC105	Harvested
BC106	Harvested
BC107	Harvested
BC108	Harvested
BC109	Harvested
BC111	Under Permit
BC112	Harvested
BC113	Harvested
BC115	Harvested
BC120	Harvested
BC125	Harvested
BC127	Harvested
BC128	Under Permit
BC129	Under Permit
BC130	Under Permit
BC132	Harvested
BC133	Harvested
BC135	Harvested
BC195	Harvested
BC196	Harvested
BC201	Harvested
BC202	Harvested
BC203	Harvested
BC204	Harvested
BC205	Under Permit
BC206	Harvested
BC207	Under Permit
BC208	Harvested
BC217	Harvested
BC217WF	Under Permit

Cutblock ID	Status
BC235	Harvested
BC236	Under
BC239	Harvested
BC239WF	Under
CA006L	Under
CA025	Harvested
CE009	Harvested
CE010	Harvested
CT046	Harvested
CT047	Harvested
CT058	Harvested
CT060	Harvested
CU016	Harvested
CU017	Harvested
CU018	Harvested
CU019	Harvested
CU021L	Harvested
CU038	Harvested
DA001	Harvested
DA003	Harvested
DA004	Under
DA005	Harvested
DA006	Under
DA007	Harvested
DA008	Harvested
DA009	Harvested
DA013	Harvested
DA019	Under
DA020	Harvested
DA021	Harvested
DA023	Harvested
DA025	Harvested
DA030	Harvested
DA100	Harvested
DA101	Harvested
DA101A	Harvested
DA102	Harvested
DA103	Harvested
DA107	Harvested
DA109	Under
DA111	Harvested
DA114	Harvested
DA115A	Under
DA117	Under

Cutblock ID	Status
DA134	Under
DA150	Harvested
DA200	Harvested
DA228	Harvested
DA233	Harvested
DA242	Harvested
DA242WF	Harvested
DA243	Under
DA244	Harvested
DA246	Harvested
DA248	Harvested
DA305	Harvested
DA306	Harvested
DA307	Under
DA308	Harvested
DA309A	Under
DA310	Harvested
DA311	Harvested
DA313	Harvested
DA317	Harvested
DA319	Harvested
DA320	Harvested
DA321	Harvested
DA322	Harvested
DA324	Harvested
DA326	Harvested
DA327	Harvested
DA328	Harvested
DA329	Harvested
DA329WF	Under
DA330	Harvested
DA390	Harvested
DA400	Harvested
DA401	Harvested
DA410	Harvested
DA411	Harvested
DA415	Harvested
DA419	Harvested
DA433	Harvested
DA447	Harvested
DA448	Harvested
DA449	Harvested
DA455	Harvested
DA458	Harvested

Cutblock ID	Status
BC221	Under Permit
BC222	Harvested
BC223	Under Permit
BC224	Harvested
BC231	Harvested
BC232	Under Permit
FE003	Harvested
FE005	Harvested
GC012	Harvested
GC013	Harvested
GC016	Harvested
GC019	Under Permit
GC021	Harvested
GC023	Harvested
HG040	Harvested
HR097	Harvested
HR153WF	Harvested
KA006	Harvested
KA170H	Harvested
KC001	Harvested
KC003H	Harvested
KC004H	Harvested
KC007	Harvested
KC007B	Harvested
KC010	Harvested
KC012	Harvested
KC014	Under Permit
KC019	Harvested
KC022	Harvested
KC023	Under Permit
KC026	Under Permit
KC030	Harvested
KC031	Harvested
KC032	Harvested
KC034	Harvested
KC040	Harvested
KC120	Harvested
KC121	Harvested
KC122	Harvested
KC123	Under Permit
KC123H	Harvested
KC129	Harvested
KC130	Harvested
KC133	Harvested
KC134	Under Permit
KC140	Harvested
KC151	Harvested
KC152	Harvested
KC153	Harvested

Cutblock ID	Status
DA118	Harvested
DA120	Harvested
DA122	Harvested
DA124	Harvested
DA126	Under
DA128	Harvested
KC175	Harvested
KC189	Harvested
KC190	Harvested
KC191	Harvested
KC192WF	Under
KC193	Harvested
KC195	Harvested
KC196	Harvested
KC197	Harvested
KC198	Harvested
KC203	Harvested
KC205	Harvested
KC206	Harvested
KC207	Harvested
KC300	Harvested
KC301	Harvested
KH015	Harvested
KH017H	Harvested
KH019	Under
KH051	Harvested
KH055L	Harvested
KH063B	Harvested
KH063C	Harvested
KH074	Harvested
KH075H	Harvested
KH076	Harvested
KH092L	Under
KH093	Harvested
KH093WF	Under
KH101	Harvested
KH102	Harvested
KH150	Harvested
KH153	Harvested
KH156	Harvested
KH159	Harvested
KH205	Harvested
KH205WF	Harvested
KH206	Harvested
KH211	Harvested
KH424	Harvested
KH424H	Harvested
KH430	Harvested
KH432	Harvested

Cutblock ID	Status
DA461	Harvested
DA462	Harvested
DA463	Harvested
DA490	Harvested
DA491	Harvested
DA500	Harvested
KH015	Harvested
KH017H	Harvested
KH019	Under
KH051	Harvested
KH055L	Harvested
KH063B	Harvested
KH063C	Harvested
KH074	Harvested
KH075H	Harvested
KH076	Harvested
KH092L	Under
KH093	Harvested
KH093WF	Under
KH101	Harvested
KH102	Harvested
LG063	Under
LG100	Harvested
LG106	Harvested
LG107	Under
LG108	Harvested
LG110	Harvested
LG127	Harvested
LG129	Under
LG130A	Harvested
LG131	Under
LG133	Harvested
LG135	Harvested
LG200	Harvested
LG205	Harvested
LG206	Under
LG209	Harvested
LG212	Harvested
LG213SS	Harvested
LG214	Harvested
LG215	Harvested
LG218AH	Harvested
LG220	Harvested
LG222	Under
LG223	Harvested
LG224	Harvested
LG225	Harvested
LG226	Harvested
LG299	Harvested

Cutblock ID	Status
KC154	Under Permit
KC155	Harvested
KC157	Harvested
KC163	Under Permit
KC171	Harvested
KC172	Under Permit
KC173	Harvested
LG311	Harvested
LG321	Under Permit
M048	Harvested
ME003	Harvested
ME004	Harvested
ME004A	Harvested
ME005	Harvested
ME007	Harvested
ME009	Harvested
ME011	Harvested
ME011H	Harvested
ME012	Harvested
ME013	Harvested
ME014	Harvested
ME017A	Under Permit
ME018	Harvested
ME018A	Under Permit
ME020	Under Permit
ME023	Harvested
ME025	Under Permit
ME026	Harvested
ME040	Harvested
ME041	Under Permit
ME042	Harvested
ME042H	Harvested
ME044	Harvested
ME045	Harvested
ME048	Harvested
ME050H	Harvested
ME123	Under Permit
ME130	Under Permit
ME135	Harvested
ME198	Harvested
ME200	Harvested
ME202	Under Permit
ME210	Harvested
ME213	Harvested
ME215	Harvested
ME217	Harvested
ME219	Under Permit
ME221	Under Permit
ME230	Harvested

Cutblock ID	Status
KH433	Under
KH434	Under
KH440	Harvested
KH504	Under
KH505	Harvested
KH535	Harvested
KH536	Harvested
MQ022H	Harvested
MQ023H	Harvested
MQ041	Harvested
MQ041A	Harvested
MQ044	Harvested
MQ050	Harvested
MQ056	Harvested
MQ057	Harvested
MQ100H	Harvested
MQ101H	Harvested
MQ201	Harvested
MQ217	Harvested
MQ250	Harvested
MQ251	Harvested
MQ252	Harvested
MQ253	Harvested
MQ257	Harvested
MQ300	Harvested
MQ305	Harvested
MQ310	Harvested
MQ315	Harvested
MQ355	Harvested
MQ356H	Harvested
MQ357	Under
MQ359	Harvested
MQ360	Harvested
MQ370	Harvested
MQ425	Harvested
MQ425A	Harvested
MQ426	Under
MQ500	Harvested
MU128	Harvested
MU300	Harvested
MU352	Harvested
MU636WF	Harvested
NA001	Harvested
NA002	Harvested
NA003	Harvested
NA005	Harvested
NA006	Harvested
NA007	Harvested
NA008	Harvested

Cutblock ID	Status
LG301	Under
LG302	Harvested
LG303	Under
LG304	Harvested
LG306	Harvested
LG309	Harvested
LG310	Harvested
NA027	Under
NA102	Harvested
NA111	Harvested
NA112	Harvested
NA113	Harvested
NA114	Harvested
NA115H	Harvested
NA116	Harvested
NA117	Under
NA119	Harvested
NA120	Harvested
NA121B	Under
NA122	Harvested
NA124	Harvested
NA124B	Harvested
NA125	Under
NA126	Harvested
NA130	Harvested
NA131	Harvested
NA133	Under
NA138	Harvested
NA201	Harvested
NA202	Harvested
NA203	Harvested
NA220	Harvested
NA227	Under
NA228	Harvested
NA230	Harvested
NA301	Harvested
NA400	Harvested
NA402	Harvested
NA403	Under
NA403H	Harvested
NE011	Harvested
NE017	Harvested
NE018A	Harvested
NE025	Harvested
NE028	Harvested
NE029	Harvested
NE032A	Harvested
NE038C	Harvested
NE040	Harvested

Cutblock ID	Status
ME233	Under Permit
ME250	Harvested
ME250A	Harvested
ME255	Harvested
MKE046	Under Permit
MQ005	Harvested
MQ010	Harvested
MQ021	Harvested
NE066	Harvested
NE068	Under Permit
NE069	Harvested
NE070A	Harvested
NE071	Harvested
NE073	Harvested
NE080	Harvested
NE081	Harvested
NE084	Harvested
NE084B	Harvested
NE084H	Harvested
NE099	Harvested
NE102	Harvested
NE105	Harvested
NE106	Harvested
NE108	Harvested
NE110	Harvested
NE115	Harvested
NE117	Harvested
NE118	Harvested
NE120	Harvested
NE121	Under Permit
NE122	Harvested
NE123	Under Permit
NE124	Harvested
NE125	Harvested
NE150	Harvested
NE201	Harvested
NE201A	Harvested
NE202	Harvested
NE208	Harvested
NE066	Harvested
NE211	Harvested
NE213	Harvested
NE215	Harvested
NE233	Harvested
NE237	Harvested
NE240	Harvested
NE266	Harvested
NE267	Under Permit
NE269	Harvested

Cutblock ID	Status
NA008A	Under
NA009	Harvested
NA010	Harvested
NA011	Harvested
NA012	Under
NA017	Harvested
NA020	Under
NA024	Under
NS013	Harvested
NS014	Harvested
NS015	Harvested
NS015A	Harvested
NS017	Under
NS020	Harvested
NS021	Harvested
NS023	Harvested
NS024	Harvested
NS025	Harvested
NS026	Harvested
NS029	Harvested
NS030	Harvested
NS031	Harvested
NS031A	Under
NS039	Harvested
NS040	Harvested
NS045	Harvested
NS046	Harvested
NS049	Harvested
NS049A	Under
NS051	Harvested
NS063H	Harvested
NS065	Harvested
NS070	Harvested
NS072	Under
NS074	Under
NS075	Harvested
NS080	Harvested
NS097	Harvested
NS099	Harvested
NS100	Harvested
NS105	Harvested
NS106WF	Under
NS107	Harvested
NS013	Harvested
NS107A	Harvested
NS109	Harvested
NS111	Harvested
NS112	Harvested
NS114	Harvested

Cutblock ID	Status
NE044	Harvested
NE046	Harvested
NE048	Harvested
NE056	Harvested
NE058	Harvested
NE059	Harvested
NE062	Harvested
NE065	Harvested
NW103	Harvested
NW104	Harvested
NW121	Harvested
NW131	Harvested
NW151	Harvested
NW160	Harvested
NW162	Harvested
NW163H	Harvested
NW170A	Harvested
NW170B	Harvested
NW410	Harvested
NW413	Harvested
NW421	Harvested
NW422	Under
NW424	Harvested
NW430	Harvested
NW432	Harvested
NW451	Harvested
NW452	Harvested
NW580	Harvested
NW585	Under
NW586H	Harvested
NW591H	Harvested
NW604	Harvested
NW607	Harvested
NW608	Harvested
NW742	Harvested
NW744	Harvested
NW751	Harvested
NW753	Harvested
NW763L	Harvested
NW764	Harvested
NW902	Under
NW903	Under
NW904	Harvested
NW905	Harvested
NW905A	Harvested
NW908	Harvested
NW912	Harvested
NW103	Harvested
OL017	Harvested

Cutblock ID	Status
NE270	Harvested
NE399	Harvested
NS006	Harvested
NS007	Harvested
NS008	Harvested
NS009	Harvested
NS009WF	Harvested
NS010	Harvested
NS010AWF	Harvested
SC006	Harvested
SC009	Harvested
SC013	Harvested
SC016	Harvested
SC017	Harvested
SC019	Harvested
SC022	Harvested
SW058AWF	Harvested
SW058BWF	Harvested
SW090	Harvested
TK034	Harvested
TN014A	Harvested
TS011	Harvested
TS013	Harvested
TS017	Under Permit
TS035B	Under Permit
TS100	Harvested
TS127B	Harvested
TS156A	Harvested
TS250	Under Permit
UN038	Harvested
UN047	Harvested
UN049	Harvested
UN050	Harvested
UN052	Harvested
UN055	Harvested
UN065	Harvested
UN067	Harvested
UN082	Harvested
UN088	Harvested
UN091	Harvested
UN092	Harvested
UN093	Harvested
UN094	Harvested
UN095	Harvested
UN095A	Harvested
UN097	Harvested
UN099	Under Permit
UN101	Harvested
UN103	Harvested

Cutblock ID	Status
NS116	Harvested
NS117	Under
NS119	Under
NS125	Under
NW033H	Harvested
NW037AH	Harvested
NW044	Harvested
NW090WF	Under
NW101	Harvested
UN216	Under
UN248	Under
UN250	Harvested
UN265F	Under
UN266F	Under
UN501	Harvested
UN550	Harvested
UN552	Harvested
UN555	Under
UN612	Harvested
VR065	Harvested
WG048	Harvested
WK033L	Under
WP088	Harvested
WP094	Harvested
WP098	Under
WP100	Harvested
WP101	Harvested
WP102	Harvested
WP104	Harvested
WP105	Harvested
WP106	Harvested
WP107	Harvested
WP107H	Harvested
WP108	Harvested
WP110	Harvested
WP111	Harvested
WP112	Harvested
WP115	Harvested
WP118	Harvested
WP119	Harvested
WP120	Harvested
WP123	Harvested
WP129	Harvested
WP129A	Harvested
WP130	Under
WP131	Harvested
WP133	Under
WS001	Harvested
WS002	Harvested

Cutblock ID	Status
P022	Harvested
Q211	Harvested
Q213	Harvested
SAL042	Under
SB055	Harvested
SB055H	Harvested
SB055ST	Harvested
SB099	Harvested
SC004	Harvested
WS024	Harvested
WS028	Harvested
WS033	Harvested
WS101	Harvested
WS102	Harvested
WS110	Harvested
WS111	Harvested
WS112	Harvested
WS114	Harvested
WS120	Harvested
WS121	Harvested
WS121A	Under
WS123	Harvested
WS130	Under
WS134	Harvested
WS136	Under
WS138	Under
WS140	Harvested
WS141	Under
WS230	Harvested
WS240	Harvested
WS243	Under
WS244H	Harvested
WS249	Harvested
WS250	Harvested
WS252	Harvested
WS254	Harvested
WS254A	Under
WS255	Under
WS270	Harvested
WS271	Under
WS290	Harvested
WS300	Harvested
WS301	Harvested
WS305	Harvested
WS310	Harvested
WT044	Harvested
WT046	Harvested

Cutblock ID	Status
UN104H	Harvested
UN110	Harvested
UN111	Harvested
UN115	Harvested
UN200	Under Permit
UN202	Harvested
UN206	Harvested
UN208	Harvested
UN210	Harvested
UN215	Harvested

Cutblock ID	Status
WS003	Harvested
WS006	Harvested
WS007	Harvested
WS008	Harvested
WS013	Harvested
WS015	Harvested
WS017	Under
WS017A	Under
WS019	Harvested
WS020	Harvested

Cutblock ID	Status

Other Parties Existing Cutblocks

Figure 23: Cutblocks harvested since 2005 or harvesting has started (under Cutting Permit) by other parties.

CutblockID	Status
1054272	Harvested
1086531	Harvested
1098210	Harvested
1274630	Harvested
1297050	Harvested
1354351	Harvested
1391234	Harvested
1471330	Harvested
1501610	Harvested
1670641	Harvested
1682140	Harvested
56596	Harvested
66878	Harvested
86554	Harvested
AR1	Harvested
DPMSC007	Harvested
DPMSC008	Harvested
DPMSC012	Harvested
DPMSC099	Harvested
KH016	Harvested
LM015	Harvested
R097C	Harvested
R139	Harvested
WS260	Harvested
WS261	Harvested
WS265	Harvested

Aɬɬi Resources Proposed Roads

Figure 24: Roads proposed for construction by Aɬɬi Resources by Road ID and estimated year of construction.

Year	Road ID
2025	CA0010
	KAHKUP
	KC126-1
	KC126-1a
	KC126-2
	KC126-3
	KC126-4
2027	R163
	R174
	WP110
	WP110a
	WP110b
2029	TM3044
	TM3045
	TM3046

Western Forest Products Proposed Roads

Figure 25: Roads proposed for construction by Western by Road ID and estimated year of construction.

Year	Road ID
2025	DR0200
	DR1000
	DR1010
	KA4025
	R104
	R104a
	R104b
	R129
	R146
	R147
	R147a
	R165
	R165a
	R173
	R173a
	R173b
	R173c
	R175
	R175a
	R175b
	R181
	R200
	R200a
	R213
	R223
	R223a
	R223b
	R223c
	R223d
	R223e
	R235
	R244
	R244a
	R253
	R29
	R298
	R298a
	R304
	R304a
	R304b
	R328
	R361
	R6
	R70

Year	Road ID
2025	TU0616
	TU0617
	TU0618
2026	KP4012
	KP4013
	KP4014
	KP4244
	KP4245
	KP4246
	KP4340
	KP4341
	KP5002
	KP5003
	KP5004
	KP5005
	R1
	R100
	R105
	R105a
	R105b
	R105c
	R107
	R107a
	R110
	R110a
	R110b
	R110c
	R112
	R112a
	R117
	R134
	R135
	R135a
	R135b
	R145
	R145a
	R149
	R149a
	R149b
	R157
	R157a
	R16
	R160
	R160a

Year	Road ID
2026	R17a
	R180
	R180a
	R180b
	R183
	R183a
	R184
	R1a
	R1b
	R1c
	R208
	R208a
	R209
	R210
	R210a
	R217
	R217a
	R222
	R222a
	R227
	R232
	R232a
	R234
	R234a
	R234b
	R234c
	R238
	R238a
	R238b
	R247
	R249
	R249a
	R27
	R272
	R272a
	R272b
	R277
	R278
	R278a
	R278b
	R281
	R283
	R283a
	R288

Year	Road ID
2025	R70a
	RA4000
	RA4031
	RA4031A
	RA4060
	TN2200
Year	Road ID
2026	R291a
	R291b
	R291c
	R291d
	R291e
	R299
	R300
	R300a
	R316
	R320
	R320a
	R325
	R327
	R341
	R341a
	R350
	R351
	R351a
	R354
	R358
	R358a
	R362
	R362a
	R362b
	R362c
	R363
	R363a
	R364
	R366
	R4
	R49
	R49a
	R49b
	R49c
	R54
	R58
	R62
	R62a
	R83
	R88
	R88a

Year	Road ID
2026	R162
	R162a
	R17
	R172
	R176
	R176a
Year	Road ID
2026	TU0820
2027	LU7210
	R113
	R114
	R114a
	R115
	R115a
	R118
	R118a
	R119
	R125
	R14
	R144
	R144a
	R144b
	R144c
	R15
	R154
	R154a
	R158
	R158a
	R159
	R167
	R171
	R171a
	R171b
	R191
	R193
	R20
	R202
	R202a
	R202b
	R206
	R206a
	R206b
	R206c
	R228
	R240
	R242
	R242a
	R242b

Year	Road ID
2026	R289
	R289a
	R289b
	R289c
	R290
	R291
Year	Road ID
2027	R265
	R284
	R284a
	R286
	R286a
	R287
	R3
	R318
	R318a
	R318b
	R326
	R326a
	R344
	R344a
	R345
	R345a
	R346
	R346a
	R348
	R3a
	R3b
	R3c
	R44
	R63
	R63a
	R63b
	R63c
	R63d
	R63e
	R63f
	R63g
	R7
	R90
	R94
	R94a
2028	R106
	R122
	R122a
	R122b
	R126
	R136

Year	Road ID
2026	R88b
	R92
	R93
	SC7701
	SC7702
	SC7703
	SC7704
	TU0800
	TU0810
Year	Road ID
2028	R187
	R187a
	R188
	R188a
	R207
	R214
	R224
	R23
	R230
	R230a
	R236
	R241
	R241a
	R245
	R245a
	R245b
	R245c
	R245d
	R26
	R261
	R26a
	R275
	R285
	R294
	R301
	R303
	R303a
	R303b
	R305
	R306
	R306a
	R307
	R319
	R319a
	R322
	R323
	R323a
	R323b

Year	Road ID
2027	R242c
	R246
	R246a
	R250
	R250a
	R250b
	R262
	R262a
	R264
Year	Road ID
2028	R359a
	R365
	R365a
	R42
	R42a
	R42b
	R42c
	R46
	R5
	R56
	R66
	R68
	R68a
	R68b
	R68c
	R68d
	R68e
	R8
	R80
	R89
	R97
	R97a
	ST1130
	WG4100
2029	EL1030
	EL1034
	EL1035
	R101
	R101a
	R103
	R103a
	R116
	R120
	R120a
	R120b
	R127
	R130
	R130a

Year	Road ID
2028	R136a
	R137
	R142
	R142a
	R148
	R150
	R151
	R151a
	R166
Year	Road ID
2029	R190d
	R212
	R215
	R215a
	R215b
	R215c
	R215d
	R219
	R219a
	R256
	R256a
	R269
	R270
	R302
	R308
	R31
	R321
	R321a
	R321b
	R321c
	R52
	R52a
	R60
	R64
	R69
	R69a
	R79
	R82
	R82a
	R82b
	R85
	R85a
	R85b
	R85c
	R9
	R98

Year	Road ID
2028	R329
	R331
	R331a
	R332
	R332a
	R353
	R353a
	R353b
	R353c
	R353d
	R357
	R359

Year	Road ID
	R130b
	R130c
	R133
	R133a
	R133b
	R156
	R156a
	R178
	R190
	R190a
	R190b
	R190c

Aẗłi Resources Existing Roads

Figure 27: Roads constructed or approved for construction by Aẗłi Resources by Road ID.

Road ID
902-1
902-2
903-1
903-2
903-3
904-1
905-1
905-2
905-3
905-4
905-5
ALSTON5
ALSTON6
ALSTON7
ALSTON8
AT8005
AT8006
AT8007
AT8008
BR12A
BR12B
CG1000
DA950-1
DA951-1
DA951-2
DA952-1
EK9500
EL4000
EL4400
EL4500
EV1010
EV1011
EV1012
EV1014
EV1015
KA0051
KH4200
KH4300
MK0001
MQ905-1
MQ905-2
MQ905-3
MQ905-4
NQ3000
NQ3010

Road ID
NQ3011
NQ3012
NS1115
NS1120
NS1121
NS1122
NS1123
SU100
SU110
SW0100
SW0350
SW0400
UN900-01
UN900-02
UN901-01
UN901-02
UN901-03
UN901-04
UN901-05
UN901-06
UN901-08
UN901-09
UN905-04
UN912_MAIN
UN912-01
UN912-02
UN912-03
UN914-01
UN914-02
UN914-03
UN914-04
UN914-05
UST006
UST010
UST040
VCH ROAD
WP110
WP200
WP300
WP400
WP500
WP950-1
WP950-2

Western Forest Products Existing Roads

Figure 28: Roads constructed or approved for construction by Western by Road ID.

Road ID	Road ID	Road ID	Road ID	Road ID
A Camp Rd	ARC0100	AT5452	AZ1100	Branch
A Reload	ARC0100A	AT5470	AZ1110	Brass Road
AD4000	ARC0101	AT5480	AZ1200	Bubba
AD4100	ARC0102	AT5490	B1000	Budlite
AD4140	ARC0103	AT6000	B1100-EFO	C148
AD4500	ARC0104	AT6001	B910	C149
AD5410	ARC0105	AT6002	Back Road	C150-EFO
AD5510	ARC0106	AT6003	BC0120	C160-EFO
AD5521	ARC0110	AT6004	BC0121	C300-EFO
AD8000	ARC0210	AT6100	BC0122	C500-EFO
AD8100	ARR Hookup	AT6101	BC0900	CA - Back
AD8110	ARR LOOP	AT6610	BC0910	CA - Back Y
AD8120	Artman Road	AT7000	BC0920	CA - Front
AD8130	AS1000	AT7004	BC0930	CA - Front
AD8140	Ashley Main	AT7004A	BC1000	CA - Front
AD9000	AT2000	AT7009	BC1010	CA - Front
Adam Road	AT2200	AT7012	BC1011	CA - Ramp
Airport Road-	AT2220	AT7013	BC1012	CA -
AL0500	AT2221	AT7014	BC1013	CA0010
AL0510	AT2222	AT7015	BC1100	CA0011
AL0520	AT2300	AT7016	BC1190	CA0040
AL1000	AT2330	AT7017	BC1191	CA0041
AL1010	AT2331	AT7018	BC1200	CA0050
AL1020	AT5000	AT7019	BC1201	CA0051
AL1030	AT5000B	AT8000	BC1221	CA0060
Alston Road	AT5000B Hookup	AT8002	BL1700	CA0100
AM0050	AT5001B	AT8003	BL1900	CA0101
AM0100	AT5002	AT8004	BL1910	CA0102
AM0110	AT5003	AT8010	BL1920	CA0103
AM5000	AT5004	AT8100	BL1921	CA0104
AM6200	AT5006	AT8101	BL1930	CA0501
AM6240	AT5007	AT8110	BL1940	CA0502
AM6243	AT5008	AT8120	BL2700	CA0503
AM6300	AT5009	AT8200	BL2800	CA300-EFO
AM6310	AT5010	AT8300	BL2801	CA310-EFO
AM6312	AT5011	Atluck Main	BR0001	CA315
AM6320	AT5100	Atluck	BR0002	CA320-EFO
AM6330	AT5400	AZ0040	BR0003	Cabin
Anutz Hookup	AT5430	AZ0050	BR0010	Cain
AR0601	AT5431	AZ0051	BR0030	Cain Road
AR0602	AT5432	AZ0060	BR12	Camp
AR0604	AT5433	AZ0061	BR12A1	Camp
AR0605	AT5434	AZ0062	BR3-EFO	Camp
AR3300	AT5435	AZ0070	BR52-EFO	Canon
AR3305	AT5436	AZ0074	BR5A7	CB Main

Road ID
AR3305A
AR3305B
AR3305C
AR3320
AR3330
CB0310
CB0400
CB0420
CB0430
CB0500
CB0510
CB0600
CB0700
CB0710
CB0720
CB0730
CB0740
CB0750
CB0760
CE Hookup
CE0200
CE0211
CE0212
CE0213
CE0300
Centennial
CH100-EFO
CH200-EFO
CH4000
CH4200
CH4210
CH6000S
CH6100S
CH6150
CH6155
Chickadee
Chuckham
CI0015
CI0016
CI0017
CI0020
CI0021
Claude Elliot
Club Road
CM0010
CN4000
CR1300
CR1310

Road ID
AT5437
AT5438
AT5440
AT5450
AT5451
Davie Road
Dean Road
Denny Ridge Bypass
Denny Ridge Road
Diane Lake Road
DL0010
DL1000
DL1001
DL1002
DL1003
DL1003A
DL1004
DL1005
DL1006
DL1006A
DL1006B
DL1006C
DL1007
DL1010
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DL1016
DL1017
DL1020
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DL1036
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DL1300
DL1310
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DL1315
DL1316
DL1317

Road ID
AZ080
AZ090
AZ1000
AZ1030
AZ1040
DN1051
DN1070
DR0004
DR0006
DR0010
DR0011
DR0012
DR0013
DR0014
DR0015
DR0016
DR0080
DR0400
DR0401
DR4100
DR4101
DR4110
DR4111
DR4112
DR4113
DR4120
DU0225
DU0230
DU0231
DU0232
DU0250
DU0251
DU0700
DU0701
DU0800
DU1910
DU1911
DU2500
DU2510
DU4100
DU4101
DU7000
DU8100
DU8200
DU9000
DU9100
Duncan
East

Road ID
BR5A7
BR5A7A
BR5A7B
Branch 2A
Branch
EC5300
EC6000
EC6100
EC6101
EK1100
EK1110
EK1300
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EK1320
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EK2000
EL0020
EL0030
EL1001
EL2006
EL2050
EL2100
EL2200
EL2300
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EL2303
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EL4100
EL4110
Eleaner
Englewood
Englewood
ER8200
EV0015
EV0019
EV0020
EV0021
EV0022
EV0024
EV0025
EV0035
EV0036
EV0080
EV0083
EV0084
EV0085
EV0100

Road ID
CB0015
CB0016
CB0020
CB0030
CB0200
EV1030
EV1031
EV1032
EV2000
EV2001
EV2002
EV2003
EV3001
EV4050
EV4051
Eve Creek
EW2000
EW2001
FE Main
FE0002
FE0900
FE0910
FE0920
FE1000
FE2000
FE2100
FE2110
FE2120
FE2200
FE3000
FE4000
Fiona Road
Fire Road
FL1000-
FL1050
FL1060
FL1100-
FL1200-
FL3000
FL3010
FN0200
FN0206
FN0210
FN0211
FN0220
FN0230
FN0250
FN0500

Road ID
CR1310A
CR3000
CR3100
DA2000
DA2020
DA2500
DASP3
FN3530
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FN5200
Fools Creek
FR0050
FR0100
FR0200
FR0201
FR0300
FR5000
GC2000
GC2110
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GC3205
GC4000

Road ID
DL1318
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DN1050
GC4111
GC4112
GC4500
GC4502
GC4503
GC5201
GC7001
GC9700
GC9710
GC9720
Gold Creek Main
Gold Creek Siding Road
Gold Spur
Goshawk Road
Grahan Spur
HA0030
HA0036
HA0037
HA0100
HA0200
HA0300
HA0310
HA0311
HA0320
HA0330
HA0340
HA0350
Harry Road
Haylar Road
HH0100
HH4000
HH4005
HH4010
HH4300
HH4310
HH4320
HH4400
HL Main
HL0010
HL0020
HL0100

Road ID
East Klak
East Reed
East Schoen
East Welch
EC3000
EC3050
EC3060
HL0306
HL0307
HL0308
HL0400
HLW1000
HLW1010
HLW1020
HM0001
HM0002
Hoomak
Hoomak
HQ0500
HQ0501
HQ0700
HQ0701
HQ1000
HQ1010
HQ1011
HQ1011A
HQ1012
HQ2000
HQ2005
HQ2010
HQ3000
HR3000
HU1000
HU1002
HU1003
HU1004
HU1005
HU1006
HU2000
HU2001
HU2010
HU2011
HU2012
HU2013
Hydro Spur
JA0600
JA3000
JA3009

Road ID
EV0101
EV0110
EV0111
EV0200
EV0201
EV0300
EV1000
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JN6000
JN6010
JN6100
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JN6200
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JN6303
JN6304
JN6308
John Road
K Main
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K100-EFO
K200-EFO
K26 Spur
K55 Spur
K6-1
K6-7
KA Main
KA0002
KA0003
KA0004
KA0005
KA0009
KA0019
KA0020
KA0021
KA0021A

Road ID
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Road ID
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KA5600

Road ID
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HL0305
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KA6200
KA6210
KA6220
KA6230
KA6240
KA7000
KA7003
KA7100
KA7200

Road ID
JA3020
JA4000
Jackson
Jamie Road
JN Hookup
JN0100
JN0110
JN1210
JN2000
KA8110
KA8200
KA8205
KA8210
KA8211
KA8212
KA8213
KA8214
KA8215
Kaipit
Kaipit Main
Karmutsen
Kathy Road
Kaypea
KC2310
KC2311
KC4060
KC4061
KC4061A
KC4061B
KC4062
KC4063
KC4063A
KC4070
KC4070A
KH0014A
KH0050
KH3000
KH3020
KH3100
KH3100A
KH3103
KH3110
KH3130
KH3140
KH4900
KH4910
KH8000
KH8012

Road ID
KA0021B
KA0021C
KA0021D
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KA0028
KA0029
KA0040
KA0041
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KI1009
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KI4203
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KI4220
KI4230
KI4231

Road ID
KA3436
KA4000
KA4000A
KA4000B
KA4000C
KA4000D
KA4002
KA4003
KA4010
KK4710
KK4711
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KL0200
KL0300
KL3000
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KL3130
Klakharry
KM0001
KM0002
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KM1204A
KM1204B
KM1210-
KM1211
KM1212

Road ID
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KM1310-EFO
KM2000-EFO
KM2010-EFO
KM2020-EFO
KM2030-EFO
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KM5423
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KM5511
KM5700
KM5701
KM5702

Road ID
KA8000
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KA8051
KA8060
KA8080
KA8081
KA8085
KA8086
KA8087
KA8088
KA8100
KMR2130
KMR2135
KMR2140
KMR2150
KMR2153
KMR2160
KMR2170
KP0020
KP0021
KP0022
KP0023
KP0023A
KP0024
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KP0595
KP0727
KP0900
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KP10000
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KP10000-3
KP10000-4
KP10000-5
KP10001
KP101
KP102
KP102A

Road ID
KI0010
KI0011
KI0012
KI0012A
KI0012B
KI0013
KI0700
KI0740
KI0741
KI0820
KI0822
KP2121
KP2122
KP2123
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KP2125
KP2203
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KP2205
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KP2208
KP2209
KP2210
KP2240
KP2242
KP2243
KP4000
KP4200
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KP4255
KP4260
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KP4270
KP4280
KP4281
KP4282

Road ID
Kilpala
KIN5_1
KIN5_3
Kinman
Kiyu Road
KK4000
KK4001
KK4500
KK4510
KK4520
KK4700
KP4620
KP4630
KP4640
KP4650
KP5000
KP5001
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KP5011
KP5012
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KP6900
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KP7000
KP7400
KP8000
KP8100
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KP8120
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KP9006
KP9008
KP9010
KP9011
KP9012
KP9013
KP9014
KP9015
KP9100

Road ID
KM1220-
KM1224
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KM1276
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KM1281
KM1290
KM1291
KP9400
KP9401
KP9410
KP9415
KP9420
KP9450
KP9500
KP9510
KP9520
KP9530
KR0002
KS Main
KS1000
KS2000
KU4700
KU4701
KU4800
KU4820
KV1000
KV1010
KV1011
KV1012
KX0203
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KX0211
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KX200
KY0110
KY0200
KY1000
KY1001
KY1010
KY1020
Larch Mt.
LC1000
LC1100

Road ID
KM5703
KM5704
KM5800
KMR1000
KMR1001
KMR1002
KMR1003
KMR1010
KMR1011
KMR2000
KMR2100
KMR2120
KMR2121
LM006
LM0300
LM0400
LM0600
LM0610
LM0810
LM1000-EFO
LM1005
LM1006
LM1007
LM1016
LM1017
LM1030
LM1031
LM3000
LM3100
LM3110S
LM3120S
LM3121AS
LM3121BS
LM31221S
LM3200
LM3300
LM3310
LM3320
LO0100
LO0110
LO0112
Loci Shop
Lookout Road
Lower Alston
Lower
LU0010
LU0020
LU0900

Road ID
KP102B
KP102C
KP102D
KP102E
KP103
KP1500
KP1501
KP2000
KP2011
KP2011A
KP2012
KP2100
KP2120
LU4000
LU4030
LU4100
LU4120
LU4130
LU4132
LU4140
LU5200
LU5300
LU5310
LU5311
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LU5370
LU7000
LU7200
LU7205
LU7207
LU7208
LU7210
LU7214
LU7215
Lukwa rail Access
MA0110
MA0120
MA0121
MA0122
MA0123
MA0200

Road ID
KP4283
KP4285
KP4290
KP4291
KP4300
KP4300A
KP4320
KP4321
KP4400A
KP4410
KP4500
KP4600
KP4610
Maquilla
Maquilla
Maquilla
Maquilla
Maquilla
Marble
Marion
Markusen
MC0200
MC0205
MC0210
MC0300
MC0400
MC1000
MC1010
MC1100
MC1110
MC1200
MC5000
MC5001
MC5002
MC5003
MC5010
MC5011
MC5100
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MC5120
MC5121
MC5140
MC5141
MC5150
MC7230
MC7231
MC7300
McInnes

Road ID
KP9110
KP9150
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KP9207
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KP9211
KP9212
KP9300
KP9310
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MH0681
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MH1200
MH1200A
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MH6220
MH6400
MH6410
MI0017
MI0018
MI0019
MI0020
MI0021
MI0030
MI0040
Mine
Mist Lake
MK0001
MK0001A
MK0002
MK0003
MK0004
MK0009
MK0010
MK0011
MK0016
MK0100
MK0110
MK0120
MK0200
MK0230

Road ID
Lily Creek
Little
LK0010
LK0010A
LK0011
LK0012
LK0013
LK0014
LK1000
LK2000
LK3000
LM004
LM005
MK2921
MK2921A
MK2922
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MK4015
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MK5200
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MK6007A
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MK6101
MK6102
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MK6120
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MK6151
MK6153
MK6205

Road ID	Road ID	Road ID	Road ID	Road ID
LU0901	MA1050	ME0200	MK0231	MK6210
LU1000	MA1060	ME0210	MK1900	MK6211
LU1010	MA1070	ME0220	MK1910	MK6212
LU1200	MA1071	ME0230	MK2900	MK6213
LU1300	MA1072	ME0231	MK2902	MK6220
LU1305	MA1073	ME1000	MK2903	MK6221
LU1310	MA1200	MH Hookup	MK2904	MK6222
LU1400	MA1210	MH0040	MK2905	MK6223
LU1405	MA1211	MH0050	MK2906	MK6224
LU1405A	MA1230	MH0065	MK2907	MK6230
LU1405B	MA1240	MH0066	MK2908	MK7000
LU1410	MA1241	MH0068	MK2909	MKE001
LU2000	MA1242	MH0069	MK2910	MKE002
LU2020	MA1243	MH0070	MK2920	MKE6220A
LU2030	MA1244	MH0300	MK2920A	MM1000
MM1300	NI0001	NK1201	NO0462	NO1135-6
MM1310	NI0100	NK1202	NO0470	NO1135-7
MM1500	NI0100A	NK1203	NO0471	NO1135-
MR0010	NI0110	NK1204	NO0500	NO2030
MR0013	NI0115	NK1205	NO0510	NO2031
MR0014	NI0120	NK1206	NO0600	NO2032
MT Main	NI0130	NK1207	NO0800	NO2033
Mt.Holdsworth	NI0140	NK1208	NO0801	NO2035
MT0050	NI0200	NK1209	NO0802	NO2036
MT1010	NI0300	NK1211	NO0900	NO2037
MT1020	NI0301	NK1211A	NO0901	NO2038
MT1030	NI0302	NK1212	NO0902	NO2040
MT1040	NI0303	NK1221	NO0903	NO2042
MT1040A	NI1100	NK1221A	NO0910	NO2043
MT1041	NI1110	NK1222	NO0920	NO2044
MT1041A	NI1120	NK1223	NO0930	NO2045
MT1043	NI1130	NK1230	NO0931	NO2046
MT1150	NI1190	NK1231	NO0932	NO2075
MT1160	NI1200	NK1300	NO1000	NO2076
Mulock Road	NI1210	NK1305	NO1001	NO2077
N Pit Access	NI2000	NK1307	NO1001A	NO2078
N1000-EFO	NI2100	NK1310	NO1005	NO2080
N1001	NI3000	NK1311	NO1010	NO2081
N1002	NI3600	NK1320	NO1011	NO2090
N1003	NI4000	NK1321	NO1011A	NO2091
N1004	NI4500	NK1322	NO1012	NO2093
N1005	NI4510	NK1400	NO1013	NO2100
N1006	NI4520	NK1500	NO1020	NO2110
N1007	Nimpkish Lake Campsite Loop	NK1600	NO1021	NO2114
N1008	Nimpkish Lake Campsite Road	NK1600A	NO1022	NO2116
N1009	Nimpkish Main	NK1610	NO1030	NO2117
N1010-EFO	Nimpkish Main South	NK1620	NO1031	NO3080
N1011	NK HOOK UP	NK1700	NO1032	NO3081

Road ID
N1012
N1013
N1020-EFO
N1021
N1030
N1031
NA0015
NA0025
NA2000
NA3000
NA4000
NA4005
NA4010
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NA5000
Nancy Road
NE270_BS1
NO3420
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NO4000
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NO4063
NO4064
NO4100
NO4101
NO4102
NO5400
NO5402
NO5402B
NO5402C
NO5402D
NO5404
NO5406A
NO5406B
NO5406C
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NO5408A
NO5409
NO5413
NO5431
NO5432
NO5433
NO5500
NO5510
NO5511

Road ID
NK0009
NK0011
NK0099
NK0100
NK0101
NK0102
NK0103
NK0200
NK0210
NK1000
NK1000A
NK1010
NK1011
NK1100
NK1110
NK1120
NK1200
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NO7260
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NO7271
NO7280
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NO7290
NO9000
NO9400
NO9500
Noomas Main
Norman Road
North Kinman Main
NR1000
NR1100
NR1150
NR1170
NR1175
NR1200
NR1210
NR4000
NR4010

Road ID
NM1000A
NM1050
NM1300
NM5000
NN1000
NN1010
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NO0456
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NO0461
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NS0086
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NS009_2
NS009_3
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NS1003
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NS1005
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NS1112
NS1113
NS1114

Road ID
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NO1111
NO1120
NO1130
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NO1130B
NO1135
NO1135-5
NO1135-
NU1022
NU1023
NU1030
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NU2010
NU2011
NU2012
NU2020
OK Track
OL0300
OL1000-
OL2500
OL4000
OL4100
OL4110
OL4120
OL4130
Old Car
Old
Oliver
PL10000
PL1100
PL11000
PL11010
PL1110
PL1120
PL1125
PL1126
PL1130
PL1140
PL11600

Road ID
NO3100
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NO3225
NO3230
NO3300
NO3302
NO3303
NO3310
NO3311
NO3320
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NO3360
NO3410
NO3411
NO3415
PL4440
PL4441
PL5100
PL5110
PL5120
PL5130
PL5200
PL7000
PL7400
PL7410
PL7500
Plateau
PT1000
QU0015
QU0020
R122
RA1000
RA1021
RA3001
RA3002
RA3003
RA3004
RA3005
RA4000
RA4030
RA4032
RA4033
RA4034
RA4035
RA4036
RA4050

Road ID	Road ID	Road ID	Road ID	Road ID
NO5512	NR4011	NS1121	PL1300	RA4060
NO5520	NR4012	NS1130	PL1301	RA4070
NO5530	NR4020	NS1131	PL1310	RA4080
NO5540	NR5000	NS1132	PL3000	RA4085
NO5550	NR6000	NS1200	PL3100	RA4090
NO5551	NR7000	NS1210	PL3110	RA6000
NO5600	NR7010	NS1900	PL3111	RA6010
NO5601	NR7020	NS1910	PL3111_A	Raven
NO5608	NR7030	NS2000	PL3112	Raymond
NO5609	NR7040	NS2001	PL3113	RD0001
NO5609A	NR7090	NS2002	PL3120	RD0002
NO5610	NR8000	NS2003	PL3121	RD0015
NO5620	NR8010	NS2004	PL3122	RD001A
NO6000	NS0070	NS5000	PL3123	RD0030
NO6000A	NS0080	NS5050	PL4000	RD0030A
NO7100	NS0081	NU1000	PL4200	RD0031
NO7101	NS0082	NU1010	PL4210	RD0031A
NO7126	NS0083	NU1020	PL4212	RD0031B
NO7130	NS0084	NU1021	PL4400	RD0032
RD0032A	SC0037A	SC1400	SC7520	ST0065
Reed Road	SC0038	SC1420	SC7525	ST0080
Ridge Top	SC0039	SC1600	SC7530	ST0090
River Road	SC0039A	SC1601	SC7540	ST0400
RO0050	SC0040	SC2000	SC7600	ST1000
RO0052	SC0041	SC2001	SC7610	ST1009
RO0060	SC0042	SC2010	SC7620	ST1020
RO0080	SC0043	SC3000	SC7622	ST1030
RO0081	SC0044	SC3011	SC7700	ST1035
RO0210	SC0045	SC3012	SC8000	ST1100
RO0211	SC0046	SC3020	SC8001	ST1110 - 1-
RO0250	SC0047	SC3030	SC8002	ST1120
RO0251	SC0048	SC3035	SC8003	ST2000
RO1000	SC0055	SC3100	SC8004	ST2010
RO1010	SC0077	SC3110	SC8010	ST2020
RO3300	SC0078	SC3111	SC8011	ST6000
Robin Road	SC0079	SC6000	SC8012	ST6500
Rona Road	SC0080	SC6200	SC8013	ST6510
RV0200	SC0090	SC6207	SCB1000	ST6520
RV0300	SC0091	SC6240	SCB1000B	ST6522
S3 - Short	SC0100	SC6241	SCB1001	ST6523
S4 - Track 1	SC0101	SC6242	SCB1002	ST6525
S4 - Track 2	SC0102	SC6243	SCB1003	ST6530
S6 - Track 1	SC0103	SC6243_BS2	SCB1004	ST6540
SA0005	SC0110	SC6245	SCB1005	ST6542
SA0010	SC0120	SC6250	SCB1006	ST6550
SA0020	SC0121	SC6260	SCB1007	ST6560
SA0030	SC0122	SC6340	SCB1008	ST6600
SA0100	SC0200	SC6350	SCB1009	ST6610

Road ID	Road ID	Road ID	Road ID	Road ID
SA0101	SC0210	SC6370	Schoen	ST6700
Sand Pit	SC0211	SC6400	Shop Track	ST6720
Sandpit Road	SC0212	SC6405	SK0030	ST6730
Sarly Road	SC0300	SC6406	SK0031	ST6740
Sawmill Main 1	SC1000	SC6407	SK0031A	ST6750
Sawmill Main	SC1010	SC6408	SN0017	ST7000
SC Main	SC1011	SC6409	SO0010	ST7003
SC0002	SC1012	SC6410	SO0020	ST7009
SC0003	SC1013	SC6420	SO0100	ST7010
SC0020	SC1014	SC6421	South	ST7012
SC0024	SC1020	SC6422	South	ST7013
SC0025	SC1021	SC6423	SP1220-	ST7020
SC0026	SC1300	SC6430	SST0001	ST7030
SC0027	SC1310	SC6440	SST0002	ST8000
SC0029	SC1350	SC6610	ST0035	ST8040
SC0031	SC1352	SC7100	ST0036	STC Main
SC0032	SC1353	SC7200	ST0037	STC0020
SC0033	SC1354	SC7300	ST0038	STC0021
SC0034	SC1356	SC7400	ST0039	STC0021A
SC0035	SC1357	SC7510	ST0050	STC0022
SC0037	SC1358	SC7515	ST0060	STC0023
STC0024	SW0545	TA8312	TK0140B	Tlakwa
STC0025	SW0546	TA8313	TK0140C	TM0100
STC0025A	SW0550	TA8314	TK0150	TM0200
STC0202	SW0560	TA8315	TK0151	TM2810
STC0203	SW0570	TA8316	TK0152	TM2820
STC0204	SW0580	TA8317	TK0153	TM2830
STC0206	SW0581	TA8319	TK0154	TM3010
STC0207	SW0591	TA8400	TK0155	TM3020
STC0208	SW0600	TA8404	TK0160	TM3021
STC0209	SW0600A	TA8405	TK0181	TM3022
STC0210	SW0610	TA8410	TK0182	TM3030
STC0212	SW0615	TA8420	TK0183	TM3040
STC0213	SW0620	TA8425	TK0184	TM3041
STC0214	SW1000	TA8440	TK0185	TM3042
STC0215	SW2000	TA8441	TK0220	TM3043
STC0216	SW2002	TA8450	TK0223	TN0050
STC0217	SW2003	TA8451	TK0224	TN1201
STC0221	SW2010	TA8452	TK0230	TN1202
STC0222	SW2020	TA8460	TK0231	TN1203
STC0222A	SW2050	Tank Road	TK0500	TN4000
STC0223	SW2051	Ted Road	TK0505	TN4005
STC0230	SW2200	TH8000	TK0510	TN4006
STC0231	SW2300	TK0010	TK0511	TN4300
STC0231A	SW2310	TK0011	TK0515	TN4310
STC0232	SW2320	TK0012	TK0520	TN4400
Steele Creek	SW2330	TK0013	TK0521	TN4500
Stuart Road	SW2340	TK0014	TK0522	TN5000

Road ID	Road ID	Road ID	Road ID	Road ID
SU0020	SW2350	TK0015	TK0523	TN5200
SU0021	SW2500	TK0100	TK0524	TN5210
SU0041	SW2510	TK0110	TK0525	TN5220
SU0042	SW2520	TK0112	TK0526	TN5300
SU0043	SW2530	TK0114	TK0527	TN5310
SU0044	SW2700	TK0120	TK0530	TN5311
SU0045	SW3000	TK0121	TK1100-	TN5312
SU0200	SW3010	TK0122	TK1101-	TN5313
SU0250	SW3020	TK0123	TK1110	TN6000
SU0300	SW3030	TK0124	TK1120	TN6100
SU0301	SW3040	TK0125	TK1130	TN6200
SU0400	SW3100	TK0126	TK1131	TN6210
SU0500	SW3110	TK0127	TK1132	TN7000
Surprise Road	SW3300	TK0128	TK1133	TN7100
Sutton Road	Swah Road	TK0130	TK3000	TN7100A
SW0200	TA0111	TK0131	TK3010	TN8000
SW0300	TA1000	TK0132	TK3011	TN8200
SW0500	TA1005	TK0133	TK3012	TO5000
SW0530	TA6200	TK0134	TK3013	TO5001
SW0531	TA7000	TK0135	TK3014	TO5002
SW0532	TA8300	TK0136	TK3020	TO5003
SW0540	TA8302	TK0140	TK3020A	TO5004
SW0541	TA8310	TK0140A	TK3021	TO5005
TO5006	UE3100	UK6431	Vernon	WB5110
TO5010	UE3110	UK6432	VL0300	WB5130
TO5100	UE3111	UK6440	VL0310	WC1000
TO5110	UE3120	UM1012	VL0311	WC1000A
TO5120	UE3130	UM1030	VL500-EFO	WC1010
TO5130	UE3131	UM1050	VL8000	WC1011
TO5200	UE3132	UM1060	VL8001	WC1012
TO6000	UE3133	UM1070	VL8002	WC1013
Toad Main	UE3200	UM2000	VM1000	WC1014
Tony Road	UE3201	UN1000	VM1010	WC5000
Torback Road	UE3210	UN1020	VM1100	WC5001
Toucher Road	UE3211	UN1030	VM1200	WC6410
Tsitika Road	UK1000	UN1500	VM1201	WC6411
Tsulton A	UK1050	UN1600	VM1210	WC6412
Tsulton Road	UK1060	UN1610	VM1211	WC6413
TU0500	UK1070	UN1620	VM1220	WC6430
TU0510	UK3600	UN1700	VM1300	WC6431
TU0511	UK3610	UN1710	VM1310	WC6432
TU0512	UK3615	UN1720	VM1330	WC6433
TU0513	UK3616	UN1730	VM1331	WC6434
TU0520	UK3620	UN1800	VM1400	WC7010
TU0530	UK3621	Upper	VM3250	WC7011
TU0600	UK3622	Upper Dam	VR0010	WC7012
TU0610	UK3700	Upper Elliot	VR0010A	WC7020
TU0611	UK3717	Upper Eve	VR0010B	WE0001

Road ID
TU0612
TU0620
TU0700
TU0701
TU0702
TU0710
TU0711
TU0720
TU0721
TU0722
TU0730
TU0732
TU0733
TU0734
TU0750
TU0760
TV Mountain
TV2000
TV2000A
TV2000B
UA4000
UA4100
UA4200
UA4210
UE1000
WG3101
WG3102
WG3103
WG3110
WG3150
WG3151
WG3160
WG3200
WG3210
WG3300
WG3310
WG3320
WG3330
WG3400
WG3410
WG3420
WG5100
WG5101
WL Main-EFO
WL0010
WL0100
WL0110
WL0120

Road ID
UK3900
UK3903
UK3904
UK3905
UK3910
UK3920
UK5000
UK5001
UK5300
UK5310
UK5400
UK5410
UK5411
UK5420
UK5430
UK5431
UK5440
UK5441
UK6001C
UK6002
UK6400
UK6410
UK6411
UK6412
UK6430
WP1020
WP1100
WP1110
WP1120
WP1200
WP1205
WP1220
WP1250
WP1251
WP1253
WP1254
WP1254A
WP1255
WP1900
WP1901
WP1902
WP1903
WP2000
WP2002
WP2010
WP2020
WP2021
WP2022

Road ID
Upper
Upper
Upper
Upper Rona
Upper
Upper
Upper Swah
USK1000
USK1020
USK1030
USK2000
USK3000
USK3100
USK3200
USK3300
USK3310
USK3320
USK3330
USK3350
UST0005
UST0030
Vernon
Vernon
Vernon
Vernon
WP3011
WP3020
WP4000
WP4000A
WP4000A1
WP4000A2
WP4000A3
WP4000A4
WP4000A5
WS0031
WS0032
WS0033
WS0034
WS1010
WS1020
WS1030
WS1031
WS1040
WS1050
WS1060
WS1100
WS11000
WS1120

Road ID
VR0010C
VR0040
VR3000
VR3100
WB0500
WB0501
WB1000
WB1010
WB2000
WB2010
WB2020
WB2030
WB2040
WB2041
WB2050
WB3000
WB3010
WB3020
WB3022
WB3030
WB3100
WB4000
WB4010
WB4020
WB5100
WV10350
WV10351
WV10355
WV1036
WV10499
WV10500
WV10502
WV2000
WV2010
WV2020
WV5000
WV6000
WV6100
WV6200
WV6210
WV6300
WV6310
WV6330
WV6340
WV8000
WV8400
WW0015
WW0016

Road ID
WE0003
WE0005
WE0006
WE0011
WE1000
WE1300
WE1310
WE1311
WE1312
WE6000
West Cabin
West
West
West Gold
West
West Woss
Weve Road
WG2000
WG2300
WG2400
WG2401
WG2402
WG2403
WG3000
WG3100

Road ID	Road ID	Road ID	Road ID
WL3000	WP2023	WS1121	WW0017
WL3010	WP2024	WS1201	WW0080
WL3400	WP2025	WS1202	Z60P9C
WL3410	WP2026	WS1203	Z60P9E
WM Hookup	WP2027	WS1211	Z60P9F
WM4100	WP2028	WS1212	Z60P9G
WM4110	WP2029	WS1213	Z60P9G1
WM5000	WP2030	WS1214A	Z60P9G1A
WO Main	WP2031	WS1215	Z60P9H
WO2000	WP2032	WS1216	Z60P9I
WO3000	WP2032A	WS1217	Z60P9J
WO3100	WP2033	WS1218	Z60P9K
WO3200	WP2034	WS1219	ZE-
WO5000	WP2040	WS1221	ZE-
Woss Main	WP2043	WS1221A	ZE-
Woss Reload	WP2044	WS1500	ZP0010
Woss Reload	WP2050	WS1700	ZP0011
Woss Road	WP2051	WS1900	ZP0035
Woss Sawmill	WP2060	WV10000	ZW0010
Woss Sideing	WP2100	WV10010	
Woss Yard	WP2110	WV10020	
Woss Yard	WP2120	WV10299	
Woss Yard	WP3000	WV10300	
WP Main	WP3001	WV10301	
WP0100	WP3002	WV10305	
WP1000	WP3003	WV10320	
WP1010	WP3010	WV10330	

Appendix E

Engagement Completed During Development of the FLP and FOP

Summary of Engagement

Engagement was completed during development of the TFL 37 pilot in coordination with Gwa'ni Project. While we focused on engagement with local communities, in recognition of the broader interest in the TFL 37 pilot, we also made a concerted effort to honour all requests for updates and learnings to a wide range of interested parties across the province. The draft FLP and FOP were also made available for formal review for 60 days from March 14 to May 13, 2024, with a total of 12 written submissions received.

Figure 87 and Figure 88 in the FLP provide a summary of engagement completed during the TFL 37 pilot that is pertinent to the FLP and FOP.

Photo Credit: Kindry Mercer