West Babine Sustainable Resource Management Plan

Socio-Economic Assessment

February 2004

Prepared for:

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1 EXECUTIVE SUMMARY

1.1 Introduction

This report provides a socio-economic assessment (SEA) of the draft West Babine Sustainable Resource Management Plan (SRMP). This SEA identifies economic activity and values under a plan implementation.

Although having no permanent human residents, important timber and environmental resources are located in the plan's study area, including a well-established population of approximately 70 grizzly bears.

The study area is the portion of the Babine River watershed in the Kispiox Timber Supply Area (TSA). The Babine River bisects the study area on an east-west axis. Nearby human settlements are Village of (Old) Hazelton, District of New Hazelton, South Hazelton, Kispiox, Glen Vowell, Kispiox, Moricetown, Smithers and Two Mile. Although Babine River Corridor Park is not part of the plan area, MSRM included it in the SRMP analysis, particularly for grizzly bear conservation factors and location of suitable Old Growth Management Areas.

1.2 West Babine's Main Economic Activities

The Babine River is internationally known for its steelhead fishing in a wilderness environment and is also becoming known nationally and internationally for rafting, kayaking and grizzly bear viewing.

The commercial tourism operators in the plan area include one angling lodge, seven river rafting companies, two guide-outfitters and one helicopter touring company. Two other well-established angling lodges are located outside but near the plan area's eastern boundary on the Babine River.

The plan area lies within the Kispiox TSA. There has been little timber harvesting north of the Babine River in tis TSA. It has been concentrated in the southern and northwest portions of the TSA, including the Nichyeskwa and Gail-Thomlinson watersheds in the WBSRM Plan area. Three licensees have approved Forest Development Plans for the plan area: New Skeena Forest Products Inc. (NSFP) and Kispiox Forest Products (KFP) north of the Babine River and BC Timber Sales Program (formerly the Small Business Enterprise Program) south of the river.

Due to historic development patterns elsewhere in the Kispiox TSA, the area north of the Babine River represents a significant portion of NSFP's and KFP's Kispiox TSA wood supply over the next 25 years.

The land base of the WBSRM Plan Area covers a total area of 235 235 ha, 19% of the Kispiox TSA total. The timber harvesting land base (THLB) of the WBSRM Plan Area is estimated as 67 289 ha, 25% of the Kispiox TSA's THLB.

In the plan area, there are large volumes of balsam and hemlock timber classified as either pulp log (67%) or marginal saw log (12%). Defective timber and an inadequate supply of sawlog quality softwood in the Kispiox TSA represent significant challenges to local mill managers. On the positive side, the TSA does not experience beetle kill problems that have created vast tracts of dead trees in more easterly TSAs.

1.3 WBSRMP Impacts

1.3.1 Forest industry Economic Development

The anticipated negative THLB area impact is 7,880 ha, 3.0% of the Kispiox TSA's THLB of 263,046 ha. The 7 880 ha of THLB is estimated to support approximately 30 000 m^3 of the TSA's AAC of 977 000 m^3.

✧ The impact is more significant on a plan area basis, negatively affecting 12% of the West Babine's THLB (of 67 289 ha). However, the negative results are tempered by the Atna-Shelagyote SMZ's combination of poor timber values[1] and high logging costs, which means that the area would not likely be harvested in anything but a very exceptional log price market. A logging prohibition in this SMZ has no impact in practical terms on the forest industry, thereby further reducing the WBSRMP's small negative impact. Removing the Atna Shelagyote SMZ's THLB leaves the draft WBSRMP negatively affecting only 6% of the West Babine's THLB.

✧ *The effective reduction in TSA THLB and timber supply will not negatively affect harvesting and BC Government revenues in the short-term and probably not in the long-term (10-20 years) because of an expected Kispiox TSA undercut due to forest industry rationalization of regional wood processing capacity that is intended to leave remaining operations as strong competitors on industry cost curves.*

✧ The main changes in the WBSRMP from current management directions and rules that will affect the forest industry are the following:

- increase in Old Growth Management Areas
- elimination of timber harvesting opportunity in the Shelagyote-Babine Tourism Node
- Atna/Shelagyote SMZ expanded and direction for no harvesting applied
- expansion of Connectivity Corridors, that have high retention requirements in the draft plan, which will reduce timber availability and growth potential in these areas
- no road building within the Shenismike Corridor, likely eliminating internal access and harvesting
- reduced operational flexibility in access management areas, particularly the Grizzly Bear Habitat Zones, and winter harvest only in the Babine SMZ

✧ In the short-term, a netdown of THLB area and operating constraints arising from the WBSRMP will not reduce forest industry employment because of the TSA's expected undercut, i.e. the full AAC is not being harvested.[2] It is not clear that the anticipated 30 000 m^3 timber supply impact will translate into reduced forest industry employment in the long-term as the timing and scope of the recovery of the northwest timber industry cannot be predicted at this juncture.

✧ From a regulatory standpoint, it is not anticipated that a WBSRMP implementation will result in an AAC reduction through a Chief Forester decision in Timber Supply Review 3,[3] in part because of the anticipated undercut. In this situation, with no AAC reduction, the industry would have the ability to harvest the full AAC if market conditions fuel this level of log demand.

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1 Silvicon Services Inc. (April 2003) *Access and Timber Development Strategy Evaluation for Shnismike/Shelgyote Triangle and Gunanoot Lake North.* Prepared for BC Ministry of Sustainable Resource Management.

2 977 000 – 30 000 leaves 947 000

3 However, other factors, such as areas being seen as no longer economically operable, may combine with the WBSRMP factor and lead to the Chief Forester setting a lower AAC for the TSA.

- If there was an employment impact from the THLB netdown, it would be in the order of 9 PYs per year[4] of direct forest industry employment in the TSA at risk and approximately 25 PYs on a province-wide basis at risk. These figures represent an upper level impact in the long-term; no negative short-term impact is anticipated.
- Direct forest industry employment supported by the current annual harvest of 70 000 m^3 is 29 PYs in the Kispiox TSA[5] and 59 PYs on a province-wide basis. If 220 000 m^3 was harvested in the plan area
- NSFP, KFP and BC Timber Sales have approved Forest Development Plans that allow them to seek cutting permits in the plan area from BC Ministry of Forests. However, neither NSFP nor KFP are operating mills in the area, and KFP's harvesting plans are unknown with the March 2004 shutdown of its Hazelton mill due to the Canada-US lumber trade dispute and high logging costs.[6]

1.3.2 Mineral Exploration and Mining Economic Development

There no operating or past mines in the plan area.[7] The draft SRMP does not increase the amount of protected area in the West Babine, so the total land base available for mineral exploration and development remains the same as under current management.

- A relatively small proportion of the plan area is protected, approximately four percent. The remaining 96 percent of the plan area's land base is available for mineral exploration, subject to the provisions of the BC Government's Mineral Exploration Code. Development will depend on a proposed project's compliance with BC and federal government regulatory processes. A new mineral development would be subject to the requirements of the BC Environmental Assessment Review Office.

1.3.3 Tourism and Recreation Economic Development

The proposed plan would have positive impacts on tourism activity and features, compared with projected impacts under current management direction and rules.

- The main factors suggesting a net positive impact under the proposed WBSRMP are the following:
  - Shelagyote-Babine Tourism Node, which helps protect viewscapes and grizzly bear habitat
  - Shenismike Corridor, which is quite important for the river rafters because a special feature of their trips is a half hour stop near Grizzly Drop where rafting tourists can view bears feeding on salmon
  - expanded Babine River SMZ between the Hanawald and Shelagyote areas, which helps manage access to the river
  - Atna/Shelagyote SMZ, which is an attractive area for future back country recreational development
- Around 2008, regional tourism employment and employment income based on Babine River area tourism experiences could total an estimated 50.5 PYs and $2 234 400,[8] respectively. The estimates by tourism operators are presented in the following table.

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[4] This estimate assumes no local wood processing of this plan area fibre in the TSA, silviculture and harvesting employment only; it is assumed that the logs would have been processed PIR's Smithers mill.

[5] This estimate assumes KFP's Hazelton mill is operating. The calculation for processing employment in the TSA used KFP's estimated harvest volume of 30 000 m^3.

[6] Interior News February (19, 2004) "Hazelton's KFP Closing Doors"

[7] Six past producing mines lie to the immediate south of the WBSRMP's boundary.

Exhibit – Regional[9] tourism employment and employment Income based on plan area tourism

Operater	Employment	Employment Income
Current tourism operators[10]	29 PYs	$1 372 900
Skeena Air Services hut-to-hut	1 PYs	$47 000
Skeena Mountain Adventures heli- and cat-skiing	5.5 PYs	$260 000
Miluulak Wilp's Kisgegas Cultural/Heritage lodge	11 PYs	$434 500
Wilps Gwininitxw Cultural/Heritage lodge	4 PYs	$120 000
Total	**50.5 PYs**	**$2 234 400**

- Visual aesthetic issues can often impact tourism features but Visual Quality Objectives will not differ under the proposed West Babine SRMP from current management directions and rules.
- As mentioned in the forest industry impacts section, current management direction and rules provide for additional road access and timber harvesting in the north of Babine area. The higher level strategic plans set guidance for timber harvesting in the north of Babine area. The WBSRMP places specific conditions on road development and access management[11] in certain important habitat areas.
- Visitation and employment tied to the Babine River's steelhead angling are not likely to change as a result of this SRM plan.[12] Angling dependent visitation and employment will not move up because they are tied to the number of rod-days held by each lodge. The BC Ministry of Water, Land and Air Protection (MWLAP) determines the allocation of rod-days for each lodge and it will not be increasing the allocation.[13]
- Visitation and employment tied to river rafting are not likely to change as a result as a result of this SRM plan. The number of trips may increase slightly in the future if the licenses allocated to First Nations are utilized. BC Parks controls the amount of rafting traffic on the river. It has no plans to alter the number of allocated licenses for Babine River rafting trips. A Babine River Corridor Park management plan may alter this situation but only small increases or decreases in trip numbers are likely in this event, if any.
- Compared to current management directions and rules, the WBSRMP is beneficial for the two guide-outfitters who operate north of the Babine River as it contains measures to sustain wildlife populations that they access for their clients. The enlarged Atna-Shealgyote SMZ excludes timber harvesting. Both guide-outfitters conduct hunts in that area. They also operate in sub-units where timber harvesting and road building will be allowed. Their interests are not harmed in these areas by the WBSRMP in comparison to current management directions and rules (which allow timber harvesting under fewer controls).

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[8] This total figure is composed of employment and employment income from the current tourism operators and the economic activity from the projected new tourism operators.
[9] Does not include non-plan area tourism activities that are related to plan area tourism.
[10] Including two angling lodges located outside, but near the plan area's eastern boundary
[11] The assumption here is that enforcement would be the same under either a WBSRMP or current management directions and rules.
[12] For the purposes of this SEA, the question is whether or not an implemented WBSRMP will have positive or negative impacts versus current management direction and rules. The question is not about comparison to another planning scenario.
[13] (pers. comm. D. Atagia, MWALP)

- Skeena Air Guides Ltd., which is owned Ray and Reg Collingwood, who hold hunting and guiding licenses in the plan area and own and operate Spatsizi Wilderness Vacations, has applied for a backcountry use permit this winter for a hut-to-hut hiking and backcountry skiing operation between their guide-outfitter base camps at Motase Lake, Sicintine Lake, Cub Lake, Hilary Lake, Gunanoot Lake and Onerka Lake. He plans to have this new venture operational in 2004,[14] which would be an incremental addition to his current hunting, fishing and wildlife viewing ventures.[15] The no logging provision for the Atna/Shelagyote SMZ would benefit this project. The project is not contingent on implementation of the WBSRMP but its provisions would help to sustain nature-based tourism values north of the Babine River although the plan does anticipate timber harvesting in what has been largely a wilderness area.
- A new entity, Skeena Mountain Adventures, has made application to Land and Water BC (LWBC) this winter for a five-year license of occupation to operate a combined heli-ski/cat-ski operation in the Skeena Mountains. The proponents intend to operate their backcountry ski operation in conjunction with a lodge to be built near the Kisgegas Reserve in partnership with Alice Jeffrey, a Gitxsan hereditary chief. The lodge may be in or near the plan area boundary and would be a four-season operation that offers hiking, wildlife viewing, angling and kayaking experiences. A separate LWBC application is planned for the lodge, which is yet to be sited.[16]

1.3.4 Government Revenues

The estimated current provincial government revenues from harvesting and processing plan area timber is $1 444 800. In the short-term, there will be no reduction in BC Government revenues derived from the forest industry due to a WBSRMP implementation because of the undercut in the Kispiox TSA. With a larger harvest of 220 000 m³ based on the WBSRMP constrained THLB, the plan area would generate almost $5 million of BC Government revenues on an annual basis. If Forest Development Plan volumes were harvested BC Government revenues could rise to approximately $6.4 million.

In the short-term, the estimated direct provincial government revenues from current Babine River area commercial tourism operations is $390 150.[17] This estimate is based on the current experience of Babine River area tourism operators and an estimate of the provincial income tax payments of tourism staff .

[14] Pers. comm. R. Collingwood, Collingwood Bros.
[15] Source: Collingwood Bros
[16] Source: ECOS Environmental Consulting Inc. and Winter, N. (October 2003) Skeena Mountain Adventures Plan. Application to LWBC.
[17] Pacific Analytics and O.R. Travers Forestry Consultants (October 2002) *The Economic Value of the Babine River Corridor Park With and Without a Protective Buffer.* Prepared for The Babine River Foundation.

1.3.5 Net Resource Value

Estimated annual net resource value associated with the plan area's forest and tourism industry activities is $1.5 million in the short-term and $3 million in the longer-term.

The combined forest and tourism net economic value estimate is increasing after 2008 because of two factors. It is anticipated that two new First Nations themed lodges will be operating in the plan area by 2008 and the timber harvest will increase to 220 000 m^3 to help feed PIR's Smithers sawmill, Canfor's Houston sawmill, West Fraser's Terrace sawmill, KFP's Hazelton sawmill and NSFP's (or its new owner) Terrace sawmill. The estimates by industry and aggregate are presented in the following table.

Exhibit – Forest Industry + Tourism Industry Annual Economic Rents in the West Babine

	2004 - 2007	2008[18] →
Forest Industry		
Annual economic rent ($)	$618 800[19]	$2 081 000[20]
Tourism		
Annual economic rent ($)	$798 000[21]	$897 000
Forest Industry + Tourism		
Annual economic rent ($)	$1 416 800	$2 978 000

1.3.6 Regional Quality of Life

A WBSRMP implementation will not harm employment in the forest industry and will support protection of tourism values in comparison to current management directions and rules. A WBSRMP implementation will not result in an immediate positive impact on Kispiox communities but its "balanced protection," i.e. largely protecting the area's economically operable THLB for forestry purposes and helping to protect natural attributes of the area that attract tourists and recreationists, will have a longer term positive affect.

[18] Assumes that the two proposed lodges are constructed and accepting visitors as of 2008.
[19] This economic rent estimate is based on harvesting 70 000 m^3 per year.
[20] This economic rent estimate is based on harvesting 220 000 m3 per year. The economic rent from the forest industry will likely decline from 2013 onwards because the current MOF timber supply projection for the Kispiox TSA shows a decline of 12% in the decade that begins in January 2013.
[21] Includes current tourism plus proposed new operations of Skeena Mountain Adventures and Skeena Air Guides.

2 INTRODUCTION

2.1 Purpose

This report provides a socio-economic assessment (SEA) of the draft West Babine Sustainable Resource Management Plan (SRMP).

The report was prepared for the Skeena Resource Management Region of the BC Ministry of Sustainable Resource Management (MSRM), in cooperation with other BC Government resource ministries and agencies. Interested parties in the BC Government, local governments, First Nations, forest industry, tourism industry and communities will use the analysis (and other work) to assess and implement the West Babine SRMP.

Although the plan area has no permanent human residents, it contains important timber and environmental resources. There is a well-established population of approximately 70 grizzly bears in the study area.

To help inform the resource management process, this SEA provides:

- a description of the socio-economic base case, focusing on current and expected demographic, employment and socio-economic trends; and
- an assessment of the socio-economic impact of proposed management directions and strategies of the draft West Babine SRMP.

The key areas in this SEA are the main changes that will affect the forest and tourism industries that the WBSRMP will bring about. The main changes of interest to the forest industry are the following:

- elimination of timber harvesting opportunity in the Shelagyote-Babine Tourism Node[22]
- no road building within the Shenismike Corridor
- expansion of the Babine River SMZ between Hanawald and Shelagyote
- Atna/Shelagyote SMZ expanded and direction for no harvesting applied
- winter only harvesting in the Babine SMZ
- reduced operational flexibility in access management areas

The main changes of interest to the tourism industry are the following:

- Shelagyote-Babine Tourism Node, which helps protect viewscapes and grizzly bear habitat
- Shenismike Corridor, which is quite important for the river rafters because a special feature of their trips is a half hour stop near Grizzly Drop where rafting tourists can view bears feeding on salmon
- expanded Babine River SMZ between the Hanawald and Shelagyote areas, which helps manage access to the river
- Atna/Shelagyote SMZ, which is an attractive area for future back country recreational development

2.2 Study Area

A map of the study area is provided on page 4. The study area is the portion of the Babine River watershed in the Kispiox TSA. The Babine River bisects the study area on an east-west axis. The southern

[22] Except for grandfathering a New Skeena Forest Products (NSFP) cutting permit in this zone.

mountains of the Atna and Sicintine ranges occupy the northern part of the study area and the northern mountains of the Babine range occupy its southern part. The eastern border of the study area is the eastern border of the Kispiox TSA (and the western border of the Bulkley TSA). The study area's western border is the Skeena River, which is not part of the plan area.

Although Babine River Corridor Park is not included in this SRM plan's mandate, MSRM included it in the SRMP analysis, particularly for grizzly bear conservation factors and location of suitable Old Growth Management Areas. The park and its values are included in this SEA.

There are no permanent human settlements in the study area. Nearby human settlements include the Village of (Old) Hazelton, the District of New Hazelton, South Hazelton, Kispiox, Glen Vowell, Kispiox, Moricetown, Smithers and Two Mile. Impacts on these communities are considered in this SEA.

2.3 Methodology

The socio-economic impacts of the proposed access alternatives are analyzed using the framework presented in *Socio-Economic and Environmental Assessment for Land and Resource Management Planning in British Columbia: Guiding Principles* [Pierce Lefevbre Consulting January 2003] and *Socio-Economic and Environmental Impact Assessment for Land and Resource Management Planning in British Columbia* [MSRM November 2001], and MSRM's guidelines for technical analysis in SRM planning. The analysis techniques and indicators employed are as follows.

Exhibit - SEA Frames, SEA Techniques and Indicators

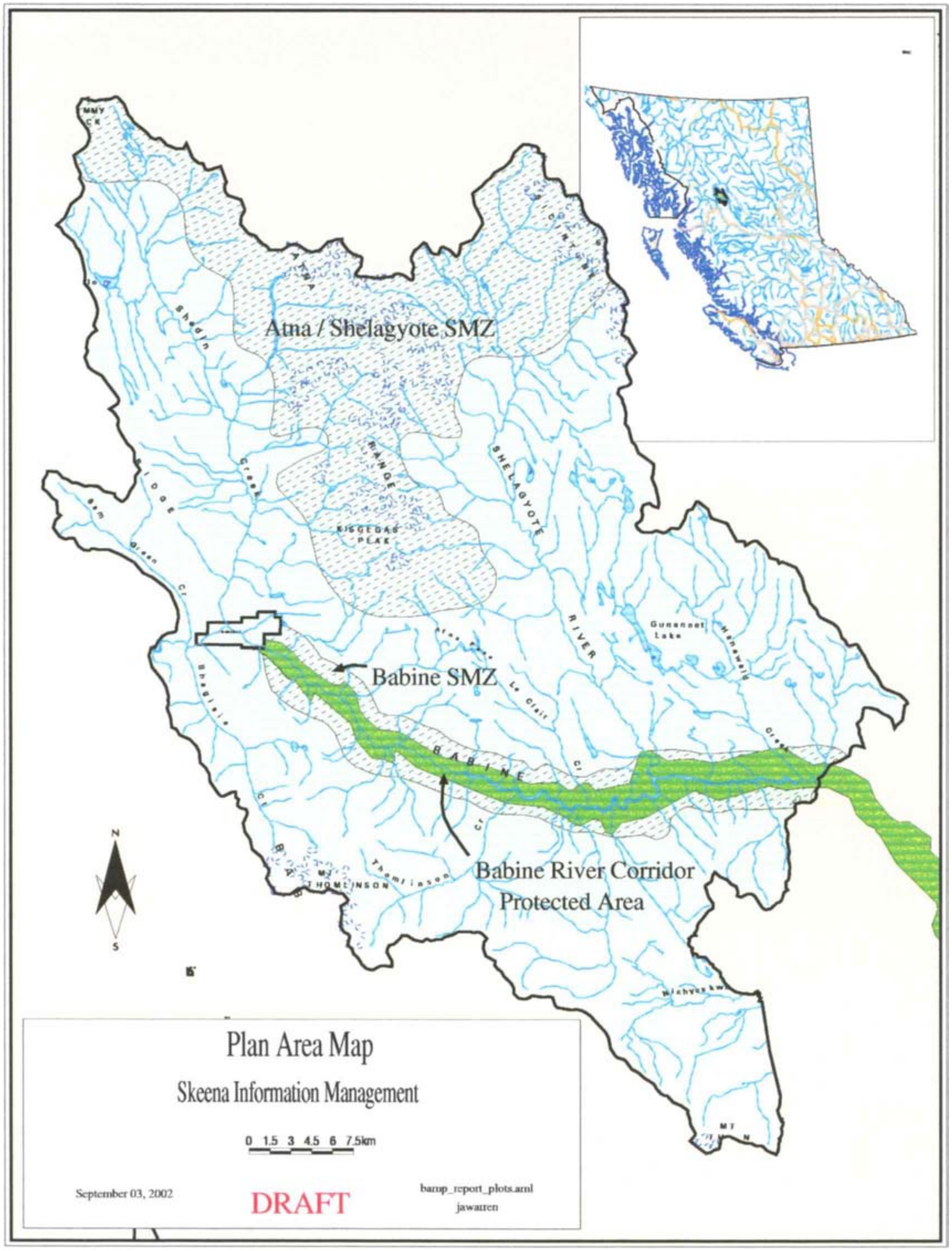
Frame	Analysis Techniques	Indicators
Economic Development	Economic activity	Direct, indirect & induced employment (PYs); wage and salary levels; employment income; GDP
Net Resource Value	Benefit-cost analysis	For commercial sectors: economic rent - product prices before tax less production costs and typical profit; in addition, any estimated economic rent captured by labour For non-commercial sectors: estimate of consumer surplus i.e. what people would be willing to pay for the activity or amenity above what they are paying
Competitiveness	Competitive strategy	Factors that most affect the ability of the main current and potential businesses operating in the plan area to prosper in their marketplace and how the SRMP might affect these competitiveness success factors
Government Finances	Fiscal impact	Revenues (taxes, royalties, etc.); expenditures; net change
Social	Social impact	Population; infrastructure; employment duration; job quality; qualitative stakeholder preferences

To measure impacts, the draft SRMP plan is compared to current management,[23] *which is called the Baseline Scenario.*

The SRMP planning context and direction is provided by two higher level plans: *Babine Interim Land and Resource Use Plan (LRUP)*, and *Kispiox Land and Resource Management Plan (LRMP)*. They provide the context and direction for current management prescriptions and rules as well.

The proposed policies, directions and rules to guide resource development in the plan area are found in the draft *West Babine Sustainable Resource Management Plan* (WBSRMP) and other government policies and rules that guide resource development in the region and the province. The draft plan is compatible with many other important government statutes, regulations, plans and policies, including ones prescribed in the *Babine LRUP*, and *Kispiox LRMP.* The draft plan modifies several areas of current government direction and regulation but leaves many others untouched. SRM planning was established to operationalize higher level plans, such as LRUPs and LRMPs, and not to re-open, supercede or replace them.

[23] Current management prescriptions and rules, reflected in the Baseline Scenario, are a yardstick for analytical purposes and do not constitute another option for implementation. There is only one option or scenario under development in this planning exercise and its outcome is represented in the draft WBSRM plan.


Atna / Shelagyote SMZ
Babine SMZ
Babine River Corridor
Protected Area
Plan Area Map
Skeena Information Management
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3 FOREST INDUSTRY ECONOMIC DEVELOPMENT

3.1 Overview

This chapter summarizes estimates of employment and employment income associated with resource use in the plan area. The WBSRM Plan envisions several economic activities that support (or could support) employment in the province.

Estimates for employment and employment income arising from resource use by tourism operators in the WBSRM Plan area are presented in Chapter 4. The results for each of the forest and tourism industries should not be compared as an either/or scenario. *The WBSRM Plan area does not set up a mutually exclusive choice between either forest industry or tourism employment. The draft plan accommodates both activities.*

This chapter also discusses resource availability and quality economic impacts of the WBSRM Plan on mining and mineral development, commercial fishing and mushroom harvesting.

In Appendix I, there is a profile of recent economic activity and demographics for the study area. It provides important background information to improve understanding of the SEA's context.

3.2 Background[25]

The West Babine plan area lies within the Kispiox TSA, which has an AAC[26] of 977 000 m^3, effective January 2003, a drop of approximately 10% from the previous AAC of 1 092 611 m^3. In the Chief Forester's Rationale for the AAC, subsequent decades were to see 12% decreases based on information available to him. The Base Case forecast in the *May 2002 Kispiox Timber Supply Area Analysis Report* showed a long-term annual harvest level of 430 000 m^3 in the eighth decade.

821 PYs of direct employment in the BC forest industry could be supported by harvesting the full amount of the Kispiox TSA's 977 000 m^3 AAC.[27]

The annual harvest activity in the Kispiox TSA averaged approximately 780 000 m^3 over the seven-year 1996 – 2002 period. Harvesting declined precipitously in the 2001 – 2002 period because of SCI/NSFP's shutdown of processing operations. The next table summarizes the volume of timber harvested in the TSA for the past seven years.

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[25] Appendix I provides more background information about the plan area's economy, including its forest industry.

[26] The WBSRM Plan Area covers an area of 235 235 ha, 19% of the Kispiox TSA total. The timber harvesting land base in the WBSRM Plan Area is estimated as 67 289 ha, 25% of the Kispiox TSA's THLB

[27] Based on 0.84 PYs of direct forest industry employment per m^3 of harvested timber estimates developed by the BC Ministry of Forests for the Kispiox TSA, [BC Ministry of Forests May 2002].

Exhibit - Kispiox TSA volumes billed, 1996- 2002

1996 (m^3)	1997 (m^3)	1998 (m^3)	1999 (m^3)	2000 (m^3)	2001 (m^3)	2002 (m^3)	7 yr avg
984 965	831 028	1 011 470	1 114 800	821 848	353 501	339 194	779 544

Source: Ministry of Forests

Three licensees have approved Forest Development Plans for the plan area: New Skeena Forest Products Inc. (NSFP), Kispiox Forest Products (KFP) north of the Babine River, and BC Timber Sales Program (formerly the Small Business Enterprise Program) south of the river. Due to historic development patterns elsewhere in the Kispiox TSA, the area north of the Babine River represents a significant portion of NSFP's and KFP's Kispiox TSA wood supply over the next 25 years.

There has been little timber harvesting north of the Babine River. Harvesting has been concentrated in the southern (Highway 37) and northwest portions of the TSA, including the Nichyeskwa and Gail-Thomlinson watersheds in the WBSRM Plan area. Harvesting volume data for SCI/NSFP, KFP and BCTS in the West Babine plan area is summarized in the following table.

Exhibit – SCI/NSFP and KFP harvest volume estimates in West Babine plan area

Licensee	1999 (m^3)	2000 (m^3)	2001 (m^3)	2002 (m^3)	2003 (m^3)
SCI/NSFP	172 400[28]	124 900[29]	10 900[30]	0	0
KFP[31]	-	0	0	30 000[32]	25 000
BCTS[33]		38 310 avg. over 3-yr period			30-40 000

Source: BC Ministry of Forests

NSFP's Forest Development Plan includes the north of the river area, from the plan's western boundary to the Shelagyote River. KFP's Forest Development Plan also includes the area north of the river, from the plan's eastern boundary to the Shelagyote River. Historically, BC Timber Sales (formerly SBFEP) awarded timber harvesting rights south of the river. It currently has ten years of approved cut blocks. With the recent changes to the timber allocation system in the province and the 20% "takeback" from licensees,[34] there is the possibility that BC Timber Sales will seek cutting permits north of the river as well.

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[28] NSFP views this amount as a "normal" production year from the West Babine plan area.
[29] Operations disrupted in Q4.
[30] Sawmill closed in February 2001 and whole log chipper closed in May 2001.
[31] Estimate provided by D. Allen, KFP
[32] KFP plans to harvest 70 000 m3 over the November 2003 to May 2004 period in its Hanawald chart.
[33] Estimate provided by M. Folkema, MOF
[34] The "takeback" is a reallocation of 20 per cent of logging rights from major licensees. Source: BC Ministry of Forests Backgrounder dated March 26, 2003, available at http://www.for.gov.bc.ca/mof/plan/timberreallocation.htm

The takeback for NSFP has not been agreed upon but the company is scheduled to give up a total of 337 000 m^3. How much NSFP will give up from its Kispiox TSA is not known but there is an expectation of a 100-150 000 m^3 takeback from its Kispiox TSA license, which would help to provide timber supply for licenses that could be awarded to the Gitxsan First Nation.

Actual harvest levels in the TSA have been considerably lower than the AAC in recent years but in 1998 and 1999 were close to or above the AAC undercut the past several years. KFP's mill shut down in late 1998, re-opened in 2001 and closed again in late February 2004. During the last four years of its operation (1997-2001), Skeena Cellulose Inc. (SCI) legally could have logged an additional 3.4 million m^3 under its licenses than it actually harvested in BC. As an interim Treaty measure, the BC Ministry of Forests committed to award a seven-year non-replaceable license to the Gitxsan Nation, using the TSA's undercut as a timber source.

In February 2003, the BC Cabinet approved an OIC allowing Kispiox TSA (as well as Kalum and North Coast TSA) tenure holders to export up to 35% of their annual harvest.[35]

The annual timber harvest in the plan area is currently about 70 000 m^3, 40 000 m^3 by BCTS award holders and 30 000 m^3 by KFP. The BCTS sawlog quality spruce-pine-fir fibre is being directed to the Smithers sawmill of Pacific Inland Resources (PIR). Dry wood pulp quality logs are currently being directed to Decker Lake's sawmill, located between Burns Lake and Houston. KFP has made arrangements with PIR to log 25 000 m^3 of its Hanawald timber in 2004.

In the plan area, there are large volumes of balsam and hemlock timber classified as pulp log (67%) or marginal saw log (12%).[36] Defective timber and an inadequate supply of saw log quality softwood in the Kispiox TSA represent significant challenges to local mill managers. On the positive side of the ledger, the TSA does not have a beetle kill problem creating vast tracts of dead trees, as is the case in TSAs to the east.

Although there is a high hemlock-balsam pulp log content within the plan area's fibre profile, its distribution is concentrated west of Shenismike Creek. The timber profile east of Shenismike Creek and south of the Babine River in the economically operable areas has a lesser pulp log content. PIR's sawmill in Smithers and Canfor's mill in Houston do not take hemlock logs because they are spruce-pine-fir mix manufacturers but are currently log buyers in the plan area and the Kispiox TSA and are seen as purchasing larger annual volumes from the Kispiox TSA in the short-term as beetle kill fibre diminishes in volume and quality and PIR's NRFLs come to an end in 2007. PIR's Smithers mill, currently purchases from 300-350 000 m^3 of logs and will be purchasing in the order of 600 000 m^3 in 2008 and thereafter. Mills to the west process hemlock logs,[37] including the operating West Fraser Terrace mill and Kitwanga Lumber mill and the closed NSFP Terrace mill and KFP Hazelton mill, so harvested volume from the west of Shenismike Creek area could be directed to them in more buoyant hemlock markets.

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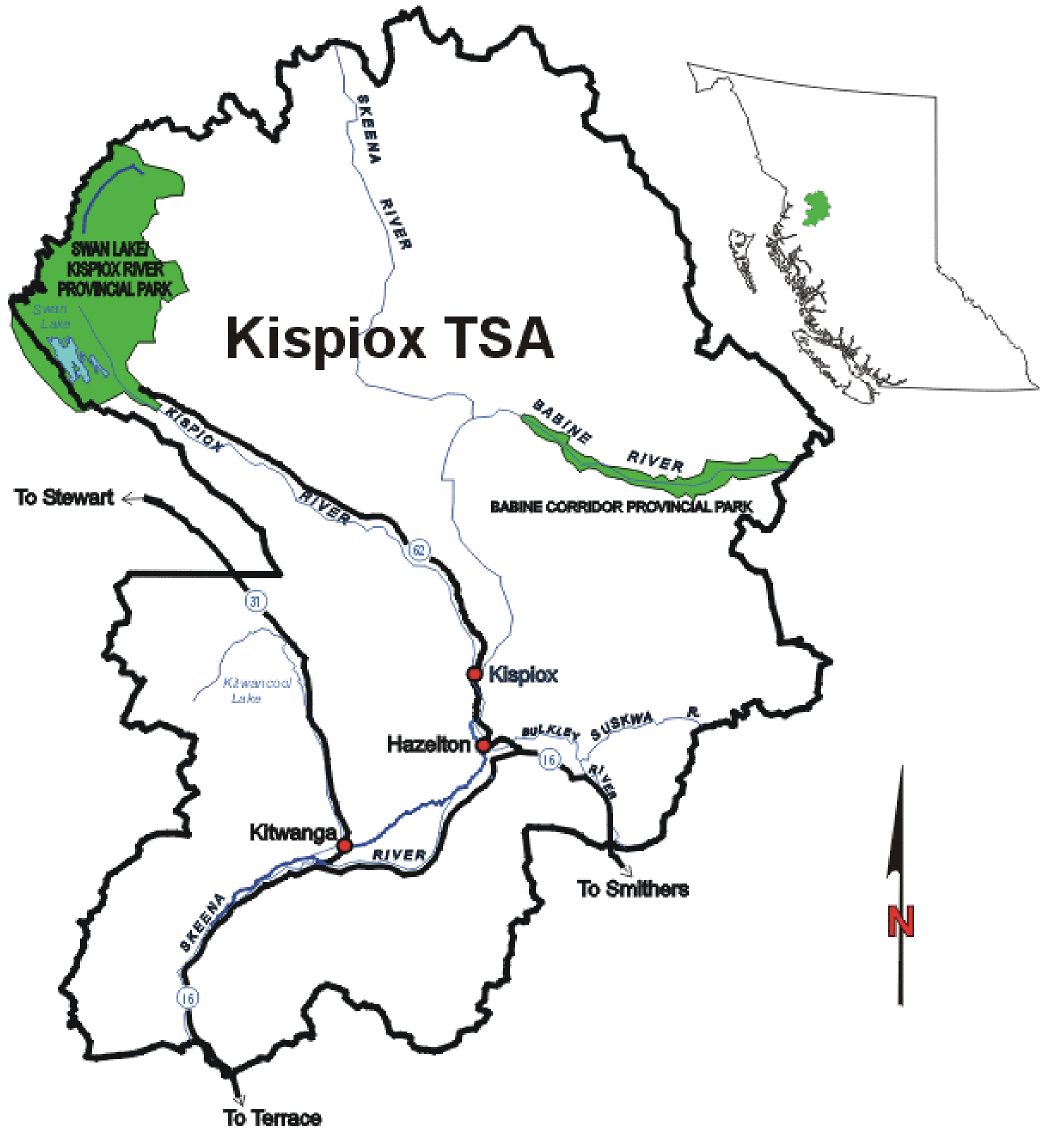
[35] OIC#121 is due to expire on February 12, 2005 and is reviewed annually. The Government of BC receives $1/$m^3$ fee in lieu of manufacture from exporters. The cedar harvest is excluded.

[36] Timber classification is based on MSRM research and is reflected in its area analysis. In Appendix II is a table that shows MSRM's classification of the plan area's stand quality by log type.

[37] NSFP has cutting permits for approximately 580 000 m^3 in the north of Babine River area, and approximately 300 000 m^3 lies to the east of Shenismike Creek. The east/west split in stand composition could tie into the strategic fibre needs of regional processors, with NSFP focusing on hembal stands to feed its processing facilities in Terrace and Prince Rupert and transferring cutting permits (and their silviculture obligations) east of Shenismike Creek to a company that focuses on a spruce-pine-fir mix. The preceding observations are speculative but the trend is towards rationalization and cost reduction in the regional and BC forest industry.

A map of the Kispiox TSA is provided below [BC Ministry of Forests May 2002].



3.3 Forest Industry Indicators

The following table presents the indicators that were used in this project to assess forest resource impacts and gauge economic development impacts related to the forest industry under the Baseline and SRMP Scenarios.

Exhibit - Forest Industry Economic Development Indicators

Indicator	Metric	Rationale
Timber Harvesting Land Base (THLB)	ha, m^3	THLB's area and volume indicate the resource opportunity, at a broad level, for harvesting timber.
Annual Timber Supply	m^3	The volume of timber that can be sustainably harvested indicates the *potential* supply of timber that can be annually harvested.
Stand Quality	m^3	Stand quality determines the type of log, such as saw log and pulp log, which points to the economic value of timber.
Annual Timber Harvest	m^3	The volume of timber that is annually harvested (historic) or is likely to be harvested (projection) indicates marketplace demand.
Direct forest industry employment and employment income (regional & provincial)	PY/m^3, PY, \$/PY, \$/ m^3	Direct forest industry employment and employment income are measures of the economic activity that the wood fibre of the plan area supports (historic) or can support (projection).
Indirect, induced & total forest industry employment income (regional & provincial)	PY/m^3, PY, \$/PY, \$/ m^3	Indirect, induced and total forest industry employment income are additional measures of economic activity tied to the plan area's wood fibre.

3.4 Timber Harvesting Landbase (THLB)

3.4.1 Kispiox TSA THLB Indicator Results

The following table presents the estimated impact of a WBSRMP implementation on the Kispiox TSA's THLB.

Exhibit - THLB Impact Calculations[38]

THLB Factors	THLB (ha)	% of Kispiox THLB Area
Kispiox TSA Current Timber Harvesting Landbase	263,046	100%
West Babine plan area THLB	67,289	25.6%
Minimum THLB Area Impact* due to: No harvesting in protected area, old-growth management area, Shelagyote-Babine Tourism Node & Atna-Shelagyote SMZ	- 5,314	- 2.0%
Maximum THLB Area Impact* due to: No harvesting in protected area, old-growth management area, Shelagyote-Babine Tourism Node & Atna-Shelagyote SMZ and 100% impact due to management directions for Connectivity Corridors, Wildlife Movement Corridor, & Grizzly Bear habitat zones	- 10,622	- 4.0%
Anticipated THLB Area Impact* due to: No harvesting in protected area, old-growth management area, Shelagyote-Babine Tourism Node & Atna-Shelagyote SMZ and partial impact due to management directions for Connectivity Corridors, Wildlife Movement Corridor, & Grizzly Bear habitat zones	- 7,880	- 3.0%

Source: Enfor Consultants Ltd.'s calculations as presented in Appendix III

3.4.2 West Babine THLB Indicator Results

The following two tables show area analysis results for the following:

- West Babine THLB area and volume in the plan area
- Percentage of the plan area's THLB area and volume by zone

[38] See Appendix III for an explanation of the estimation methods and more detailed presentation of the area netdown by zone.

Exhibit – West Babine THLB Area Indicator Results

Resource Indicators	Total (ha)	Protected Areas	Old Growth Manage-ment Areas	Shelagyote / Babine Tourism Node	Atna/ Shelagyote SMZ	Connectivity Corridors	Shenismike Wildlife Movement Corridor	Babine SMZ	High Value Grizzly Bear Habitat Zones	Integrated Resource Management
Area										
SRMP Scenario	67 289	0%	1%	1%	7%	6%	1%	7%	13%	64%
Baseline Scenario	67 289	0%	0%	NA	1%	2%	NA	8%	9%	80

Exhibit – West Babine THLB Volume Indicator Results

Resource Indicators	Total (m^3)	Protected Areas	Old Growth Manage-ment Areas	Shelagyote / Babine Tourism Node	Atna/ Shelagyote SMZ	Connectivity Corridors	Shenismike Wildlife Movement Corridor	Babine SMZ	High Value Grizzly Bear Habitat Zones	Integrated Resource Management
Volume										
SRMP Scenario	20 147 377	0%	1%	1%	7%	7%	1%	7%	13%	63%
Baseline Scenario	20 147 377	0%	0%	NA	1%	2%	NA	8%	10%	79%

3.4.3 THLB Indicator Results Discussion

The anticipated negative THLB area impact from a WBSRMP implementation is an effective netdown of an estimated 7,880 ha, 3.0% of the Kispiox TSA's THLB of 263,046 ha.

- The THLB netdown impact is more significant on a plan area basis, negatively affecting 12% of the West Babine's THLB (of 67,289 ha).
- A WBSRMP implementation would lead to a 20% reduction of the timber harvesting land base (a reduction of 10,822 ha) in the Integrated Resource Management (IRM) areas.[39]
- Pre-WBSRMP, 80% of the area's Timber Harvesting Land Base (THLB) was in an IRM area and when the plan is implemented, 64% of the THLB will be in an IRM area. Most of the shift arises from the expansion of the Atna/Shelgyote SMZ; pre-WBSRMP it had only 1% of the THLB and on plan implementation it will account for 7% of the THLB.
- The draft plan prohibits commercial timber harvesting in the Atna/Shelagyote SMZ, thereby reducing timber supply potential in the plan area and TSA. However, timber quality in the Atna-Shelagyote SMZ is poor[40] and its logging costs are high so setting its timber off-limits for harvesting has no practical impact on the forest industry as it very likely would not be logged. Removing the Atna/Shelagyote SMZ's THLB leaves the draft WBSRMP negatively affecting only 6% of the West Babine's THLB and 1.5% of the plan area's THLB.
- 13% of the THLB is in high value Grizzly Bear Habitat Zones, which pre-plan accounted for 9% of the THLB. The draft plan causes long-term deferrals and extended rotations in this zone.
- The draft plan's requirements for high retention in Connectivity Corridors will reduce timber availability and growth potential in these areas. Pre-WBSRMP, 2% of the THLB was in connectivity corridors; upon plan implementation, 7% of the THLB will be in connectivity corridors, including 1% in the Shenismike.

[39] The area analysis data, reported herein, is sourced from a GIS analysis prepared by the Smithers Office of BC Ministry of Sustainable Resource Management [BC Ministry of Sustainable Resource Management 2003b].
[40] Silvicon Services Inc. (April 2003) *Access and Timber Development Strategy Evaluation for Shnismike/Shelgyote Triangle and Gunanoot Lake North.* Prepared for BC Ministry of Sustainable Resource Management.

3.5 Stand Quality

3.5.1 Indicator Results

The following two tables present area analysis results for the following:

- West Babine timber stand quality volume by log type
- Percentage of the plan area's timber stand volume by stand quality and zone

Exhibit – West Babine Stand Quality Indicator Results for Baseline Scenario

Resource Indicators	Total Volume of Indicator (m^3)	% in Protected Areas	% in Old Growth Management Areas	% in Shelagyote / Babine Tourism Node	% in Atna/Shelagyote SMZ	% in Connectivity Corridors	% in Shenismike Wildlife Movement Corridor	% in Babine SMZ	% in High Value Grizzly Bear Habitat Zones	% in Integrated Resource Management
THLB total	20 147 377	0	0	NA	1	2	NA	8	9	80
Stand Quality - Pulp	13 508 446	0	0	NA	2	1	NA	2	6	89
Stand Quality - Marginal Sawlog	2 495 220	0	0	NA	1	4	NA	15	21	60
Stand Quality - Sawlog	2 558 859	0	0	NA	0	3	NA	21	18	58
Stand Quality - Young	679 866	0	0	NA	0	2	NA	21	11	66

Exhibit – West Babine Stand Quality Indicator Results for SRMP Scenario

Resource Indicators	Total Volume of Indicator (m^3)	% in Protect-ed Areas	% in Old Growth Manage-ment Areas	% in Shelagyote / Babine Tourism Node	% in Atna/Shela-gyote SMZ	% in Connectivity Corridors	% in Shenismike Wildlife Movement Corridor	% in Babine SMZ	% in High Value Grizzly Bear Habitat Zones	% in Integrated Resource Management
THLB Total	20 147 377	0	1	1	7	6	1	7	13	64
Stand Quality - Pulp	13 508 446	0	1	1	9	6	0	2	12	69
Stand Quality - Marginal Sawlog	2 495 220	0	2	0	8	9	1	15	23	44
Stand Quality - Sawlog	2 558 859	0	1	3	2	5	3	18	14	54
Stand Quality - Young	679 866	0	1	5	2	2	0	18	13	60

3.5.2 Indicator Results Discussion

As shown in the preceding table, a relatively small amount (110 974 m^3) of saw log quality timber is being shifted out of IRM areas through a WBSRMP implementation, a 7% decrease from the Baseline Sceanrio.

- The shift of THLB from IRM areas to other zones mainly affects pulp and marginal saw log quality stands. The Spruce and Pine saw log quality stands in IRM zones experience smaller declines; from 51% to 48% for Spruce stands and 85% to 77% for Pine stands.
- Approximately 76 000 m^3 of saw log quality timber is found in the Shelagyote-Babine Tourism Node. The new tourism node zone, where timber harvesting will be limited, accounts for 5% of the Pine saw log area. Harvesting is prohibited in this zone except for a NSFP cutting permit that is expected to be grandfathered.
- Based on log quality determination standards shown in Appendix II, the overall pulp content of the plan area's standing volume is high at 67%. The plan area's timber profile makes having a stable, large buyer of pulp fibre as a lynchpin to a profitable harvesting and processing forest industry in the region. The Eurocan pulp mill at Kitimat relies on residual sawmill chips, mainly from West Fraser sawmills. Another source is needed to offset the cost of harvesting pulp logs. An oriented strandboard (OSB) plant is a possible alternative if costs can be lowered to make its input fibre costs economical for operation in the northwest region.

3.6 Timber Supply

3.6.1 Indicator Results

The following table presents the estimated annual timber supply impact of a WBSRMP implementation on the Kispiox TSA's Allowable Annual Cut (AAC).

3.6.2 Kispiox TSA Timber Supply Indicator Results

Exhibit – Timber Supply Impact Calculations[41]

Timber Supply Factors	Timber Supply (m^3/year)	% of Kispiox TSA AAC
Kispiox TSA AAC	977,000	100%
West Babine plan area timber supply (approximate contribution to the Kispiox TSA AAC) under current management (Baseline Scenario)	250,000[42]	25.6%
Minimum THLB Area Impact* due to: No harvesting in protected area, old-growth management area, Shelagyote-Babine Tourism Node & Atna-Shelagyote SMZ	- 19,735	- 2.0%
Maximum THLB Area Impact* due to: No harvesting in protected area, old-growth management area, Shelagyote-Babine Tourism Node & Atna-Shelagyote SMZ and 100% impact due to management directions for Connectivity Corridors, Wildlife Movement Corridor, & Grizzly Bear habitat zones	- 39,451	- 4.0%
Anticipated THLB Area Impact* due to: No harvesting in protected area, old-growth management area, Shelagyote-Babine Tourism Node & Atna-Shelagyote SMZ and partial impact due to management directions for Connectivity Corridors, Wildlife Movement Corridor, & Grizzly Bear habitat zones	- 29,269	- 3.0%
West Babine plan area timber supply (approximate contribution to the Kispiox TSA AAC) under WBSRMP implementation	220 000	- 22.6%

*Source: Enfor Consultants Ltd.'s calculations

3.6.3 Indicator Results Discussion

The estimated annual timber supply impact of a West Babine SRMP implementation is an approximate reduction of 30,000 m^3 (- 3.0%) from the Kispiox TSA's AAC of 977,000 m^3.

- ✧ This impact is a relatively small amount (4% of the TSA AAC) and may contribute to a reduction of the TSA's AAC by the Chief Forester in the currently underway Timber Supply Review 3. *However, it is not anticipated that a WBSRMP implementation will result in an AAC reduction through a Chief Forester decision in Timber Supply Review 3.*[43] In setting the AAC effective January 2003, the Chief Forester foresaw 12% AAC reductions by decade, reaching the long term harvest level of 430 000 m^3 by the eighth decade. It is not clear at this juncture if the effective netdown from a WBSRMP implementation will necessitate an AAC reduction greater than the anticipated 12% reduction in 2013.

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[41] See Appendix III for an explanation of the estimation methods and more detailed presentation of the area netdown by zone.
[42] AAC of 977,000 m^3 / THLB of 263,046 ha = 3.714 m^3/ha, which is multiplied by 67,289 ha to provide a West Babine timber supply estimate.
[43] However, other factors, such as areas being seen as no longer economically operable, may combine with the WBSRMP factor and lead to the Chief Forester setting a lower AAC for the TSA.

- From a harvesting standpoint, the TSA has experienced a substantial undercut for the past few years. The WBSRMP netdown will not lead to a reduction in TSA harvest activity because an undercut is expected in the short-term and will persist unless processing capacity, fibre ownership and stumpage issues are resolved so that regional wood product manufacturers can operate in at least the middle of their industry cost curves. Given the difficulties in the region's forest industry and the difficulty of altering stumpage and harvest regulations on a spot area basis because of Canada-US lumber trade disputes, it is not known when the full AAC will be harvested again. The fate of the leading hemlock-balsam stands largely depends on the efforts to re-open the Prince Rupert pulp mill. A more buoyant hemlock lumber market would spur some buying by West Fraser's Terrace mill but not likely on a large scale because of the mill's smaller size and company forest licenses.
- The shown West Babine plan area annual timber supply of 250 000 m^3 per year (under current management) is based on an average AAC timber supply per hectare of 3.714 m^3/ha for the Kispiox TSA. The West Babine's timber supply is managed as part of the Kispiox TSA's timber supply so a long-term harvest level has not been determined for the plan area as a separate entity. MOF manages the timber supply in the Kispiox TSA on an overall basis in consultation with its' stakeholders. The THLB netdowns and operating constraints of a SRMP implementation will be taken into account during Timber Supply Review 3, currently underway. The long-term impact on timber supply would amount to approximately 2 to 4% in each decade, resulting in a long term reduction of 8,600 to 17,200 m^3/year (based on a long term harvest level of 430 000 m^3/year for the TSA) once the timber flow has stabilized in eight decades.
- A WBSRMP implementation suggests a 12% reduction to 220 000 m^3 (from 250 000 m^3 for the plan area's annual timber supply estimate. This figure does not denote an annual long-term harvest volume, which takes into account sustainability, because the plan area is not managed on that basis. The actual annual harvest in the West Babine could be managed at a higher or lower annual level than 220 000 m^3 depending on the management needs for the Kispiox TSA. Given the historic pattern of harvesting in the TSA, it is likely that the plan area could be more heavily harvested than the 3.174 m^3 per ha AAC average in order to take some pressure off the southern TSA's portions.

3.7 Forest Industry Employment

3.7.1 Indicator Results

As an indicator of the level of forest industry employment that the plan area could support the following table shows estimates of annual potential forest industry employment arising from harvesting West Babine timber based on the following four harvest volume scenarios:

- 70 000 m^3 – estimated current annual harvest volume in the West Babine plan area
- 220 000 m^3 – based on multiplying WBSRMP constrained THLB contribution (59 409 ha) by TSA-wide m^3/ha AAC average of 3.714
- 250 000 m^3 – based on multiplying unconstrained THLB contribution (67 289 ha) by TSA-wide m^3/ha AAC average of 3.714
- 300 000 m^3 – based on NSFP, KFP and BCTS forest development plan volumes[44]

[44] An estimation of annual timber harvest in the West Babine that uses forest development plans arrived at an almost 300,000 m^3 timber supply in the short-term. The following table gives the basis for this estimate, a calculation that uses each licensee's Kispiox TSA AAC and their Forest Development Plan (FDP) shares of WBSRMP harvesting to estimate the annual potential timber harvest.

Exhibit - Estimated WBSRMP share of Kispiox TSA AAC (m^3)

Different harvesting scenarios are possible because MOF manages timber supply unevenly across the TSA, (balancing various interests) and licensees have imbalanced harvesting preferences across the TSA. For example, little harvesting has occurred north of the Babine River but intensive harvesting could occur there if licensees wanted to log the area and MOF chose to accommodate by issuing cutting permits. The intensive harvesting in the TSA has occurred closer to the mills. If NSFP and KFP (or whomever assumed responsibility for their licensed volumes) were viable financial entities and log markets were buoyant, it is possible that higher volumes than shown could be logged for several years in the plan area.

A critical assumption in this estimation of plan area potential employment is that there would be similar wood processing capacity in the TSA as existed in the late 90s. The province-wide employment estimation is not tied to plan area processing but does assume that there is an economically sound market for the area's pulp chips.

Projections of forest industry employment that would be supported by the harvest of plan area timber[45] are presented in the following table.

Exhibit - Forest Industry Employment[46] (PYs) Indicator Results for West Babine Harvest Scenarios

	Estimated current annual harvest	WBSRMP constrained THLB	Baseline Scenario THLB	Pre-WBSRMP Forest Development Plans
Annual harvest volume	**70 000 m^3**	**220 000 m^3**	**250 000 m^3**	**300 000 m^3**
Kispiox TSA				
Direct silviculture & harvesting	21 PYs	66 PYs	75 PYs	90 PYs
Direct Processing	8	55	62	75
Total Direct	29	121	137	165
Indirect/induced	11	35	40	40
Total Direct + Indirect/induced	40	156	177	205
Province-Wide				

Licensee	Kispiox TSA apportionment (m^3)	WBSRMP % of Licensee's TSA Chart Volume	Estimated WBSRMP annual harvest (m^3)
New Skeena FP	547 974	32%	175 352
Kispiox FP	94 559	78%	73 756
BC Timber Sales	242 466	19%	46 069
Total			295 177

[45] The estimates represent employment tied to harvesting and processing of timber from the plan area only. The estimates do not include employment of Kispiox TSA residents arising from harvesting or processing of fibre from outside the plan area.

[46] Ratios of employment and employment income per m^3 of harvested timber based on experience in the Kispiox TSA are used to develop this report's forest industry impact estimates [BC Ministry of Forests May 2002]. MOF developed these ratios to prepare the Kispiox TSA Timber Supply Review and they are presented in Appendix IV.

	Estimated current annual harvest	WBSRMP constrained THLB	Baseline Scenario THLB	Pre-WBSRMP Forest Development Plans
Direct silviculture & Harvesting	24	75	85	102
Direct Processing	35	110	125	150
Total Direct	59	185	210	252
Indirect/induced	71	222	252	303
Total Direct + Indirect/induced	130	407	462	555

3.7.2 Indicator Results Discussion

In the short-term, a netdown of THLB area and operating constraints arising from the WBSRMP will not reduce forest industry employment because of the TSA's expected undercut, i.e. the full AAC is not being harvested.[47] It is not clear that the anticipated 30 000 m^3 timber supply impact will translate into reduced forest industry employment in the long-term as the timing and scope of the recovery of the northwest timber industry cannot be predicted at this juncture.

From a regulatory standpoint, it is not anticipated that a WBSRMP implementation will result in an AAC reduction through a Chief Forester decision in Timber Supply Review 3,[48] in part because of the anticipated undercut. In this situation, with no AAC reduction, the industry would have the ability to harvest the full AAC if market conditions fuel this level of log demand.

If there was an employment impact from the THLB netdown, it would be in the order of 9 PYs per year[49] of direct forest industry employment in the TSA at risk and approximately 25 PYs on a province-wide basis at risk. These figures represent an upper level impact in the long-term; no negative short-term impact is anticipated.

- Direct forest industry employment supported by the current annual harvest of 70 000 m3 is 29 PYs in the Kispiox TSA[50] and 59 PYs on a province-wide basis.
- The potential annual direct forest industry employment on a province-wide basis from harvesting West Babine timber ranges from 185 to 252 PYs. The harvest volume drives forest industry employment. Kispiox TSA direct forest industry employment would range from 121 to 165 PYs. In addition there would be substantial amounts of indirect and induced employment spurred by the direct forest industry activity. Total employment impact on a province-wide basis range from 407 to 555 PYs and from 156 to 205 PYs on a TSA basis. These estimates were assembled from the preceding AAC estimate and employment and employment income ratios prepared by MOF for the Kispiox

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[47] 977 000 – 30 000 leaves 947 000

[48] However, other factors, such as areas being seen as no longer economically operable, may combine with the WBSRMP factor and lead to the Chief Forester setting a lower AAC for the TSA.

[49] This estimate assumes no local wood processing of this plan area fibre in the TSA. It is assumed that the logs would have been trucked to PIR's Smithers mill. Only TSA silviculture and harvesting employment is seen as being at risk at this juncture.

[50] This estimate assumes KFP's Hazelton mill is operating. The calculation for processing employment in the TSA used KFP's estimated harvest volume of 30 000 m^3.

TSA. The potential estimated annual harvest and employment for each current licensee are shown in the following table.

Although there is substantial potential employment attached to the plan area's timber harvest, most remains potential at this juncture. The financial difficulties of NSFP and KFP and the Canada-US lumber trade dispute has led to harvesting well below AAC levels. BCTS award holders will harvest timber in the plan area. If KFP does not harvest, it will likely make arrangements with PIR or a contractor to harvest a similar volume to what it has been harvesting in the Hanawald area. NSFP plans to harvest but the extent of its harvesting will not be known until it emerges from bankruptcy proceedings and the extent of its mill operations are known. Harvesting in the north of the Babine River area, where new roads and bridges are needed to access the timber, will require the re-opening of NSFP mill operations. The re-opening of NSFP's Prince Rupert pulp mill is important for the short term viability of KFP, as well as for NSFP's sawmill operations.

- In the long-term, the full amount of the available annual supply will very likely be harvested because of province-and continent-wide coniferous fibre constraints in the face of steady demand. Also in the long term,[51] employment per cubic metre may vary from current estimates because of technology changes and regulatory directives.
- Projecting employment derived from harvesting timber in the plan area is highly speculative because only one mill is operating in the TSA, the Kitwanga mill[52] that NSFP is in the process of selling to an Alberta-based company. West Fraser's Smithers sawmill in the neighbouring Bulkley TSA buys spruce and pine (but not hemlock) logs from the Kispiox TSA, an estimated 100 000 m^3 over the past two years.[53]

KFP harvested timber in the Hanawald area of the West Babine this winter (approximately 25,000 m^3) but closed its Hazelton mill in March 2004. It was giving its pulp logs away to its logging contractor, who was decking them in harvesting areas or selling the dry wood to Decker Lake, a small mill between Burns lake and Houston that specializes in milling lower value dry wood. The lack of a regional outlet for pulp logs since the closure of NSFP's pulp mill is a serious shortcoming because of the high proportion of pulp quality timber in the West Babine plan area and Kispiox TSA timber profile.[54] This gap in processing capacity places significant financial constraints on regional saw mill operators and timber harvesting rights holders. KFP could no longer operate its Hazelton saw mill in the absence of a financially viable market for its pulp logs; the financial returns from the saw log component of its cut blocks could not sustain its woodlands and mill operations.

BCTS award holders are harvesting an estimated 40 000 m3 from its chart areas south of the Babine River. These award holders are currently selling their logs to Pacific Inland Resources (PIR) at Smithers. There is a limitation on the amount of hemlock and balsam this PIR mill will accept because it focuses on producing a pine-spruce-fir mix.

NSFP will no longer operate its Carnaby sawmill and there are unlikely to be buyers for it because the mill is not suitable for efficiently milling the area's timber profile.

There are several factors that weigh against economically harvesting in the West Babine plan area at this time and they include the following:

[51] Growth and harvest of BC coniferous harvests occurs over a relatively long cycle, often in the vicinity of 70-80 years. In this paragraph, the short term is viewed as the next 10 years. The long term is 10-20 years.
[52] currently one shift
[53] Pers. comm., Gord Gunson, PIR
[54] West Fraser's Eurocan pulp mill in Kitimat is the only regional outlet for pulp quality fibre but it is purchasing only residual chips and hog fuel from non-West Fraser suppliers. Pulp mills to the east of the northwest region will not currently take hemlock chips or residuals.

- Lack of a financially viable market for regional pulp logs[55]
- Diminished sawmilling capacity in the region
- Large available volumes of beetle kill wood in nearby TSAs, such as the Lakes TSA
- BC Government stumpage system and utilization, bucking and waste assessment standards do not account well for outlier timber stands, such as the decadent hembal stands in the West Babine area[56]

Due to the preceding reasons and the continued financial difficulties of NSFP, there is unlikely to be a substantial amount of harvesting in the plan area in the short-term. The key factor is the lack of a large, stable market for pulp chips. In the longer term, there will have to be resolutions of the aforementioned factors in order to spur interest in harvesting and processing timber in the plan area.

[55] A report for the Office of the Premier observed that *"In the Northwest, the high pulp log content of the forests and the high cost of delivering pulp logs to sawmills or chipping plants, plus chipping, substantially exceeds the price paid for by-product chips by the pulp mills. This 'pulp log issue' is very significant and is one of the major reasons why Skeena's Prince Rupert pulp mill has not been profitable"* [Cheston Forest Consulting Ltd. January 2000].

[56] In a report to the BC Government, a former Deputy Minister of Forests recommended consideration that a third appraisal area in the northwest be established to go along with the current Coast and Interior appraisal areas. The discussion focuses around blending stumpage rates across a defined region (i.e. Kispoix, Nass, Cranberry, North Coast TSAs) to make it more economical to harvest and modifying utilization standards and bucking and waste assessment standards to allow pulp quality timber to be considered waste without financial penalties.

4 TOURISM AND RECREATION ECONOMIC DEVELOPMENT

4.1 Background

The Babine River is internationally known for its steelhead fishing in a wilderness environment and is also becoming known nationally and internationally for rafting, kayaking and grizzly bear viewing. The BC Legislature has designated it as one of ten Class 1 rivers in the province.[57]

Babine River Corridor Provincial Park, an approximately 1 km wide corridor, stretches from the Kisgegas Reserve, its westernmost point to two kilometres downstream from Nilkitkwa Lake at its eastern edge. Approximately 65% of the park is in the West Babine plan area. It was established as a Class A Provincial Park in 1999 pursuant to recommendations for protection in each of the Bulkley and Kispiox Land and Resource Management Plans and Babine Local Resource Use Plan. The park corridor is buffered by a 500 – 1 000 m wide special management zone (Babine River Valley SMZ).

The commercial tourism operators in the Babine River area include three angling lodges, seven river rafting companies, two guide-outfitters and one helicopter touring company. The majority of the spending comes from visitors to the steelhead fishing lodges, only one of which is located in the WBSRM Plan area.

Angling is concentrated on the upper reaches between the fish weir and Thomlinson Creek. Between this creek and Big Slide, the river narrows and becomes rocky with steep walls and the whitewater that kayakers and rafters want. The river enters a canyon as it nears Big Slide. Below Shedin Creek to the confluence with the Skeena, the river opens up once again.

A study prepared for the Babine River Foundation estimated that, in 2001, there was a total of 716 tourists in the vicinity of the Babine River and they spent an estimated $3 865 391[58] in the plan area, approximately $800 per day [Pacific Analytics and O.R. Travers Forestry Consultants October 2002]. These are visitors who were guests of either the angling lodges, or the rafting companies or the guide-outfitters. The following table presents a breakdown of visitation and spending by type of business.

[57] Fishing opportunities are limited by the Class I permit system to give first priority to Canadian residents and second to non-residents. There are six Class II angling rivers in the region: the Skeena, Kispiox, Suskwa, Bulkley, Kitseguecla and Kitwanga. Class I requires a visually unmodified landscape whereas the Class II designation does not. The designation system was established to protect superlative sport fishing opportunities as angling pressures increase.

[58] The lodge packages are all inclusive but their visitors seem to spend approximately double the per day package fee in total.

Exhibit – 2001 Visitation for Babine River Area Commercial Tourism Operations

	Visitors	Visitor Days
Angling lodges	379	2 653
Rafting companies	158	960
Guide outfitters	111	1 015
Total	648	4 628

Source: pers. comm.. J Johnson, Pacific Analytics Inc.

The exact number of recreational freshwater fishers is unknown. The lodges are estimated to account for 60% or more of Babine River steelhead angling.[59] That estimate suggests approximately 1 000 rod-days for non-guided resident and non-resident anglers on the Babine River, most would likely be occurring outside of the plan area because of water access difficulties. The authors of the aforementioned Babine River Foundation Report estimated approximately 600 local recreationists visited the Babine River area in 2001.

<u>Official visitation statistics are not available specifically for the Babine River area.</u>

Currently local visitation to the Babine River area occurs outside of the WBSRM Plan area. It is focused on the boat launch and angling opportunities in the vicinity of the fish weir in the upper portion of the river.

An information kiosk was operated between late July and late November in 1994 and 1995 at km 54 on the Nilkitkwa road to provide information on the area to visitors. In 1995, 408 check-in and 207 check-out forms were collected [SKR Consultants 1996]. Eighty-six percent were BC residents (most were local residents: Smithers- 53%; Babine area – 12%; Houston – 7%; Telkwa – 7%; and Moricetown/ Hazelton – 1%). Seven percent were from the US. Fifty-one percent listed angling as their main activity. Other listed activities include wildlife viewing – 20%; hunting - 6%; forest industry – 13%; touring – 13%; hiking/camping – 6%; and whitewater kayaking/rafting – 3%.

The local anglers visited for one day on average and the average party size was 2.7 persons. Over 90 percent arrived by truck. An estimated fifty percent of the visitors to the area used the kiosk [Quanstrom 1995]. *Therefore, possibly 800 individuals visited the area in the summer and fall in recent years.*

The authors of an extensive survey of Babine River users identified carrying capacity constraints on the river when they concluded that *"According to respondents to the questionnaire, boating use, steelhead angling and sockeye angling on the Babine River already approaches or exceeds the capacity of the river to provide the kind wilderness recreation experiences they desire. This indicates a need for some management action to bring use in line with capacity."* [Hillcrest Recreation Consulting, Chipeniuk, R., and Davis, Lack & Associates March 2001]

In 1993, the Ministry of Forests sponsored a survey of three groups having an interest in the Babine River (41 local residents, 50 river users, 84 attendees at an Outdoor Recreation Council symposium on rivers). The main activity of the river users (86%) was angling. Photography and wildlife viewing overlapped with angling for many. Forty-six percent of the users stayed at one of the three lodges. Over half were

[59] Pers. comm. D. Atagi, MWALP

from BC and almost a third were from the US. Almost 40 percent used the weir/bridge area as a base camp. Over 95 percent spent more than three days on the river. The breakdown for mode of transport to access the river was as follows: jet boats – 43% (reflecting the proportion of lodge visitors); rafters – 15.7%; canoeists and kayakers – 14.7%; hike-in – 21.6% (probably anglers who fish in the vicinity of the weir); and fly-in – 5%. The primary reasons listed for visiting the river were "being close to nature," "learning about nature" and seeking adventure and solitude." Given the high value placed on solitude and wilderness, it is significant that two-thirds perceived no crowding problems on the river [BC Ministry of Forests December 1993].

Outside of the plan area, the Hazeltons have become a popular stopover for Americans and Canadians travelling to Alaska and the territories since the 1973 opening of the Cassiar highway. Highway improvements and increased ferry traffic through Prince Rupert have contributed to the growing highway tourism market.

While there are few built attractions in the region, one of the most popular and well-known facilities is 'Ksan, a Gitx̲san village replica constructed in 1970 which includes traditional longhouses, a museum, art exhibition centre, carving school, gift shop, totems, art studios and interpretive tours. The yearly visitation appears to have remained steady at about 50 000 over the previous decade [Crane Management Consultants April 1998 and Meredith & Associates and The Office of the Wet'suwet'en November 2002].

Other popular activities in the Babine River watershed include hunting, wildlife viewing and camping.

Further information on the plan area's tourism and recreation industries is provided in Appendix I.

4.2 Tourism and Recreation Indicators

The following table presents the indicators that were used in this project to assess tourism resource impacts and gauge economic development impacts related to the tourism industry under the Baseline and SRMP Scenarios.

Exhibit - Tourism and Recreation Economic Development Impact Indicators

Indicator	Indicator Classes & Measurement Units	Rationale
Protection and Special Management Zone Area	Hectares (ha)	In protection and SMZ areas, tourism resources are protected from risk of damage through development. The degree of protection is tied to the protection designation and the SMZ's management prescriptions.
Visual Quality Objectives	P-reservation, R-retention PR–partial retention M-modification	Visual Quality Objectives (VQOs)[60] are resource management objectives established by the district manager [BC Ministry of Forests] or contained in a higher level plan that reflect the desired level of visual quality based on the physical characteristics of and social concern for the area. They are used to identify the level of alteration that would be acceptable on a viewscape.
Direct tourism industry employment and employment income (regional & provincial)	PY/m^3, PY, $/PY, $/ m^3	Direct tourism industry employment and employment income are measures of the economic activity that the tourism resources of the plan area supports (historic) or can support (projection).
Indirect, induced & total tourism industry employment and employment income (regional & provincial)	PY/m^3, PY, $/PY, $/ m^3	Indirect, induced and total tourism industry employment and employment income are additional measures of economic activity tied to the plan area's tourism resources.

4.3 Protection and SMZ Area

4.3.1 Indicator Results

The following table presents area analysis results for the following:

- Gross land base
- percentage distribution of Gross Land Base area by zone for the Baseline and SRMP Scenarios

[60] VQO classes are described as the following: Preservation – no visible change occur in the landscape from forest development practices; Retention – forest management activities or alterations not be visibly apparent; Partial retention – forestry alterations remain visually subordinate to the characteristic landscape; and Modification – forestry alterations can dominate the original landscape.

Exhibit – Protection and SMZ Area Indicator Results

Resource Indicators	Total Area of indicator	Protected Areas	Old Growth Management Areas	Shelagyote / Babine Tourism Node	Atna/Shelagyote SMZ	Connectivity Corridors	Shenismike Wildlife Movement Corridor	Babine SMZ	High Value Grizzly Bear Habitat Zones	Integrated Resource Management
Baseline Scenario										
Gross Land Base Area	235 235 ha	4%	2%	NA	21%	3%	NA	4%	8%	59%
SRMP Scenario										
Gross Land Base Area	235 235 ha	4%	9%	1%	26%	5%	1%	3%	13%	39%

Source: MSRM

4.3.2 Indicator Results

The draft SRMP does not add new protected areas but it does create two new special management zones and increase the area of existing special management zones at the expense of the Integrated Resource Management Zone, thereby enhancing protection of tourism and recreation resources for current and future tourism operators, tourists and recreationists.

- Logging is excluded from Old-Growth Management Area and the Atna/Shelagyote SMZ. Connectivity Corridors, Shenismike Wildlife Movement Corridor, Babine SMZ and High Value Grizzly Bear Habitat Zones have management prescriptions that serve to protect various natural features and resources. A Babine Tourism Node of 2 108 ha is intended to protect tourism values in the vicinity of the Silver Hilton angling lodge. The draft management prescriptions prohibit logging in this zone except for a NSFP cutting permit that is grandfathered in the draft plan.
- The area of the Atna/Shelagyote is increasing by 25% to in the WBSRMP over its current size.
- The IRM zone is reduced from 59% to 39% of the plan area's gross land base in the draft SRMP. Old Growth Management Areas share of the GLB increase from 2% to 9%, high value grizzly bear habitat zones share of the GLB rises from 8% to 13%.
- The Atna/Shelagyote SMZ's share goes from 21% to 26%, a total of 62,112 ha, which is two-third the size of the IRM zone, and logging is prohibited under the draft plan therein.
- The specific measures in special management zones that will serve to better conserve resources and values that help underpin backcountry tourism in the West Babine are the following:
  - reduction of timber harvesting opportunity in the Shelagyote-Babine Tourism Node
  - no road building within the Shenismike Corridor
  - expansion of the Babine River SMZ between Hanawald and Shelagyote
  - Atna/Shelagyote SMZ expanded and direction for no harvesting applied[61]
  - Shelagyote-Babine Tourism Node, which helps protect viewscapes and grizzly bear habitat
  - Shenismike Corridor, which is quite important for the river rafters because a special feature of their trips is a half hour stop near Grizzly Drop where rafting tourists can view bears feeding on salmon
  - expanded Babine River SMZ between the Hanawald and Shelagyote areas, which helps manage access to the river

[61] Replace temporary deferral in Kispiox LRMP

4.4 Visual Quality

4.4.1 Indicator Results

The following table presents area analysis results for the following key tourism and recreation resource indicator by scenario:

- ✧ Total area classified as "Retention", "Partial Retention" and "Modified" VQOs by scenario
- ✧ Percentage of the area of "Retention", "Partial Retention" and "Modified" VQOs by zone and scenario

Exhibit – Visual Quality Objectives Indicator Results

Resource Indicators	Total Area of indicator	Protected Areas	Old Growth Manage-ment Areas	Shelagyote / Babine Tourism Node	Atna/Shela-gyote SMZ	Connectivity Corridors	Shenismike Wildlife Movement Corridor	Babine SMZ	High Value Grizzly Bear Habitat Zones	Integrated Resource Management
Baseline Scenario										
VQO - Retention	4 853 ha	0	0	NA	1	3	NA	15	20	61
VQO - Partial Retention	9 714 ha	0	0	NA	0	2	NA	27	22	49
VQO – Modified	5 409 ha	0	0	NA	1	7	NA	4	3	86
SRMP Scenario										
VQO - Retention	4 853 ha	0	1	0	8	9	1	14	22	45
VQO - Partial Retention	9 714 ha	0	1	4	0	4	4	23	18	46
VQO – Modified	5 409 ha	0	4	0	6	7	1	3	4	49

4.4.2 Visual Quality Indicator Results Discussion

The changes to Visual Quality Objectives occur indirectly through the draft SRMP's changes to zonation, i.e. some areas of VQO classes move from one zone to another as the result of a zone boundary change or creation. The SRMP process did not designate additional areas for VQOs and did not revise current designations.

- ✧ A small portion of the plan area (8.5%) and its THLB (29.7%) has been assessed and classified in terms of visual landscapes. The VQO classification is not an assessment of the land base in terms of the ability of its scenic viewscapes to support recreation or tourism activities. As a consequence, it should only be viewed as a very broad tourism value indicator.
- ✧ The increases in VQO area in the SRMP Scenario mainly occur in the Atna/Shelagyote SMZ at the expense of the IRM zone, thereby preserving certain viewscapes as no logging is permitted in the Atna/Shelagyote SMZ. The VQO zone with the most stringent alteration specifications, the Retention Zone, comprises approximately 3,600 ha of this SMZ.
- ✧ As a result of the new zonation proposed in the draft SRMP, the IRM zone's proportion of the area of Retention VQO drops from 61% to 45%, its share of Partial Retention VQO drops slightly from 49% to 46% and Modified VQO's share in the IRM zone goes down from 86% to 49% for the SRMP Scenario.

4.5 Tourism Employment and Employment Income

4.5.1 Indicator Results and Discussion

The current annual employment and employment income for Babine River area tourism operations are 29 PYs and $1 372 900[62], respectively. These figures were drawn from a Babine River Foundation study [October 2002] that described economic activity generated by the current commercial tourism operators in the Babine River area. That report covers the economic activities of one angling lodge located in the plan area and two steelhead angling lodges that are located outside the WBSRM Plan area.

- ✧ The current commercial tourism operators in the WBSRM Plan area have little or no room for expansion based on current permits so their future employment and employment income pictures will look much the same as does their current one. An exception is in the river rafting niche where BC parks has allocated two permits for First Nations that have remain unused to date but are likely to be used in the future. To date, the angling lodge operators have chosen not to use their facilities to offer other types of tourism experiences in the summer season.
- ✧ Increases in tourism activity in the plan area will come from new operations. The number and scale of these operations will be limited because the plan area's main tourism feature, the Babine River, is almost wholly located in Babine River Corridor Park. This factor severely limits the potential for undertaking new ventures that are connected to the river. Although a management plan has yet to be written for this park, BC Parks does not foresee opening up this park to further commercial development.[63] The difficult access into the Babine River area and competition from other wilderness

[62] Estimated annual income on a FTE basis, including gratuities and imputed rent, is $47,467. Does not include non-plan area tourism activities that are related to plan area tourism.
[63] pers. comm. K Zimmer, MSRM

experiences in BC that are either more accessible or spectacular have deterred new investment in the plan area to date.

- At this juncture, three tourism projects under discussion appear to have potential for successful implementation and they are as follows:
  - Skeena Air Guides Ltd.'s Sicintine to Hillary Lake hut-to-hut hiking and backcountry skiing project[64]
  - Heli-skiing project[65] proposed by Skeena Mountain Adventures in conjunction with Miluulak Wilp's project that includes a Kisgegas lodge, participation in First Nations cultural life such as fishing and berry picking, wildlife viewing and a 187-kilometre hiking trail to Bear Lake and over the Atna Range
  - Wilps Gwininitxw Cultural/Heritage lodge, wildlife viewing and hiking trails

  The negotiation of suitable arrangements with BC Parks and BC MWLAP for appropriate permits will be an important development hurdle, along with securing suitable financing. Skeena Air Guides Ltd. (Collingwood Bros.) hut-to-hut project and Skeena Mountain Adventures both have applications before LWBC for licenses of occupation. The Kisgegas lodge and Wilps Gwininitxw lodge will also require appropriate applications to LWBC if they require Crown land use. All three projects are included in the estimates of future tourism employment and economic value but the two cultural/heritage lodges are in the early developmental stages.

  The parameters of these projects are only known in general terms at this juncture. To include these projects in the tourism estimates for employment and net economic value, the authors relied upon secondary revenue, cost and employment information from the BC Ministry of Sustainable Resource Management's Building Blocks initiative[66] and the applications to LWBC by Skeena Air Guides Ltd. and Skeena Mountain Adventures. The employment and net economic value estimates for these

[64] This project would use Collingwood Bros existing guide and outfitting camps to service a new clientele.

[65] This is a combined heli-ski / cat-ski venture that has identified six ski zones in the Skeena Mountains north of Hazelton. The intent is to eventually provide accommodation at a First Nations themed lodge in a joint venture with Alice Jeffrey and Miluulak Wilp, to be sited near the Kisgegas reserve. The LWBC application also contemplates other lodge projects with other Wilps.

[66] Available at http://srmwww.gov.bc.ca/rmd/ecdev/analysis/building_blocks.htm
Another option for developing revenue, cost and employment estimates is to assume that the projects are comparable to one or more current operations. Recently MOF undertook a planning project to analyze different economic resource value scenarios from forestry and tourism [Forest Development Section February 2003]. The actual experience of a high end nature-based tourism lodge, Nimmo Bay Resort, was used as the example in that study. Based on its web site description Nimmo Bay Resort provides lodge time, private inter-tidal chalet meditation, coastal hiking, nature tours, rock climbing, hot tub, surf biking, fly fishing lessons, gourmandizing, uninterrupted sleep, and inter-tidal coastal kayaking. A variety of massage services are also available. Daily fly outs can be purchased during a visitor's stay. The maximum number of guests is 18 and the typical stay is four days and four nights. The cost for a basic package is $3 995 US per person. Nimmo Bay Resort and the U'mista Cultural Centre & Museum have partnered to create a First Nations cultural adventure. Its cost is $4 995 US per person [see http://www.nimmobay.bc.ca/lodge-retreat.html for information re Nimmo Bay Resort]. If a Kisgegas lodge had the same operating parameters as Nimmo Bay Resort, it would employ 21 staff, four of which would work year round. This employment would translate into 12 PYs of direct employment [Forest Development Section February 2003].

[67] The authors of this study attempted to contact representatives of the Gitxsan First Nation through MSRM's Aboriginal Projects and Consultation Co-ordinator but the Gitxsan First Nation representatives chose not to talk to the authors.

anticipated projects should be viewed as broad ones, subject to refinement as more information becomes available about their parameters.[68]

The hut-to-hut and heli-skiing ventures are slated to begin operations in 2004. The other two ventures do not have specific target start dates. For the purposes of this analysis, Miluulak Wilp's Kisgegas Cultural/Heritage lodge and Wilps Gwininitxw Cultural/Heritage lodge are projected to open in 2007.[69]

- ✧ Starting in 2004, it is estimated that the hut-to-hut project will support three seasonal staff (1.0 PYs[70]) and $47 000[71] of employment income. Operational for winter 2004-2005, Skeena Mountain Adventures is expected to support 12 staff,[72] likely 10 seasonal who will be seasonal and two full-time persons (5.5 PYs) and $260 000 of employment income. If the two First Nations cultural heritage projects come on stream in 2007, it is estimated that the Kisgegas lodge will each support 11 PYs[73] and $434 500 of employment income. The Wilps Gwininitxw Cultural/Heritage lodge is projected herein as a summer season operation, supporting 4 PYs and $120,000 of employment income.
- ✧ Around 2008, regional tourism employment and employment income based on Babine River area tourism experiences could total an estimated 50.5 PYs and $2 234 400[74], respectively. The estimates by tourism operators are presented in the following table.

[68] Visitation and service quality are the main drivers of employment, financial and economic results for tourism projects. It is anticipated that these three projects will be relatively small in scale and constrained by the relatively short summer tourism season in the area.
[69] The Skeena Mountain Adventures LWBC application estimated that two to five years will be required to find a suitable site, construct and start-up the proposed Kisgegas lodge.
[70] Skeena Air Guides Ltd.'s LWBC application states that three additional seasonal staff will be hired to support the proposed commercial recreation activities. The company currently employs 21 seasonal field staff and two full-time positions.
[71] Used employment estimate from multi-day hiking "Building Block" [January 2003] and the annual employment income estimate for Babine River tourism staff of approximately $47 000 reported in *The Economic Value of the Babine River Corridor Park With and Without a Protective Buffer*. The "Building Block" entitled *Commercial Lodges and Camps/Huts* [Marlyn Chisholm & Associates July 2002] sets out an annual employment income estimate for lodge staff of $32 000.
[72] Skeena Mountain Adventures's LWBC application states that estimated staffing requirements are an operations manager, five mountain guides, two pilots, two helicopter engineers, a massage therapist, and one helper.
[73] Winter and summer operations with 12 staff each.
[74] This total figure is composed of employment and employment income from the current tourism operators and the economic activity from the projected new tourism operators.

Exhibit – Regional[75] tourism employment and employment Income based on plan area tourism

Operator	Employment	Employment Income
Current tourism operators[76]	29 PYs	$1 372 900
Skeena Air Services hut-to-hut	1 PYs	$47 000
Skeena Mountain Adventures heli- and cat-skiing	5.5 PYs	$260 000
Miluulak Wilp's Kisgegas Cultural/Heritage lodge	11 PYs	$434 500
Wilps Gwininitxw Cultural/Heritage lodge	4 PYs	$120 000
Total	50.5 PYs	$2 234 400

[75] Does not include non-plan area tourism activities that are related to plan area tourism.
[76] Including two angling lodges located outside, but near the plan area's eastern boundary.

5 MINERALS AND MINING

5.1 Background

There is neither recent nor current mining activity in the plan area.[77] There are more known mineral occurrences to the west of the Shelagyote River than to the east. Exploration activity would likely occur in the area of known mineralization.

The scale of socio-economic impacts is dependent upon two main factors. First, and most obvious, is whether there exists an economic concentration of minerals. There have been no significant reserves yet discovered in the Shedin, Shelagyote or Nilkitkwa drainages. Second, should an economic mineralization occurrence be discovered, the impact would vary depending upon the size, type and location of the deposit. Vein deposits, for example, typically employ fewer people and have a shorter mine life than do porphyry deposits.

Whether a mine is a camp or drive-in operation would be dependent on the remoteness of its location. Some employees of a camp style mine would reside outside the local area in the Lower Mainland and the Okanagan. With a mine in the Shedin or Shelagyote drainages, its employees would likely reside in a camp during work periods and travel to their permanent residences that would be spread out over several BC communities.

Smithers is already a mineral development service centre, a relatively short 77 kilometres from the Hazeltons. Therefore, it is likely that any mineral development in the plan area would be serviced for the most part from Smithers rather the Hazeltons, even if the development were to occur west of the Shenismike. Concentrate would be trucked to Smithers for off-loading to rail or air (in the case of gold). Another possibility is to truck concentrate to the port of Stewart.[78]

5.2 Indicators

The following table presents the indicators that were used in this project to assess mineral resource impacts for the minerals exploration and mining industries under the Baseline and SRMP scenarios.

[77] Six past producing mines lie outside of the plan area to the immediate south.
[78] Boliden Westmin (Canada) Limited maintains a mill at Stewart, which ceased production in 1996. A port loading facility at Stewart has serviced the Granduc, Cassiar Abestos, Eskay Creek and Huckleberry mines since the 1970s.

Exhibit - Minerals and Mining Economic Development Indicators

Indicator	Measurement Unit	Rationale
Metallic Mineral and Industrial Mineral Potential, ranked as extreme, high, moderate, fair and low	Hectares (ha)	Ministry of Energy and Mines experts used maps and data to classify areas on a probabilistic basis of discovering future mineral deposit level. On a provincial basis, the relative ranking identifies areas of higher potential.
Metallic and industrial mineral sites (producer, past producer, developed prospect, prospect and showing	Number	Concentrations of occurrences or sites provide an indication of potential and the amount of industry interest in an area's mineralization.
Metallic mineral and placer claims	Number	Presence of claims in proposed protection area highlights potential compensation situation for BC Government; Congregations of claims provide an indication of potential and the amount of industry interest in an area's mineralization.

5.2.1 Minerals and Mining Development Indicator Results

The following table presents area analysis results for the following key minerals and mining indicators by scenario:

- ✧ Area of extreme or high mineral potential and percentage of the plan area's extreme or high mineral potential area by zone
- ✧ Area of extreme or high oil and gas potential and percentage of the plan area's extreme or high oil and gas potential area by zone
- ✧ Number of developed prospects[79] by zone

[79] The plan area has neither current producers nor past producers. It has only one developed prospect and three developed occurrences.

Exhibit – Mineral Indicator Results

Indicators	Total Area or # of Occurrences	Protected Areas	Old Growth Mgment Areas	Shelagyote Babine Tourism Node	Atna/ Shelagyote SMZ	Connectivity Corridors	Shenismike Wildlife Movement Corridor	Babine SMZ	High Value Grizzly Bear Habitat	Integrated Resource Mgment
Extreme & High Metallic Mineral Potential, plan area total (ha) and distribution by zone (%)										
Baseline	129 127 ha	3%	1%	NA	33%	3%	NA	4%	8%	49%
SRMP	129 127 ha	3%	8%	0	38%	2%	1%	4%	10%	34%
Number of developed showings, plan area total and distribution by zone (#)										
Baseline	19	2	1	NA	8	0	NA	0	2	7
SRMP	19	0	1	0	0	0	0	0	3	15
Extreme & High Natural Gas & Crude Petroleum Potential, plan area total (ha) and distribution by zone (%)										
Baseline	102 538 ha	6%	3%	NA	4%	4%	NA	3%	7%	72%
SRMP	102 538 ha	6%	10%	2	9%	7%	0	2%	16%	49%

5.2.2 Indicator Results Discussion

The draft SRMP does not increase the amount of protected area in the West Babine, so the total land base available for mineral exploration and development remains the same as under current management.

- The BC Government has undertaken a few measures in the past two years to improve the business climate for exploring and developing minerals in the province. An important piece of this strategy is the "Two Zone" legislated policy, where zone one areas prohibit mineral exploration or mining. The second zone is open for mineral exploration and development,[80] subject to compliance with local, BC and federal government regulations.
- The plan complies with the "Two Zone" policy. A relatively small proportion of the plan area is protected, approximately four percent. The remaining 96 percent of the plan area's land base is available for mineral exploration, subject to the provisions of the BC Government's Mineral Exploration Code, and other applicable legislation. Development will depend on a proposed project's compliance with BC and federal government regulatory processes. A new mineral development would be subject to the requirements of the BC Environmental Assessment Review Office.
- From an area analysis perspective, the main outcome of a WBSRMP implementation will be a 31% reduction of the land base with extreme and high metallic mineral potential in the Integrated Resource Management areas, from 49% to 34%. There will be a 33% reduction of the land base with high and very high natural gas and petroleum potential in the Integrated Resource Management areas, from 72% to 49%. There is one developed prospect, located in the IRM zone, on Mt Thomlinson, which has been assessed as having 40.8 million tonnes of molybdenum with secondary copper and tungsten.
- There may be some cost implications for exploration and development in several of the non-IRM zones (the grizzly bear habitat zone, connectivity corridors, wildlife movement corridor and tourism node) due to access restrictions, connectivity provisions and grizzly bear management provisions.
- The strict access management provisions of the draft SRMP will limit the extent of exploration because travel on logging roads will be prohibited during non-logging periods. The paucity of forestry roads is a barrier to mineral exploration of the area north of the Babine River so the future inaccessibility of much of the area by road will continue to limit the amount of mineral exploration undertaken.

[80] Legislation for the two-zone system was enacted in 2002 under the *Mineral Tenure Act*.

6 OTHER RESOURCE-BASED ECONOMIC SECTORS

6.1 Fisheries

From an area analysis perspective, the main outcome of a WBSRMP implementation will be a 42% reduction of the land base with high fish value in the Integrated Resource Management areas, shifting these high fish value areas to more protected zones.

- The amount of high value fish area more than doubles in High Value Grizzly Bear Habitat Zones. The largest share of high value fish area (18%) will be in the no logging Atna/Shelgyote SMZ upon WBSRM plan implementation.
- From a fisheries perspective, the more development in a watershed, the greater is the loss of fish habitat. Impacts are generally cumulative. Unless access is carefully managed, increased road development will cause increased angling pressure. Higher angling pressure would fall most heavily on Bull trout, Dolly Varden and steelhead.
- The Kispiox TSA contains a number of significant fisheries systems and supports a diverse population of fish species that contribute to local and provincial economies through sport and commercial fisheries. There have been significant declines in salmon, steelhead and trout stocks in the Kispiox TSA because of habitat degradation. While forest practices impact fish habitat in many ways, the interrelationships between disturbances makes it difficult to determine direct causal mechanisms. However, removal of riparian vegetation decreases terrestrial insect drift carbon (on which in stream aquatic invertebrates production is dependent), large organic debris (which is important for maintaining important stream structural elements and facilitates maximum carbon cycling), and shade, with resultant increases in summer stream temperature and decreases in winter stream temperature. Streamside vegetation is important in preventing stream bank erosion with the resultant increases in sedimentation and infilling and erosion of important stream habitat elements. Removal of rooted bank vegetation can result in the depths and loss of important habitat elements. And removal of forest vegetation causes changes in watershed hydrology, with increases in flow, peak flow, and the erosive ability of the stream, with resultant removal of important habitat structural elements, and increased potential for debris torrents. The greatest impact on stream habitats comes from the increased road volume that is inherent with logging activities (due to associated erosion and sedimentation).

6.2 Mushrooms

The area of identified pine mushroom habitat in MSRM's GIS is relatively small, approximately 340 ha. The new zonation represented in the WBSRMP changes only slightly the protection of pine mushroom habitat from logging. Approximately three-quarters of pine mushroom habitat is in the IRM zone under the WBSRMP and current management.

7 GOVERNMENT REVENUES

7.1 Forest Industry

The estimated current provincial government revenues from harvesting and processing plan area timber is $1 444 800. In the short-term, there will be no reduction in BC Government revenues derived from the forest industry due to a WBSRMP implementation because of the undercut in the Kispiox TSA. With a larger harvest of 220 000 m^3 based on the WBSRMP constrained THLB, the plan area would generate almost $5 million of BC Government revenues on an annual basis. If Forest Development Plan volumes were harvested BC Government revenues could rise to approximately $6.4 million.

- The amount of current annual harvesting in the plan area is an estimated[81] 70 000 m^3. The following table presents an estimation of the amount of BC government revenues that are derived from this harvest of 70 000 m^3 as well as an estimate of the revenues if larger volumes were harvested.

Exhibit - Estimated WBSRMP Government Revenues

	Current Harvest Estimate			
	70 000 m^3	**220 000 m^3**	**250 000 m^3**	**300 000 m^3**
Stumpage[82]	$471 800	$1 619 200	$1 840 000	$2 208 000
Industry taxes[83]	532 000	1 672 000	1 900 000	2 280 000
Provincial income tax[84]	441 000	1 386 000	1 575 000	1 890 000
Total government revenues	1 444 800	4 677 200	5 315 000	6 378 000

- Forest industry activity in the TSA will not be diminished due to the reductions of the TSA's THLB and WBSRMP's introduction of a few operating constraints in some management zones.
- The TSA's forest industry has not harvested the full AAC for several years and is not anticipated to do so for many years to come. There could be a shift in activity if a cutting permit is in a no logging zone as the harvesting associated with that cutting permit would occur elsewhere under a new cutting permit in the TSA.
- The three entities with chart areas in the plan area are not expected to have their licensed apportionments revised downward as a result of a WBSRMP implementation in the near term. The AAC could be revised downward at the end of Timber Supply Review 3, in advance of the anticipated downward revision of 12% in 2013.

[81] 40 000 m^3 through BC Timber Sales south of the Babine River (pers. comm., M Folkema, MOF) and 30 000 m^3 by KFP in the Hanawald area (pers. comm., D. Allen, KFP). If KFP does not harvest in the Hanawald in the next few years because of its shuttered mill, then it would likely make arrangements with PIR or a contractor to harvest a similar annual volume.

[82] Current average Kispiox TSA stumpage of $6.74 per m^3 for the January to July 2003 period applied against the current harvest of 60 000 m^3 and average Kispiox TSA stumpage of $7.36 per m^3 for the January 1997 to July 2003 period applied against other harvesting scenarios, source: BC Ministry of Forests.

[83] Based on average industry tax revenues of $7.60 per m^3, Source: BC Ministry of Forests May 2002

[84] Based on average BC personal income tax revenues of $6.30 per m^3, Source: BC Ministry of Forests May 2002

7.2 Tourism Industry

In the short-term, the estimated direct provincial government revenues from current Babine River area commercial tourism operations is $390 150.[85] This estimate is based on the current experience of Babine River area tourism operators and an estimate of the provincial income tax payments of tourism staff .

[85] Pacific Analytics and O.R. Travers Forestry Consultants (October 2002) *The Economic Value of the Babine River Corridor Park With and Without a Protective Buffer.* Prepared for The Babine River Foundation.

8 NET RESOURCE VALUE

8.1 Overview

The net resource value frame of a SEEA provides a reading of economic efficiency, i.e. helping to identify economic value of the use of resources under study. It highlights impact from an economic accounting perspective and measures economic rent.

It is an inclusive measure that considers economic value arising from all uses of all resources under study. In the West Babine SRMP case, there are several resources over a large area under consideration. In other analytical exercises, the focus is often much more narrow, for example the multiple economic uses of a particular river (for hydroelectricity generation, angling, recreational swimming, etc.). Attempting an "economic accounting" exercise for all resources and their uses over the West Babine plan area is a prohibitive task but qualitatively understanding these values would benefit LRMP decision-making.

Resource use in the plan area is not a mutually exclusive choice between either the forest industry or tourism. Every plan scenario can accommodate multiple activities. From an economic efficiency perspective,[86] the most desirable path is to select the combination of management directions and rules (i.e., scenario) that produces the largest amount of net economic value. In the West Babine, forest industry and tourism activity are intended to co-exist and thrive, both contributing to the province's economic well-being.

In this chapter, a high level estimate of net resource value arising from economic activities in the West Babine plan area is presented. Other sections of the chapter, discuss in qualitative terms, net economic values associated with other resources.

8.2 Forest Industry

The estimated annual net economic value arising from harvesting and processing West Babine timber is broadly estimated as approximately $618 800 arising from the current annual harvest of 60 000 m^3. A WBSRMP implementation will not lessen this amount because it does not negatively impact current forestry activity.

The following table presents the calculation of net economic value for each scenario.

[86] A stakeholder looking at the plan area from another perspective, such as First Nations culture or environmental preservation, may not choose to adopt Net Resource Value as a decision making aid.

Table: 8-1: Estimate[87] of net resource value per m^3 of harvested timber in the West Babine plan area

Economic Rent Category	Scenarios			
	70 000 m^3	**220 000 m^3**	**250 000 m^3**	**300 000 m^3**
Public sector rent[88]	$471 800	$1 619 200	$1 840 000	$2 208 000
Labour sector rent[89]	$147 000	$462 000	525 000	630 000
Corporate sector rent[90]	negligible	negligible	negligible	negligible
Net economic value	$618 800	$2 081 200	$ 2 365 000	$2 838 000

Although there are substantial potential employment and economic rents attached to the plan area's timber harvest, it is unclear when higher harvesting levels will occur. As mentioned in the Economic Development Chapter, the financial difficulties of NSFP and SCI and the Canada-US lumber trade dispute has led to harvesting well below AAC levels. NSFP plans to harvest but the extent of its harvesting will not be known until the extent of its mill operations are known. Harvesting in the north of the Babine River area, west of Shenismike Creek will likely require re-opening of NSFP pulp mill (by NSFP or another entity) because of the high hemlock-balsam pulp quality timber in this area.. The re-opening of NSFP's Prince Rupert pulp mill is important for the short term viability of KFP, as well, providing a market for its pulp logs.

East of Shenismike Creek, prospects for more harvesting are stronger because of lower pulp log content and the interest of PIR's Smithers mill and Canfor's Houston mill in acquiring spruce-pine-fir logs to help feed their large capacity mills.

[87] Estimates of net economic value for the forest industry are highly sensitive to estimation methodologies. The preceding estimates should be interpreted as broad ones but satisfactory for comparing relative differences in net economic value between scenarios.

[88] Government resource rent revenues are used as a proxy for a portion of the economic rents from forestry. Economic rent and stumpage are not equivalent. Stumpage is the return to the Crown as the steward and legal owner of the resource. It fluctuates based on a complex formula that tries to reflect a sharing of the residual economic return. Economic rent *includes* stumpage because economic rent is the net value of the resource to BC "society" (that is to all residents of the province, and not simply to holders of timber harvesting rights and not to the BC Government). A portion of the economic rent goes towards stumpage and the remainder is retained by employer and employees. Economic rent is also not equivalent to profits. In the forestry case, economic rent is the difference between timber selling price and harvesting and transportation costs, before taxes and BC Government assessed royalties (i.e. stumpage), and after a reasonable profit. It is referred to as "rent" because it accrues over time. The stumpage returns are assumed to reflect product market prices less production costs less a reasonable return on capital.

[89] Labour is assumed to capture a portion of the economic rents through the wage bargaining process. Five percent of annual income is assumed to be attributable to economic rents.

[90] Corporate rents in the BC forest sector are seen as being competed away. Recent evidence shows very poor returns to owners of forest industry assets in BC. For example, in publication entitled *The Forest Industry in British Columbia*, PriceWaterouseCoopers reported that between 1995 and 1999, the BC forest industry recorded a five-year return on capital of 2.9% and total earnings before taxes of an average of 0.8% of total sales revenues.

8.3 Tourism Industry

The current estimated annual economic rent associated with current Babine River area commercial tourism operations is $739 927. Timber harvesting in certain parts of the plan area are allowed under current management direction and the WBSRMP. The wilderness character north of the river in the plan area will change as more harvesting occurs there. Excepting the guide-outfitters, the current operators are focused on the river so their tourism values are largely protected through the park designation and the WBSRMP adds a tourism node in the vicinity of the Silver Hilton angling lodge.

The calculation for this estimate is shown in the following table. Economic rents associated with wilderness tourism operations are calculated by subtracting from total revenue all costs associated with producing the tourism experiences, including an allowance for profit and risk.[91] A standard 10% of revenue is used to account for profit and risk in this analysis. The calculation for annual economic rents associated with current Babine River area commercial tourism operators[92] is shown in the next table.

Exhibit – Annual economic rents associated with current Babine River area commercial tourism operators

Revenues	$3 573 868
Less **Material expenses**	$1 338 497
Less **Employment expenses**	$1 138 057
Less **Allowance for profit and risk**	$357 387
Economic rent	$739 927
Economic rent per client day	$160

Source: Pacific Analytics 2002 and author's calculations

The proposed projects do not have financial results, of course and have not made public their financial projections. In order to suggest a scale of net resource value from the proposed operations, an estimated economic rent per client day of $160[93] was multiplied by an estimate of the number of annual guest days,[94] 980, to suggest annual economic rent from the new operations of $156 800.

[91] For this economic rent calculation, cost and revenue data for the current commercial tourism operators was sourced from the publication entitled *The Economic Value of the Babine River Corridor Park With and Without a Protective Buffer* and a personal communication with one of its authors, J. Johnson.
[92] Which includes the two angling lodges that lie outside of the plan area, near its eastern boundary.
[93] from the above calculation of economic rent for current tourism operators
[94] The LWBC applications of Skeena Mountain Adventures and Skeena Air Services contain estimates of their anticipated guest numbers. The visitation for the two lodges is based on an estimate of 12 guests per operating week each.

8.4 Forest Industry + Tourism Industry Annual Economic Rents in the West Babine

In the short-term, estimated annual economic rent associated with the plan area's forest and tourism industry activities is $1.5 million and $3 million in the longer-term.

The combined forest and tourism net economic value estimate is shown as increasing after 2008 because of two factors. It is anticipated that two new First Nations themed lodges will be operating in the plan area by 2008 and the timber harvest will increase to 220 000 m^3 to help feed PIR's Smithers sawmill, Canfor's Houston sawmill, West Fraser's Terrace sawmill, KFP's Hazelton sawmill and NSFP's (or its new owner) Terrace sawmill. The estimates by industry and aggregate are presented in the following table.

Exhibit – Forest Industry + Tourism Industry Annual Economic Rents in the West Babine

	2004 – 2007	2008[95] →
	Forest Industry	
Annual economic rent ($)	$618 800[96]	$2 081 000[97]
	Tourism	
Annual economic rent ($)	$798 000[98]	$897 000
	Forest Industry + Tourism	
Annual economic rent ($)	$1 416 800	$2 978 000

8.5 Other Resource Values

8.5.1 Recreational Angling, Hunting and Kayaking

A "handful" of local recreationists will take advantage of the improved access in the plan area despite the access controls. If they were completely blocked from recreating in the north of Babine River area they would likely hunt, fish or kayak elsewhere so there is not likely to be a net decrease in hunting, angling and kayaking activity (and therefore no decrease in net resource value) in the province as a result of a WBSRMP implementation. Timber harvesting may detract from recreational experiences in the north of the Babine River but on balance, it will enhance these opportunities by creating some road access, albeit controlled.

✧ An important objective of this SRMP is to assess all net economic values in the plan area. Many goods and services, including the recreational services of natural resources, do not get traded under

[95] Assumes that the two proposed lodges are constructed and accepting visitors as of 2008.
[96] This economic rent estimate is based on harvesting 70 000 m^3 per year.
[97] This economic rent estimate is based on harvesting 220 000 m^3 per year. The economic rent from the forest industry will likely decline from 2013 onwards because the current MOF timber supply projection for the Kispiox TSA shows a decline of 12% in the decade that begins in January 2013.
[98] Includes current tourism plus proposed new operations of Skeena Mountain Adventures and Skeena Air Guides.

normal market conditions. Even where there is no price,[99] BC anglers, hunters, hikers, campers, boaters and kayakers enjoy a surplus of benefits because they would be willing to pay a certain amount to consume or enjoy the services of the resources that go into making up their recreational experiences.[100]

- ✧ *An estimate of the annual net resource value currently derived from recreationist activity in the Babine River area is $60 000.* This figure is based on the estimated number of recreationists per year in the Babine River area, 800, which is stated in Section 4.1 (Tourism and Recreation Background), an assumption that each stays for an average of three days and a willingness to pay consumer surplus value of $25 per day.[101]
- ✧ Current management direction would likely lead to an increased number of recreationists compared to a WBSRMP implementation because of the latter's access controls. However, with the Baseline Scenario there would be some gradual degradation of the resources that attract backcountry and mid-country recreationists, possibly lowering the value that they might place on hunting, fishing or kayaking in the area. The incremental difference in net resource value arising from either would be small in total dollar terms (the current net resource value is estimated at $60 000) and there is no basis for estimating the difference at this time.

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[99] The absence of prices is the norm in the case of recreational use or non-use of natural resources. Sometimes entrance or permit fees (for resident hunting and angling) are seen as market prices but they are rarely accurate representations of economic value. Their prices are almost never set within a competitive market framework. For example, permit and license fee prices are not set based upon surveys of what resident hunters and anglers say they are willing to pay for them, and competitive bids are rarely used to ration access as is done with BCTS/SBFEP timber. License and permit fees increase government financial receipts and decrease individual financial resources, that is money moves from "one pocket to another," but they do not indicate net economic values that individuals or BC society attach to the resource(s).

Aggregating the per day net economic values for a recreation experience in a region or at a site over the annual number of recreationists yields an estimate of net economic value for the recreation experiences in the region. The lack of observed market prices for outdoor recreation experiences means that their net economic value must be estimated. A few methodologies have been developed and gained wide acceptance, the Contingent Valuation Method (CVM) and Travel Cost Method (TCM).

[100] The differentiation is made between BC and non-BC hunters, etc. because the net economic value of the non-BC group is captured in the net economic value of the tourism industry. Recreational hunters, anglers, campers, boaters, kayakers and hikers are interested in an overall recreational experience that is tied into accessing an overall wilderness ambience as well as the opportunity to see (and in the case of hunters and anglers, capture) some fish and wildlife species.

[101] Direct estimates of per day net economic values for various forms of recreation in the West Babine would also be helpful but estimates are available from elsewhere in BC that can help to inform about the value of recreational experiences. In the mid 90s, a typical per day economic rent value in BC was $25 [Crane Management Consultants 1994]. The technical economic term is consumer surplus, and is the amount that a recreationist would pay above his or her travel and equipment outlays. In some instances, recreation resources are owned privately, a private fishing lake is an example. The incremental cost that an angler pays for the right to fish the lake above the owner's maintenance cost is equivalent to consumer surplus. This type of market-based fee is rarely seen with public ownership and management of recreation resources. Other attempts have been made at valuing use of nature from this perspective. A federal-provincial task force undertook a large-scale survey in the mid 90s that addressed this topic. Its report is entitled *The importance of nature to Canadians: the economic significance of nature-related activities*. BC Parks commissioned Coopers and Lybrand to complete an economic impact study of parks in 1995/1996, which provides estimates of consumer surplus associated with BC Parks. In that study, the consumer surplus per user day is estimated at $31 per user day for day use and at $33 per user day for camping visits.

8.5.2 Grizzly Bear Net Resource Value

A definable reduction in net resource value attached to preservation and option values[102] attached to the area's population of grizzly bears is not foreseen, both because the population is little known outside the region and because the negative impacts on the grizzly bear population are projected to be minimal as a result of the plan's implementation. As well, the draft plan represents an improvement over current management directions and rules, which provide for road building and timber harvesting in the north of Babine River areas. For example, under current management directions and rules, the area that is to be the Shenismike Corridor (in the WBSRM Plan) is currently not protected.

- ✧ Aside from the impacts of harvesting on grizzly bear habitat, there is the matter of the aforementioned increased visitation to the plan area by tourists and recreationists. This may lead to more conflicts between humans and bears and a feeling among some residents that the area's wilderness qualities are being eroded. To many residents these are moral and ethical values that extend beyond economics.
- ✧ Planning for management of the Babine River area grizzly bears is the original impetus for developing the WBSRM Plan. There is an extensive literature on the impacts of roads on grizzly bear populations.[103] Most researchers agree that the impact of roads is due to factors such as habitat displacement and increased mortality due to increased access by hunters and poachers. Additionally, the general increase in the frequency of interactions between humans and bears, associated with improved access, inevitably leads to higher bear mortality.
- ✧ Increased access would improve hunter efficiency and result in mortality of big game species, especially moose, deer, goat, black bear and grizzly bear. Any increase in access and human contact may lead to lower reproductive rates, increased culling and increased poaching. In addition to increased hunter access, roads improve the efficiency of natural predators, specifically wolves, thereby leading to higher mortality of prey species.
- ✧ There is also the issue of direct habitat loss due to road construction and the resultant change in habitat conditions due to forest harvesting. All of which occurs at the time of road construction or immediately afterward.

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[102] From an economic perspective, consumption and enjoyment of wilderness resources occurs in two basic ways - use and non-use. "Use" refers to on-site activities that may involve consumption of the services of a resource for leisure, such as hunting and fishing, or non-consumptive uses, such as wildlife viewing. "Non-use" value is usually referred to as preservation or intrinsic value because it revolves around keeping a resource in a relatively undisturbed state. Non-use is distinguished from use in that (with non-use) only the resource helps produce an activity, i.e. no other resources are consumed such as gas and time to visit a recreation site. Non-use or preservation value is said to have four components.

- **Existence value** - a person may simply enjoy knowing a resource is left in a certain state
- **Option Value** - a person may hold some expectation, however slim, of consuming or enjoying a resource in the future
- **Quasi-Option Value** - a person may hold some expectation that new information may come forward at a later date, which would influence a decision about use of a resource today
- **Bequest Value** - a person might want to see a resource made available to others today or in the future

Since there are no competitive marketplaces for recreational or intrinsic services of environmental amenities, their net economic values must be estimated through indirect methods.

[103] summarized in Hatler 1995

- Keystone Bioresearch (under contract to BC Environment) ranked the biophysical habitat units in the Babine watershed for use by grizzly bears and identified movement corridors [1990; 1991; 1992]. A key finding was the need for protection of important habitats to facilitate maintenance of the Babine grizzly bear population over the long term. The 1994 LRUP ranked treatment units in the watershed by grizzly bear habitat.
- The draft WBSRM plan includes specific measures, such as the Shenismike Wildlife Movement Corridor, High Value Grizzly Bear habitat Zones and access controls, to minimize deleterious impacts from human activity on the area’s grizzly bears.

9 COMPETITIVENESS SUCCESS FACTORS

9.1 Forest Industry

9.1.1 Introduction

The competitiveness factors that most affect the ability of current and potential forest industry businesses, which use the plan area's timber resource, to prosper are the following:

- ✧ Amount and security of access to the area's timber resource
- ✧ Cost of harvesting and wood processing
- ✧ Manufacturing capacity to process the region's fibre profile and volume
- ✧ Access to the American market
- ✧ Timber resource quality

A SRMP can affect the first two factors.

Due to historic development patterns elsewhere in the Kispiox TSA, the area north of the Babine River represents a significant portion of available TSA wood supply over the next 25 years.

9.1.2 Cost Competitiveness

The region's forest businesses need an overall cost structure that is competitive on a global basis. The forest industry businesses in the region that use plan area timber resources are or will be commodity lumber and pulp manufacturers. Having satisfactory fibre quality will be important in both industries but ultimately these industries prosper and decline on the basis of their cost structures. Historically, SCI's pulp mill was on the high end of the pulp industry cost curve, which meant that falling pulp prices left the operation financially vulnerable.

Cheston Forest Consultants Ltd. observed that "In Northwest B.C., the forest industry has not been profitable since 1995 and has been only marginally profitable since the early 1950s, when intensive development of the area commenced. The major reason for the poor performance of the forest industry is the generally low returns and high cost of operating in the Northwest." [January 2000]

In a July 12, 2002 speech to the Terrace Chamber of Commerce, the president of NWBC Timber and Pulp Ltd. cited Skeena's woodlands division as "…by far the largest cost centre in the company…. Fibre costs cut to the very core of our competitiveness and viability."

In general, the cost competitiveness impact of a WBSRMP implementation on the forest industry will be slightly negative due to imposition of some area specific operating constraints that are incremental to FRPA rules. Examples are constraints associated with grizzly bear management and retention requirement in Landscape Riparian Corridors.

9.1.3 Access

The main changes in the WBSRMP from current management directions and rules that will affect the forest industry are the following:

- significant reduction of timber harvesting opportunity in the Shelagyote-Babine Tourism Node
- no road building within the Shenismike Corridor
- expansion of the Babine River SMZ between Hanawald and Shelagyote
- Atna/Shelagyote SMZ expanded and direction for no harvesting applied
- reduced operational flexibility in access management areas

The Kispiox TSA's THLB will be effectively reduced by 3%.[104] However, there has been a large undercut in the TSA in recent years, even prior to NSFP/SCI's closure, so the effective THLB reduction is not projected to translate into a timber supply reduction that would affect the forest industry in the foreseeable future.

The plan's road access management provisions could affect timber harvesting costs and/or revenues[105]. There are no current access management policies specific to the Kispiox TSA or the Babine River area, except the proposals cited in the Forest Development Plans. The management of the Nichyeskwa Connector represents an example of current access management, which will not change under the WBSRM Plan. It is not clear at this juncture what those changes will be and therefore how they could affect harvesting costs.

9.1.4 Other Competitiveness Factors

Defective timber and an inadequate supply of saw log quality softwood represent significant challenges to local mill managers. The most significant characteristic of the forest profile is an abundance of mature western hemlock and balsam. These over-mature stands have not been disturbed by fire for many years and are susceptible to insects and disease as a result of the transitional climate of the area. Timber quality is variable with a high proportion of decadence due to the old age of the forest [BC Ministry of Forests May 2002].

The fibre profile of the region has to be taken into account when establishing a regulatory framework that attempts to sustain viable forest industry businesses in the region. In describing the fibre profile of the region Cheston Forest Consulting Ltd. commented that "…60% to 80% pulp logs may be a better estimate for Kispiox, Cranberry and Nass TSAs which is unique in BC. This timber is far poorer than most of the Interior …As well, in these TSAs, a significant proportion of the sawlogs are of marginal quality. The lumber recovery from these logs is low, and the grade recovery is much less (mostly grade 3 lumber) than the Interior or Coast averages." [January 2000]

The viability of the regional forest industry is also dependent on having appropriate processing capacity to mill the area's fibre profile. SCI managed a regional log flow to suit the specialized timber input needs of each mill; mid-sized logs went to Carnaby, while small logs went to Smithers and large logs to Terrace.

The NSFP's Prince Rupert pulp mill is a fundamental factor in making the logging economics of the overall plan area, but especially the plan area west of Shenismike Creek, where there is a higher

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104 And only 1.5% if the economically inoperable Atna/Shelagyote SMZ is removed from the THLB.

105 If access was not allowed when lumber or log prices were more financially attractive than in open access periods.

proportion of hemlock-balsam stands than east of Shenismike Creek. In the aforementioned Terrace speech, NWBC Timber and Pulp's president described it as *"…the economic driver of the rest of the business."* He also observed that "Terrace and Carnaby [sawmill] operations have absolutely no future as stand alone businesses, and only have a chance with a cost competitive pulp mill as a reliable customer for its chips. Starting up those operations under any other circumstances would be financial suicide."

NSFP examined the feasibility of re-opening its Carnaby mill and attempted to negotiate a new labour agreement with its union bargaining unit but the company currently thinks that it will not reopen this mill. The company does plan to harvest the timber that would have been otherwise directed to Carnaby. At the time of the report's writing the company had not decided on its plans for utilization of this Kispiox TSA timber that would have otherwise been directed to Carnaby.[106]

The WBSRM Plan will not affect decisions about processing capability, but NSFP's decision to neither re-open nor modernize the Carnaby mill will have a major impact on harvesting activity in the Kispiox TSA and employment in its timber processing sector. NSFP has not presently formulated new plans for utilizing the timber that would have formerly been milled at Carnaby.

9.2 Tourism

9.2.1 Introduction

The factors that most affect the ability of current and potential tourism industry businesses, which use the plan area's tourism resources, to prosper in the marketplace are the following:

- Opportunity to catch steelhead in a wilderness setting and overnight in accommodation with a high level of personal service
- Opportunity to raft or kayak a diverse river in a wilderness setting and view grizzly bears

The river has several attributes that contribute to a high quality wilderness tourism and recreation experience.

Wilderness Qualities

- limited access along 90 kilometres of the river;
- natural, scenic views;
- significant populations of large mammals, including grizzly bear viewing opportunities during the rafting and fishing seasons; and,
- diverse and natural ecosystems.

Sports Fishing

- a high quality sport fishery with an emphasis on trophy steelhead;
- long, wide gravel bars and beaches with good casting room adjacent to excellent holding water;
- higher water quality and clarity; and,
- excellent fly and lure fishing for steelhead trout and salmon in uncrowded settings.

[106] Pers. comm. D. Stuart, NSFP

Rafting and Kayaking

- ✧ challenging rapids and chutes with International Whitewater Grades from I to IV including Grades I to III in the upper portion and 30 kilometres of continuous Grade IV in the lower river section;
- ✧ trips of four or more days (up to six days including the Skeena River) with good road access at both ends;
- ✧ diverse, interesting river with numerous dispersed and attractive camping sites; and,
- ✧ narrow and deep canyons at the lower end.

Other Related Activities

- ✧ hiking between Tomlinson and Gail Creeks;
- ✧ fossil beds near Gail Creek;
- ✧ surrounding mountain ranges (Shelagyote) and associated alpine areas for day hiking or extended backpacking in the lower third of river;
- ✧ good wildlife viewing opportunities; and,
- ✧ nature photography and appreciation.

9.2.2 Angling

Lodge visitation, revenues and employment generated by steelhead angling are also tied to the quality of the angling experience. Several factors help create this experience including the following:

- ✧ Number of fish caught per day
- ✧ Number of fish strikes per day
- ✧ Size of fish
- ✧ Natural environment of the angling experience, i.e. are other anglers nearby, what is the visual quality in the vicinity of angler accommodation and angling areas, are there manmade noises in angler accommodation and angling areas
- ✧ Accommodation, food, transportation and equipment quality (which are in the hands of lodge owners)

A SRM plan could have impacts on fish habitat, angling effort and the natural environment of the angling experience. Accommodation, food, transportation and equipment factors are in the hands of lodge owners. <u>The impacts of the proposed plan on tourism activity and features are net positive by comparison to projected impacts under current management direction and rules.</u>

When consulted for this study, the tourism operators in the Babine River area expressed considerable concern about the negative impacts they foresee with improved road access to the north of Babine River area. They are in general agreement that the area should be preserved as wilderness to the greatest extent possible.[107]

<u>The main factors suggesting a net positive impact under the proposed WBSRMP are its creation of two special management zones, Shelagyote-Babine Tourism Node and the Shenismike Corridor, which offer added protection to important grizzly bear and goat habitat, the grizzly bear habitat management directions and the no logging prohibition in an expanded Atna/Shelagyote SMZ.</u> The Shenismike Wildlife Corridor minimizes bear–human interactions along Shenismike Creek and helps protect bear viewing values at "Grizzly Drop." The tourism node excludes timber harvesting and roadbuilding in the vicinity of

[107] Through the Kispiox and Bulkley LRMP processes, the BC Government identified and made recommendations for several protected area designations. The protected area for the Babine River corridor is one example. The areas not identified for protection from development must incorporate integrated use at the landscape level under the LRMP and related processes.

Silver Hilton Lodge, except for an access road across the Shelagyote River to benchlands west and north of the Babine River. The VQO standard for this access road is no more than 1% disturbance within the seen area. The logging ban in the Atna/Shelagyote SMZ, the second largest zone in the plan area, next to the IRM zone, will preserve a very large wilderness. As well, the Babine SMZ expands the SMZ on both sides of the river and requires road closures further back from the Park boundaries. It also helps maintain the wilderness tourism function at “Triple Header,” an angling pool on the river.

These new zones represent changes to current management directions and rules. In their absence, there could possibly be development in the areas enclosed by these new zones that would be detrimental to angling and wildlife viewing values, leading to some reduced tourism visitation.

9.2.3 Rafting and Kayaking

River rafting visitation, revenues and employment are tied to the quality of the rafting experience. Several factors help create this experience including the following:

- Quality of whitewater
- Mix of whitewater and flat water experiences
- Type and amount of wildlife viewed
- Natural environment of the river rafting experience, i.e. are other persons seen along the river, such as anglers and kayakers, what is the visual quality along the river’s viewscapes, do river rafters hear manmade noises
- Accommodation, food, transportation and equipment quality (which are in the hands of river rafting companies)

<u>The main factors suggesting a net positive impact under the proposed WBSRMP are the following:</u>

- <u>Shelagyote-Babine Tourism Node</u>
- <u>Shenismike Corridor</u>
- expanded Babine River SMZ between Hanawald and Shelagyote
- <u>Atna/Shelagyote SMZ</u>

<u>The tourism node will help protect viewscapes and grizzly bear habitat.</u> The wildlife movement corridor is quite important for the river rafters because a special feature of their trips is a half hour stop near Grizzly Drop where rafting tourists can view bears feeding on salmon. The new SMZ helps protect viewscapes along the river.

<u>Compared to current management directions and rules, the WBSRMP will be beneficial for sustaining river rafting experiences for visitors.</u> It will neither enhance the quality of the experience nor stimulate additional river rafting tourists. The latter factor is in the hands of BC Parks and the marketing acumen of river rafting company owners.

There are no recent surveys on unguided angling or kayaking activity. The volume of both is unregulated although unguided resident and non-resident anglers must obtain the appropriate licenses and tags in order to fish in the study area.

An important issue is how the WBSRMP affects access to the river. Easier access to the river will likely bring more unguided anglers and kayakers, small additional numbers because of the remoteness of the area from major population centers. More unguided anglers and kayakers means more spending associated with their visits. The flip side is that more visitors reduce the quality of the wilderness experience, thereby affecting the visitors who come to the Babine River area specifically for that dimension.

In a survey [Hillcrest Recreation Consulting, Chipeniuk, R., and Davis, Lack & Associates March 2001]on recreational use carrying capacity of the Babine River, the authors noted that *"A large number of respondents are particularly concerned that new forest roads will provide new opportunities for anglers to access the river, producing a deterioration in the ability of existing users to enjoy a wilderness experience. Respondents also expressed concern regarding the negative affect of industrial development on fish and wildlife species found in the park."*

The WBSRMP includes an access management plan that is intended to inhibit access to the river except under controlled situations.

Both NSFP and KFP have Forest Development Plans that allow the companies to conduct timber harvesting north of the Babine River if they comply with various forest and environmental rules and regulations. These rules and regulations do not change under the WBSRMP. In the area of access management, the WBSRMP adds additional specifications to the current rules and regulations that the two licensees must comply with. The access management plan is important because with more forest access roads north of the river, visitors will eventually be able to drive to areas that are currently impossible to access by vehicle.

The proposed access management plan was drafted to inhibit access to the river. The key to access management is enforcement. If the WBSRMP access management plan is properly funded and implemented it should succeed in hindering access to the river. The plan can be improved based on experience as well, but this will require appropriate monitoring to assess the success or lack thereof of the plan in achieving its purposes. The WBSRMP includes a monitoring component.

At this juncture, increased visitation by neither kayakers nor unguided anglers is foreseen. As a result there will likely be no additional visitation by these groups that will harm the wilderness experience values of guided anglers and river rafters. We would like to underline the observation that the key to achieving the access management plan's goal of inhibiting access to the river is tied to appropriate monitoring and fine-tuning the access management plan to meet this goal.

10 SOCIAL

The purpose of this chapter is to identify the potential community and social impacts arising from the draft plan under consideration.

10.1 Employment

A WBSRMP implementation will not harm employment in the forest industry and will support protection of tourism values in comparison to current management directions and rules. A WBSRMP implementation will not result in an immediate positive impact on Kispiox communities but its “balanced protection,” i.e. largely protecting the area’s economically operable THLB for forestry purposes and helping to protect natural attributes of the area that attract tourists and recreationists, will have a longer term positive affect.

- In the mid 90s, the BC government estimated income in the major sectors bringing money into local economies. At that time, the forest industry was the mainstay of the economy in the Kispiox region, accounting for 37% of its “basic sector” income and providing well compensated employment [BC Stats 1999].
- Since the mid 90s, the Hazeltons and region economy has declined considerably, due primarily to the demise of SCI. The Seaton and C-GED mills have permanently closed. The Carnaby mill does not appear to be a candidate for re-opening. The Kitwanga mill is operating on one shift and temporarily closes when its markets are inadequate. Kispiox Forest Products’ sawmill closed in March 2004 and was closed during 2000 and 2001.
- In the mid 90s, timber from the Kispiox TSA supported almost 600 person-years of employment in the region. It could support a substantial base of forest industry employment once again, but major changes in the structure of the regional forest industry would be required. First and foremost, its timber harvesting and processing would have to become cost competitive on a global basis. This goal would require investment in new processing capacity, reduced labour rates, excellent collaborative relationships between major stakeholders, and sophisticated management.
- The regional economy is mired in a severe downturn. The WBSRM planning exercise has provided a basis for some stakeholders to share their interests and needs in a collaborative environment. The WBSRM plan will provide greater certainty for stakeholders, which will be helpful with efforts to improve the local economy.
- As speculated in the Forest Industry Economic Development Chapter, in general, the employment and employment income impacts of a WBSRMP implementation on the forest industry will be slightly negative. Nevertheless, the plan should enhance the prospects for growth in wilderness tourism in the study area, but that growth is limited by the limited carrying capacity of the area’s resources (especially the Babine River) as a wilderness destination.

10.2 Recreation

Compared to current management direction and rules, the prescriptions of the WBSRM Plan will likely limit some opportunities for local recreationists. Under the current management regimen, access to the north side of the Babine River area through newly constructed logging roads might have been less restricted than planned under the WBSRM Plan. The number of affected recreationists is expected to be very few, partially because of the region's small population and partially because similar recreation experiences are available closer to the region's population centers.

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APPENDIX I - STUDY AREA PROFILE

This appendix provides background information on the study area's demographics and economic structure and activity. It is provided to aid the reader's understanding of recent economic trends and events in the study area. The data is sourced from secondary sources, such as Statistics Canada, BC Stats, and BC Ministry of Forests. The appendix includes information on the following:

- Population
- First Nations
- Labour force
- Economic dependencies
- Transportation access
- Tourism products, accommodation and employment
- Tourist and recreationist visitation and employment
- Timber harvesting land base
- Allowable annual cut apportionment
- Forest Development Plans
- Timber harvesting volume
- Harvesting and processing facilities and employment
- Minerals and mining
- Commercial fisheries
- Trapping

Population

Plan Area

There is no permanent population in the plan area. Tourism, logging, recreation, trapping and First Nations food fishery activity generates a very small transient population. The unpopulated Kisgegas Reserve of the Gitxsan First Nation is located on the western border of Babine River Corridor Park. It is not part of the plan area but is surrounded by it. Although there are no permanent residents in the plan area, many residents in communities to the south are connected to the plan area's forestry, tourism, recreation and First Nations activity. Further afield, some employment in the coastal BC fishing industries involves salmon that migrate up the Babine River to spawn in Babine Lake.

Kispiox TSA

The population of the Kispiox TSA from the 2001 Census was estimated to be 5 995, a decline of about 5% from 1996. A sizable proportion, approximately 80 percent, of the Kispiox TSA population resides outside municipal boundaries. This non-municipal population is largely made up of First Nations communities, such as Kispiox.

Exhibit - Population Trends in the Kispiox TSA (1991-2005)

Area	1991	1996	2001	2005 (est.)	% Chg/yr '96-'05
New Hazelton (District Municipality)	786	822	750		
Hazelton (Village)	339	347	345		
Other	4 840	5 069	4 900		
Kispiox TSA	5 965	6 292	5 995	6 200	-0.2

Source: Census of Canada 1991, 1996, 2001; BC Stats

The closure of SCI's timber processing operations in the northwest, including the Carnaby Mill, located near Hazelton and the study area's main private sector employer, is the primary reason for the drop. Over half of the TSA's population is estimated to be First Nations members. Population growth in the Kispiox TSA is expected to be about one half that of the provincial estimate over the next 20 years, in the range of four and half percent for each five-year period [BC Ministry of Forests May 2002].

First Nations Overview

<u>The West Babine SRMP area lies within the traditional territories of the Gitxsan people.</u>

Kisgegas Canyon and village site in the plan area are occupied seasonally to support a Gitxsan traditional fishery. Historically Kisgegas Canyon was the heartland of many adjacent Gitxsan villages and is reported to have been one of the largest aboriginal settlements in the Skeena watershed (Rabnett 2001).

Gitxsan (traditionally a Tsimshian speaking people) bands in the region are Gitanmaax at Hazelton, Gitsegukla at Kitseguecla, Sikadoak at Glen Vowell, Kispiox at Kispiox, Gitwangak at Kitwanga, and Gitanyow at Kitwancool. The Gitxsan are divided into 48 house groups (a "Wilp") based on kinship and the Houses have exclusive rights, within the First Nation, to harvest resources in geographically defined territories. The house groups belong to one of four clans: Lax Gibuu (Wolf); Lax Seel (Frog); Gisgaast (Fireweed); and Lax Skiik (Eagle). In the vicinity of the Babine River, there are a few House group territories, including Miluulak, Wii Gyet, Tsa Buk, Djogaslee, Nii Kyap and Gwoimt. The total estimated population of the Gitxsan nation is 10 000 and approximately 70 percent live within the traditional territory [Delgamuukw PR Fund undated].

Kisgegas is the only reserve north of the Babine in the Kispiox TSA. It was one of six traditional Gitxsan winter villages near the Skeena River [I.R. Wilson Consultants Ltd. June 1994]. Residents of the villages of Kuldo and Kisgegas, the northernmost ones, re-settled at Glen Vowell and Kispiox, near New Hazelton in the 1950s. In some recent summers, the Gitxsan have sited a healing camp for members at Kisgegas.

For many years, the Wet'suwet'en and Gitxsan were administered jointly through the Gitxsan-Wet'suwet'en Government Commission in Hazelton and elected band chiefs and councilors. In 1993, the Wet'suwet'en decided to move towards their traditional governance system and established the Office of the Wet'suwet'en Hereditary Chiefs in Moricetown. In effect, there is a dual system of governance within Wet'suwet'en traditional territory [Cutting Edge Consulting 1996].

In the summer of 1996 the Gitxsan installed a fish wheel to commercially harvest salmon near the Kisgegas reserve on the Babine River. The Gitxsan have since shifted most of their salmon harvesting activities to the vicinity of the fish weir.

The Babine River area is included within the land claims of the Gitxsan and Wet'suwet'en First Nations.

Labour Force

Labour Force by Industry

The next figure shows the region's labour force as of Census Day in 1996 and 2001. Overall the region's labour force shrunk by almost 15% between the 1996 and 2001 Census Days. The biggest change was registered by the region's services sector labour force, a 20% decrease. The labour force figures also include the unemployed. The unemployment rates in the region are high: 19.3% for Electoral Area B of the Kitimat-Stikine Regional District, 18.2% for the Village of Hazelton and 22.2 for New Hazelton as of 2001 Census Day. By comparison the BC unemployment rate was much lower, 8.5%. The distribution of the labour force by sector in the region is also significantly different from provincial distribution. Only 5.2% of the BC Labour Force was in the Primary Industries in 2001 versus 23% of the Kispiox region's labour force. The region's Service Sector Labour was also proportionally smaller, 60.3% versus 79% for BC.

Exhibit – Experienced labour force[108] by sector for the Kispiox region,[109] 1996 and 2001

Sectors	1996	2001	% change
Primary industries	340	345	4.4%
Manufacturing & construction	260	250	- 3.8
Services	1 145	905	- 20.1
Total	1 750	1 500	- 14.3

Source: Statistics Canada, 1996 and 2001 Census

Direct employment in economic base sectors supports indirect and induced employment with goods and service suppliers. For example, at the time of the 1996 Census, the forest sector supported numerous jobs in the region through logging companies and mills buying goods and services from local businesses (i.e. indirect employment) and forest industry employees purchasing consumer goods and services (i.e. induced employment). The BC Ministry of Finance and Corporate Relations estimated the local indirect and induced employment for economic base sectors in the Kispiox TSA as follows [G. Horne 1999].

- 29 indirect and induced jobs for every 100 direct timber harvest jobs
- 42 indirect and induced jobs for every 100 direct wood products manufacturing
- 14 indirect and induced jobs for every 100 direct tourism jobs
- 19 indirect and induced jobs for every 100 public sector jobs

[108] Refers to persons 15 years and over who were employed or unemployed during the week (Sunday to Saturday) prior to Census Day.

[109] Defined as Village of Hazelton, District of New Hazelton and Electoral Area B of the Kitimat-Stikine Regional District.

Economic Dependencies

In 1995 and 2000, the forest industry was the mainstay of the economy in the Kispiox region, accounting for 37% in 1995 and 29% in 2000 of its basic sector income.[110] The no.2 economic driver in the area was the public sector. Tourism was a smaller factor, about 6% of the area's basic sector income in 1996 and dropped to 3% in 2000. Transfer payments became a larger piece of the local economy in 2000, accounting for 24% of basic sector income. The following table presents the area's 1996 income by basic sector.

Exhibit – Basic Sector Income Distribution (% share)

	Forest	Mining	Fish/ trap	Agri	Tour- ism	Public	Hitech	Con- struc	Other basic	Trans- fer	Other Non-basic	Total
Kispiox TSA (1995)	37	2	2	1	6	34	0	3	2	10	3	100
Hazelton & area (2000)	29	3	1	1	3	32	0	2	0	24	5	100

Source: BC Stats

Although the BC Government has not prepared a more recent basic sector income analysis, a new one would look sharply different than the shown 1996 income distribution. NSFP's Carnaby mill, the largest one in the area, is closed. As well, the harvesting level in the Kispiox TSA today is well below 1996 levels so the forest sector's share of basic income will be much less than 37%. The BC Ministry of Forests' District Office was downgraded to a field office in March 2003, significantly reducing today's public sector employment from 1996 levels. Today's portion of income coming from transfer payments, such as UI and social assistance, would increase from 1996 levels. Although the level of tourism activity in the Hazelton area has not changed significantly between 1996 and 2002, its importance has because of the downturns in other sectors.

Transportation Access

Air

Hilton-Norlakes Lodge uses a Smithers airport-based helicopter to transport guests to its Babine River location.

Road

There are no public highways in the plan area. There is seasonal access via Forest Service Roads (FSRs).

Forest service roads reach into the peripheral area north of the Babine River from the west and the east, and to the south of the river at its mid-section in the Gail and Catalina Creek drainages. The Babine River bridge was constructed in 1996 near the confluence of the Babine and Skeena Rivers.[111] The Big Slide

[110] These results are no longer current but provide a snapshot of the structure of the local economy when its forest industry was more fully engaged.

[111] The Gitxsan First Nation had a court injunction preventing bridge construction over the Babine River near Sam Green Creek but it was lifted in 1995 and, after extensive government and industry consultation with the Gitxsan, a western crossing of the river was built in 1996.

FSR has been extended (from the Babine River bridge) into the west side of the Shedin Creek drainage as afar as Goat Head Creek (Kisgegas Reserve). At the east end, a bridge was built a half kilometre from the Nilkitkwa Lake outlet in the 1960s. An extension of the 486 Road (from this Bulkley-Cassiar FD system) now reaches a few kilometres into the Kispiox Forest District.

In 2002, the 455 Rd. (along the south side of Nichyeskwa Creek) in the Bulkley-Cassiar TSA was connected to the Nichyeskwa FSR in the Kispiox TSA, which creates a circle route, south of the Babine River, connecting the Bulkley and Kispiox TSAs. This route was approved as winter-only access and is gated during spring and summer months.

The Kuldo FSR and Damsumlo FSR give entry into the upper Shedin watershed. A road from the port at Stewart to the Kemess mine at the north end of Williston Lake, near Fort Ware, has been proposed that will cross Tommy Jack pass and connect with the Damsumlo FSR. This may have a future impact on the plan area due to increased industrial traffic and easier access to the area for the public.

Tourism Products, Accommodation and Employment

Angling Lodges

<u>As a result of the Babine's steelhead sport fishery in a wilderness setting, a successful angler guiding business has flourished on the river over the past three decades.</u>

The Silver Hilton Steelhead Lodge is the only lodge and angling guide operation in the plan area. The main lodge is located two kilometres downstream from where the Shelagyote River flows into the Babine River and its secondary camp is seven kilometres upriver from the Shelagyote. Both facilities are in Babine River Corridor Park. Most clients arrive by helicopter. The lodge formerly offered whitewater jet boat trips and wilderness vacations in August. It hosted a summer youth leadership camp in 2002. As well as having 610 steelhead rod days on the Babine, this lodge has 60 rod days on the Shelagyote.[112]

Angling along the river is concentrated in its upper reach, from the headwaters at the outlet from Nilkitkwa Lake to approximately the Gail Creek confluence. The lower river, past Gail Creek, offers few sports fishing opportunities because of whitewater and steep banks.

The three licensed angling guiding operations (Babine Norlakes Lodge, Babine Steelhead Lodge, Silver Hilton Steelhead Lodge) operate during the steelhead season of September into November. The capacity of the three lodges is approximately 3 000 days over a 63 day season [BC Ministry of Forests, BC Environment and Babine Technical Committee 1991].

A total of 1 708 rod-days annually have been allocated to the three Babine River lodges.[113] By comparison, there are 55 guiding licenses and over 9 000 angling days approved for the Kispiox River [Crane Management Consultants 1998].
Since 1990, steelhead anglers have been subject to catch-and-release regulations. The Babine is the only river in the entire steelhead range where world record size, wild summer steelhead can be caught in a wilderness-like environment [BC Ministry of Forests, BC Environment and Babine Technical Advisory Committee 1991].

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[112] Anglers fish along the banks for approximately six kilometres from the confluence. The Shelagyote River is not passable by cartop or jet boat.
[113] Pers. comm. D. Atagi, MWALP

The origin of the clientele varies between the guides but most clients are foreign; one guide (P. Clegg) reported the breakdown as 60% US, 20% Japan, 10% Europe and 20% Canada [Crane Management Consultants April 1998]. The steelhead lodges charge approximately US$3 500 per 6.5 day week or US$540 per day for their wilderness experiences during their short season[114].

Over the last five years a recreational Sockeye salmon fishery has been allowed. Anglers do not need a jet boat to access these salmon as they fish downstream of the fish counting fence. It is open for approximately one month and not every year. On weekends there have been 40-50 local anglers spread along three to four kilometres of riverbank.

A downturn in fish population, and in particular the Bull trout, which have been reduced in numbers to the point where they have been blue listed, is viewed as linked to increased fishing and decreased viability of the waters. The area's Dolly Varden and Steelhead have not been officially listed but their stocks are carefully monitored. MWLAP anticipates undertaking an angling management plan for the Babine River.[115]

Kayaking, Rafting, Canoeing and Camping

The river has garnered international attention because of its whitewater rafting values in a wilderness setting, opportunities for viewing grizzlies and changing topography along a 100 km length.

On the web site of Rivers and Oceans, a Squamish-based rafting company, the Babine is described as having a mixture of water. It is 65% float, 30% fast current with splashy parts (Class II-III), and with 4 or 5 short whitewater sections lasting 10 seconds to 5 minutes (Class IV-V).

The trips are 4-7 days in duration and an example of the cost to rafters is the US$1 875 price[116] posted on the web site of Rivers and Oceans. Use by rafters is controlled through permitting by BC Parks but kayaking activity is not regulated. Rafters use the river in July, August and September. BC Parks has capped the number of trips per year at 20 and doesn't anticipate raising the limit because the agency wants to minimize disturbance to grizzly bears.[117] Seven companies held trip permits in 2002. Smithers-based Suskwa Adventure Outfitters had four permits, Squamish-based Rivers and Oceans has permits for six trips, and five companies received single trip permit. Suskwa and Rivers and Oceans have five-year grandfathered permits that end next year; the others have to apply each year. Two permits are held for exclusive use of First Nations but they have not been utilized.

There are several persons who guide kayak trips or teach kayaking skills or shuttle-drive during the July through September season.

Babine rafters, kayakers and canoeists put in at the fish weir and take out at Kispiox on the Skeena River. The regular campsites are located at the confluence of the Shelagyote River and below the "Big Slide" along the Babine and about five kilometres down the Skeena [Crane Management Consultants April 1998]. Others include Nilkitkwa River confluence, Shahnagh Creek, Gail Creek (fossils are found 200 m upstream on Gail Creek), and the sandbar between Gail and Thomlinson Creeks [Herchmer 1993]. There is only one regulated campsite, near the fish weir. It was built in 2000 by the Ministry of Forests away from the river to reduce potential for conflict between campers and grizzly bears. Aside from the BC Government's licensing of rafting companies and guides, the watersports industry is self-regulating. The

114 Source is http://www.babinenorlakes.com/rates/steelhead_rates.html
115 Pers. comm. D. Atagi, MWALP
116 All inclusive except for transportation cost to Smithers.
117 Pers. comm. K. Zimmer, MSRM

regular users of the river bring port-a-potties and remove their garbage and attempt to encourage non-resident users to do likewise.

It has been previously pointed out that the ability of the river corridor to support land-based activities, such as camping and hiking, varies considerably along the river's length. Poor soil drainage, sensitive soils and steep slopes along the uppermost portion of the river limit campsite locations. The lower part of the river corridor cannot withstand much additional use due to steep, unstable and failing slopes. Campsite locations are scarce in this lower third of the river. The middle section of the river is wider and provides numerous well-drained gravel bars and dry river terraces [BC Ministry of Forests; BC Environment; Babine Technical Committee 1991].

Hunting

Hunting opportunities include moose, deer, wolf, mountain goat, caribou, grizzly and black bear. There are two licensed guide-outfitters, Collingwood Bros and Tukii Lodge (Dave Hooper). It is estimated that approximately 80 percent of northwestern BC guide-outfitter clients are from the US.

Wildlife Viewing

Part of the outdoor adventure experience for anglers, rafters and kayakers is viewing grizzly bears fishing for salmon at the mouth of the Shelagyote River and at "Grizzly Drop"[118].

The Skeena Region Wildlife Viewing Development Plan identified three grizzly bear viewing locales in or near the plan area: Grizzly Bear Drop on the lower Babine River (in the plan area) and two that are outside of the plan area, the Babine River fish counting weir and Upper Babine River [Mol 1991].

Vehicle access to the Babine River is limited to the bridges at its outlet and its headwaters and no official facilities for viewers are available at either location. Grizzly bear viewers who do not have a boat are limited to the fish counting weir at the headwaters.

The Babine River watershed supports a provincially and internationally significant population of approximately 70 grizzly bears. Other key regional populations are in the Upper Kispiox and Gunanoot Lake areas. The grizzly bear is on BC Ministry of Water, Land and Air Protection's Blue List and is considered a sensitive/vulnerable species in BC.

From August until late fall, when spawning salmon are abundant, grizzlies congregate on the shores of the Babine River. High grizzly bear fishing for salmon occurs at the eastern end of the river, near the fishing weir, and at "Grizzly Drop," the rapids where Shenismike Creek joins the Babine River in the lower canyon.

[118] Grizzly Drop is located where Shenismike Creek enters the river. Here it drops one to two metres through a very narrow gorge. Spawning salmon rest in the pools and attract the feeding bears [Herchmer 1993].

First Nations Tourism

Gitxsan representatives have put forth a few tourism concepts and two have entered into the planning stage. They are as follows.[119]

1. Alice Jeffery (Miluulak)
   Gitxsan culture school with a linking trail structure. Would entail central area at the ancient village of Kisgegas, which would be staging area for backcountry trekkers and an interpretative site/ cultural school. One of the trails would go from Kisgegas to Bear Lake. A side trip would be a day hike along Babine River to Grizzly Drop in late summer for bear viewing. This project has an initial business plan. Three phases are proposed, spanning 10 years to complete the development of the entire project.

2. Wilmer Johnson (Tsa Bux)
   Ideas include a women's retreat at the north end of Bear Lake, which is outside of the plan area to the east), bed and breakfast at Kisgegas, one for each house, trail development (ATVs in summer, snowmobile in winter), fishing, including value added fishery, such as canning and smoking salmon.

3. Yvonne Lattie, Mercy Loring (Wilps Gwininitxw)
   Proposed trail from Kisgegas Reserve via Tommy Jack Pass (on boundary of plan area) to Sicintine River and Skeena mainstem.

The Gitxsan, Gitanyow, and Wet'suwet'en First Nations joined together to sponsor a two-phase tourism strategy [Meredith & Associates and The Office of the Wet'Su Wet'En November 2002]. A Phase I report is available that sketched tourism projects[120] in the traditional territories of the Gitxsan, Gitanyow, and Wet'suwet'en First Nations. It reports that five infrastructure projects have received funding from the Coastal Economic Adjustment Initiative since the beginning of 2000.[121] None are located in the WBSRM Plan area. A Gitxsan – Kisgegas Cultural/Heritage Tourism project for the Kisgegas Reserve was included in the work program for Phase II of the First Nations tourism strategy. The following SWOT analysis[122] for First Nations tourism projects in the Babine River area is excerpted from this First Nations tourism strategy.

119 Information provided by D.Stoffel, a MSRM contractor, in a March 7, 2003 email message.
120 Underway, planned and discussed projects
121 Gitwangak Heritage Village and Motel, which will be located at the western corner of the busy intersection of Highways 16 and 37. The Lax'Skiik Clan of the Gitxsan Nation has been developing a cultural and tourism site for the past ten years in the ancient village of Gitangaat, part of the Gitwangak reserve; extensive restoration and renovation of the 'Ksan Historical Village and Museum in Hazelton to meet increased tourist traffic. Skeena Ecoexpeditions includes the construction of a visitors centre, housing an interpretive and guiding centre, a gift shop and gallery, and the construction of a base camp (to be built about 70 miles north on the historic village of Kuldo, and will include two winterized cabins, a kitchen facility and a covered meeting shelter).
122 SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats.

Exhibit – SWOT Analysis for First Nations tourism projects in the Babine River area

Strengths	Weaknesses
• east and west sides of watershed accessible by road but large parts of watershed unit, especially northeast, are unroaded • Babine River: fishing, rafting, Babine River Corridor Provincial Park, petroglyphs • wildlife viewing, especially grizzlies in the Babine River corridor • Gisgegas village: infrastructure and cultural history • Shedin River-Shelf Ridge ancient trail system • Gisgegas-Atna Range ancient trail system and snowmobile route • inland fishery at Gisgegas	• lack of tourism infrastructure on the landbase, especially Gitxsan controlled • lack of trained Gitxsan personnel in tourism • inability to acquire capital for tourism infrastructure • relatively long access by road from population centres • ancient trail systems in need of repair for tourism capability

Opportunities	Threats
• Gisgegas village: cultural history, accommodation, activities, petroglyphs • traditional fishing activities • hut-to-hut trek, Gisgegas-Kuldo village along Shelf Ridge (ancient trail) • backcountry tours into the Atna Range • Nichyeskwa connector road • partnering with existing rafting and sport fishing operators • cultural history around Gunanoot Lake	• logging development, especially north of Babine River and along Shedin and Sam Green Creeks • habitat destruction and road access affecting grizzly population • overuse of Babine River corridor for rafting and kayaking detracts from experience and results in environmental damage at few suitable camping spots • Nichyeskwa connector road • global recession • uncertainty of aboriginal title creating poor investment climate • establishment of non-local tourism businesses resulting in loss of local control over tourism industry, especially around sport fishing and rafting

Timber Harvesting Land Base

Kispiox TSA

The land base of the Kispiox TSA covers a total area of 1 224 075 hectares with the timber harvesting land base accounting for 253 634[123] hectares. The next table summarizes the major area classifications in the Kispiox Timber Supply Area.

Exhibit - Kispiox Timber Supply Area Timber Harvesting Land Base

Classification	Area (ha)	Area (ha)	% TSA area
TSA area		1 224 075	100.0
Non-Crown land	(149 352)		12.2
Non-forest land	(377 666)		30.8
Total Crown forest		697 057	56.9
Reductions to productive crown forest	(434 011)		35.5
Additions	0		0.0
Current timber harvesting land base		263 046	21.5
Future Reductions	(9 412)		0.7
Long-term timber harvesting land base		**253 634**	**20.7**

Notes:
1. Reductions to Crown forest include non-merchantable forest, inoperable forest, environmentally sensitive areas and protected areas
2. Additions include current and backlog NSR (not satisfactorily restocked) areas
3. Future reductions include losses to future roads

Source: Ministry of Forests 2002

WBSRM Plan Area

The land base of the WBSRM Plan Area covers a total area of 235 235 ha, 19% of the Kispiox TSA total. The timber harvesting land base of the WBSRM Plan Area is estimated as 67 289 ha, 21% of the Kispiox TSA total [MSRM 2003b].

In the plan area, there are large volumes of balsam and hemlock timber classified as marginal pulp log (67%) or marginal saw log (12%). The traditional saw log harvest profile in the Kispiox TSA consists of spruce, lodgepole pine and the taller one-third of the balsam inventory. Saw log quality timber is estimated to represent only 13% of existing mature timber volumes in the plan area. All three types of timber contribute to harvest flow potential. The next table presents area and volume estimates for timber in the plan area.

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[123] A 20% reduction from the timber harvesting land base shown in the 1996 *Kispiox TSA Timber Supply Analysis* report. The new THLB is smaller because there are six new protected areas, estimated losses have increased, and forest management changes affect requirements for community watersheds, water quality, scenic areas, and old-growth forests.

Exhibit – WBSRM Plan Area Timber Harvesting Land Base Estimates

Resource Indicator	Area (ha)	Volume (m^3)
Plan Area Gross Land Base (ha)	235 235	
Forestry (ha)		
Timber Harvesting Land Base	67 289	20 147 377
Stand Quality – Pulp	44 441	13 508 446
Stand Quality - Marginal Sawlog	7 650	2 495 220
Stand Quality - Sawlog - Spruce All	5 911	1 777 663
Stand Quality - Sawlog - Pine All	2 457	678 528
Stand Quality - Sawlog - Cedar All	0	0
Stand Quality - Sawlog - Balsam G	293	102 668
Stand Quality – Young	6 270	679 866

Source: MSRM 2003b

Allowable Annual Cut (AAC) Apportionment

The Kispiox TSA's (current) apportionment and commitments are displayed in the following table.

Exhibit - Kispiox TSA AAC Apportionment and Commitments[124]

	m^3/year	% of AAC
Forest Licenses		
Replaceable	788 065	72
New Skeena Forest Products Inc.	547 974	
Kitwanga Lumber Co. Ltd.	87 571	
Kispiox Forest Products Ltd.	64 124	
Bell Pole Company	55 414	
Non-replaceable	30 435	3
Kispiox Forest Products Ltd.	30 435	
Timber Supply Licenses		
TSL>10 000 m^3, replaceable	11 980	1
Canema Timber Ltd.	11 381	
TSL<=10 000 m^3, replaceable	5 054	0.5
Sub-Total	**805 099**	**76.5**

[124] MOF has yet to revise the apportionment and commitments in the Kispiox TSA to align with its new lower AAC.

	m³/year	% of AAC
Timber Sales BC		
Category 1 (sec 20)	172 710	16
Category 2 (sec 20)	11 020	1
Bid Proposals (sec 21)	58 736	5
Sub-Total	**242 466**	**22**
Woodlot Licenses	3 611	0.5
Forest Service Reserve	11 000	1
Total Allowable Annual Cut	**1 092 611**	**100.0%**

Source: Ministry of Forests

The Kispiox TSA's AAC of 977 000 m^3 became effective in January 2003. It is a decline of 10% from the previous AAC of 1 092 611 m^3. It is projected to fall by 12% in subsequent decades.

821 PYs of direct employment in the BC forest industry could be supported by harvesting the full amount of the Kispiox TSA's AAC.[125]

New Skeena Forest Products Inc. holds the largest timber commitment in the TSA by a wide margin, over half of the AAC. Kispiox Forest Products, Kitwanga Lumber and Bell Pole Company Ltd. also hold replaceable forest licenses. KFP also has a non-replaceable license for approximately 10% of the AAC. The BC Government's Timber Sale Program accounts for over 25% of the TSA's apportionment.

The timber commitments in the Kispiox TSA are subject to change due to the implementation of the BC Government's March 26, 2003 announcement of a Forest Revitalization Plan, which includes a provision to reallocate 20% of logging rights from major licensees to BC Timber Sales. As well, there will be changes arising from the June 1, 2003 signing by the Gitxsan Hereditary Chiefs and the BC Minister of Forests of a framework agreement that commits the Gitxsan and the province to negotiate a short-term forestry agreement for a non-replaceable forest license of up to 1.2 million m^3 over seven years and sharing of up to $2.6 million in annual forestry revenues. The timber for the forest license would come from "undercut" or unlogged timber from New Skeena Forest Products' forest licenses in the Kispiox TSA.

Kispiox Band owned - Anspayaxw Tenure Corporation holds a non-AAC non-replaceable license for 53 406 m^3; this volume does not appear in the AAC apportionment table.

[125] Based on 0.84 PYs of direct forest industry employment per m^3 of harvested timber estimates developed by the BC Ministry of Forests for the Kispiox TSA, [BC Ministry of Forests May 2002]. This does not include wood products transport and road building and maintenance employment associated with harvesting Kispiox TSA timber.

Forest Development Plans (FDP)

Each of the three licensees has Forest Development Plans that are valid until April 2005. Each licensee's portion of its Kispiox TSA chart volume accounted for by its FDP blocks in the WBSRM Plan area is as follows:

- BC Timber Sales – 19% of its Kispiox TSA chart volume
- NSFP – 32% of its Kispiox TSA chart volume
- KFP – 78% of its Kispiox TSA chart volume

The land area and timber volume for approved and proposed FDP blocks of each of the licensees are shown in the following tables.

Exhibit - BC Timber Sales FDP 2002 – 2011: Approved and Proposed Blocks

	All Blocks, Approved and Proposed		WBSRMP % of Licensee's TSA Chart Area	WBSRMP % of Licensee's TSA Chart Volume
	Gross Area (ha)	Volume (m^3)		
Entire TSA Chart	18 502.1	3 055 384		
Babine LU	831.8	105 483	4.5	3.5
Babine River LU	1 215.7	176 073	6.6	5.8
Gail LU	1 857.6	298 721	10.0	9.8
Total for WBSRMP	3 905.1	580 277	21.1	19.0

Source: MSRM 2003c

Exhibit - NSFP FDP 2001 – 2007: Approved and Proposed Blocks

	All Blocks, Approved and Proposed		WBSRMP % of Licensee's TSA Chart Area	WBSRMP % of Licensee's TSA Chart Volume
	Gross Area (ha)	Volume (m^3)		
Entire TSA Chart	16 072	3 872 932		
Sam Green	1 178	312 655	13.6	8.1
Shelogyote	2 423	582 076	15.1	15.0
Big Slide	0	0	0	0
Shedin	2 228	360 634	13.9	9.3
Total for WB SRMP	5 829	1 255 365	36.3	32.4

Source: MSRM 2003c

Exhibit - KFP FDP 2000 – 2005: Approved and Proposed Blocks

	All Blocks, Approved and Proposed		WBSRMP % of Licensee's TSA Chart Area	WBSRMP % of Licensee's TSA Chart Volume
	Gross Area (ha)	Volume (m^3)		
Entire TSA Chart	3 415	1 009 220		
(Hanawald)	2 915	787 982	85.4	78.1
Total for WB SRMP	2 915	787 982	85.4	78.1

Source: MSRM 2003c

Timber Harvesting Volume

Kispiox TSA

The annual harvest activity in the Kispiox TSA averaged approximately 780 000 m3 over the seven-year 1996-97 – 2002-03 period. Harvesting declined precipitously in the 2001 – 2002 period because of SCI/NSFP's financial problems. The next table summarizes the volume of timber harvested in the TSA for the past seven years.

Exhibit - Kispiox TSA volumes billed, 1996- 2002

1996 (m^3/yr)	1997 (m^3/yr)	1998 (m^3/yr)	1999 (m^3/yr)	2000 (m^3/yr)	2001 (m^3/yr)	2002 (m^3/yr)	7 yr avg
984 965	831 028	1 011 470	1 114 800	821 848	353 501	339 194	779 544

Source: BC Ministry of Forests

WBSRM Plan Area

There has been little timber harvesting north of the Babine River. Harvesting has been concentrated in the southern and northwest portions of the TSA, including the Nichyeskwa and Gail-Thomlinson watersheds in the WBSRM Plan area. Harvesting volume data for SCI/NSFP and KFP in the West Babine plan area is summarized in the following table.

Exhibit – SCI/NSFP and KFP harvest volume estimates in West Babine plan area

Licensee	1999 (m^3)	2000 (m^3)	2001 (m^3)	2002 (m^3)	2003 (m^3)
SCI/NSFP	172 400[126]	124 900[127]	10 900[128]	0	0
KFP[129]	-	0	0	30 000[130]	25 000
BCTS[131]		38 310 avg. over 3-yr period			30-40 000

Source: BC Ministry of Forests

In 1988, the Gitxsan First Nation was granted the "Sam Green" injunction that prevented timber harvesting over the northern third of the Kispiox TSA pending resolution of land claims. The injunction was lifted in April 1995. As a result of the injunction and SCI's financial woes, only a few kilometers of logging road has been extended into the north of Babine River western area.

Kispiox Forest Products holds the Hanawald Chart Area north of the Babine River that will be an important timber source for this small company. The company constructed a five kilometre road (two kilometres within Bulkley-Cassiar TSA and three kilometres within Kispiox TSA) in winter 1997-98.

NSFP holds the chart areas for the timber west of the Hanawald Chart Area north of the Babine River. In its five year plan, the company projected annual harvesting of approximately 200 000 m^3 from its north of the Babine chart areas by years 3 and 4, amounting to about 40 percent of its Kispiox Forest TSA commitment. Its initial three cut blocks across the Babine River bridge were harvested in winter 1996-97.

Harvesting and Processing Facilities and Employment

New Skeena Forest Products Inc. owns a sawmill in South Hazelton (Carnaby) and a whole log chipper in New Hazelton adjacent to the plan area, both closed since February 2001.

The Carnaby sawmill and chipping complex has an annual capacity of approximately 750 000 cubic metres and the Hazelton whole log chipper which has an annual capacity of about 300 000 cubic metres.

When it was last operating the Carnaby sawmill employed approximately 145 persons and the whole chipper in New Hazelton employed approximately 15. When SCI was in full operation in the late 90s, it employed another 180 workers in its Kispiox TSA harvesting operations. It was the largest private sector employer of First Nations people in the Kispiox; over 50% of sawmill employees and a significant percentage of harvesting contract employees were First Nations members. SCI processed most of its AAC harvest locally, with the majority of its chip output going to its Prince Rupert pulp mill.

NWBC Timber & Pulp Ltd. bought the former Skeena Cellulose Inc. in April 2002 for a debt-free $6 million, with the BC government absorbing a $ 412 million loss. NWBC subsequently renamed the company, New Skeena Forest Products (NSFP).

126 NSFP views this amount as a "normal" production year from the West Babine plan area.
127 Operations disrupted in Q4.
128 Sawmill closed in February 2001 and whole log chipper closed in May 2001.
129 Estimate provided by D. Allen, KFP
130 KFP plans to harvest 70 000 m3 over the November 2003 to May 2004 period in its Hanawald chart.
131 Estimate provided by M. Folkema, MOF

NSFP owns three other production facilities in the Prince Rupert Forest Region: a bleached kraft pulp mill in Prince Rupert; a sawmill in Terrace; and a sawmill in Smithers. It has a 49% interest in Kitwanga Lumber's Kitwanga saw mill. The current status of NSFP's processing operations are as follows:

- Prince Rupert pulp mill – closed; NSFP announced in April 2003 that it expects to place its pulp mill in start-up mode by the end of June, ramp-up in July and August, and be in full production by September.
- Terrace saw mill – closed; New Skeena's Terrace mill has been shut down for 18 months but on May 23, NSFP announced that Terrace sawmill operation employees have ratified a new six-year collective agreement, which includes a 20% wage cut from the current Coast Master Agreement. The company also announced a start-up target for the Terrace mill of September 2003.
- Smithers saw mill – closed; NWBC Timber and Pulp Ltd. sold its Smithers mill to West Fraser Timber, which has chosen not to re-open the mill. West Fraser is feeding timber associated with the purchased mill to its existing Smithers mill.
- Kitwanga saw mill – closed as of May 2003 because of a combination of low lumber prices and lack of a market for its chips. This mill is expected to re-start operations when lumber and chip market conditions improve.
- Carnaby saw mill – closed; NWBC Timber and Pulp Ltd.'s president offered this mill to the Gitxsan Nation for $1 in February 2003, mill workers rejected a renegotiated labour agreement in December 2002. This mill is not expected to re-open because its processing equipment is inappropriate for the area's fibre profile, largely decadent hemlock.
- New Hazelton chipper – closed; It is expected to re-open in October after the Prince Rupert pulp mill is in full operation and creates a market for its chip output.

NSFP managed a regional log flow to suit the specialized timber input needs of each mill; mid-sized logs went to Carnaby, while small logs went to Smithers and large logs to Terrace. Logs from outside the Kispiox TSA were directed to the Carnaby mill. Sixty percent of its Bulkley FD wood was directed to the big log Linck saw at Carnaby in the late 90s [Crane Management Consultants April 1998]. The supply of logs to its local mills that cannot be sourced from the Kispiox TSA was supplemented by supplies from the Bulkley and Morice TSAs, as well as some private purchases.[132] NSFP has a license in the Kalum TSA that provided approximately 15% of its total timber requirement prior to 2001. The company obtained another 25 to 30% of its requirement from TFL1, in the Kalum Forest District, prior to 2001.

The following table presents SCI's average employment for the 1997-2000 period, based upon a survey conducted by BC Ministry of Forests.

[132] Sixty percent of SCI's Bulkley FD wood was directed to the big log Linck saw at Carnaby [Crane Management Consultants April 1998].

Exhibit – SCI's harvest and direct employment 1997-2000 average

AAC	576 815 m^3
2000 harvest	563 550 m^3
1997-2000 average harvest	443 429 m^3
Direct employment (person-years)[133]	
Harvesting, silviculture and administration	110
Processing	142

Source: BC Ministry of Forests May 2002

Kispiox Forest Products Ltd. is privately owned by Vancouver-based interests and is the successor to Isolite Stege Forest Products Co. Ltd. from which it purchased both a Forest License (64 124 m^3) and sawmill in New Hazelton. Annual mill capacity is about 48 mbf. It is a big log mill but the company is examining the feasibility of installing a small log line, which would increase capacity to 57 mbf. Its timber licenses only account for 35% of its two shift fibre needs. Most of its harvest is processed as lumber within the TSA. An estimated 70 percent of its lumber is sold into the US. It has approximately 85 employees (approximately 60 percent are members of First Nations) and has been operating with two shifts for the past 5-6 months. It uses a Smithers contract logging company to log its Hanawald chart over the winter months[134] (November to May).

KFP joint ventured with the Kispiox Band in Hazelton to win a Section 22 SBFEP sale. They proposed to establish a remanufacturing plant in Hazelton, employing 20-25 persons if awarded the timber tenure, but it was not built and the joint venture is looking at other projects.

The following table shows KFP's 1997 to 2000 average employment levels associated with its Kispiox TSA operations based upon a survey conducted by BC Ministry of Forests. The mill was shutdown in late 1998 through 2000 but reopened in early 2001, which affects its average employment figures.

Exhibit – KFP's harvest and direct employment 1997-2000 average

AAC	94 559 m^3
2000 harvest	2 288 m^3
1997-2000 average harvest	39 244 m^3
Direct employment (person-years)	
Harvesting, silviculture and administration	13
Processing	47

Source: BC Ministry of Forests May 2002

Kitwanga Lumber Co. Ltd., incorporated in 1963, operates a sawmill/planer in Kitwanga, which currently employs approximately 45 workers. Another 18 jobs are attributable to the company's harvesting operations across the TSA. More than 40 aboriginal people are employed by Kitwanga Lumber.Most of the mill's fibre inputs come from the Kispiox TSA.

Kitwanga Lumber is not affected by a proposal to access the West Babine area because it does not have a chart area north of the Babine River and there is no BC Timber Sales chart area north of the Babine River in the Kispiox Forest District (at this juncture).

[133] The employment figures relate to the volumes harvested from the Kispiox TSA land base only. The employment does not include wood products transport and road building maintenance.

[134] A MOF restriction

The following presents Kitwanga Lumber's recent harvest activity and 1997 to 2000 average employment levels associated with its Kispiox TSA operations, based upon a survey conducted by BC Ministry of Forests.

Exhibit - Kitwanga Lumber's harvest and direct employment 1997-2000 average

AAC	92 180 m^3
2000 harvest	82 993 m^3
1997-2000 average harvest	105 665 m^3
Direct employment (person-years)	
Harvesting, silviculture and administration	34
Processing	42

Source: BC Ministry of Forests May 2002

Bell Pole Co. is a family owned company, producing electric utility poles for markets throughout North America. It harvests western red cedar and lodgepole pine in BC to produce its poles, and markets non-pole quality logs to other companies in return for pole quality logs.

The next table gives Bell Pole's recent harvest activity and 1997 to 2000 average employment levels associated with its Kispiox TSA operations, based upon a survey conducted by BC Ministry of Forests.

Exhibit - Bell Pole harvest and direct employment 1997-2000 averages

AAC	55 414 m^3
2000 harvest	70 466 m^3
1997-2000 average harvest	48 843 m^3
Direct employment (person-years)	
Harvesting, silviculture and administration	15
Processing	20

Source: BC Ministry of Forests May 2002

Other licensees in the Kispiox TSA include BC Timber Sales Program (formerly Small Business Forest Enterprise Program), the Anspayaxw Tenure Corp., and Canema Timber Ltd. From 1997 – 2000, SBFEP harvest averaged 245 105 m^3 annually, which would suggest an estimated 165 person-years of local harvesting, silviculture and processing employment.

Minerals and Mining

There are no mines actively operating in the Kispiox TSA. Although no major activity has been recorded, the last commercially significant attempt was made in 1983. Some mining activity occurred in the 1970s and 1980s when gold and silver prices went up.

Within the Babine River region, parts of the Atna Range, the French Peak/Mount Thoen area and Mount Thomlinson have been actively explored since the 1960s and are under current mineral tenures.

The Kispiox district has an exploration and mining history that dates back to 1884 at the Dry Hill mine on Lorne Creek. The Klondike Gold Rush brought an influx of prospectors into the Hazeltons in 1889. The earliest underground mining production was recorded in 1914 when the construction of the railway permitted the transportation of ore. Base and precious metals have been produced from several underground mines around the Hazeltons, in the Rocher Deboule Range and around Nine Mile Mountain.

Numerous roads and trails, originally built to provide access to mineral occurrences in alpine regions, now provide the basis for extensive hiking trails within the region.

Smithers is the main supply and service centre for mineral exploration and development in northern BC. Major mines serviced from Smithers include Eskay Creek and Snip. Crews fly in and out of Smithers on a rotational basis throughout the year. The convenience of daily flights to and from Smithers Airport, the fixed wing, float plane and permanent helicopter bases, and the Ministry of Energy and Mines makes Smithers an attractive base for mining-related activities. Many mining consultants, drilling operations, exploration companies, prospectors and surveyors are based in Smithers and Telkwa.

Commercial Fisheries

The Babine-Nilkitkwa lake system supports the largest single sockeye salmon population in Canada. The Babine population has accounted for 75-95% of Skeena sockeye salmon production, averaging more than 3.8 million adult fish annually since 1990 [DFO 1999].

Within the Skeena drainage, the Babine-Nilkitkwa lake system is the largest single producer of both sockeye salmon and steelhead trout. Large populations of chinook, coho and pink salmon, Dolly Varden char, cutthroat trout and other fish species are present as well. Chinook and coho are currently threatened species.

First Nations conduct a food fishery and Excess Salmon to Spawning Requirement (ESSR) fishery on the Babine River at the fish counting fence. Here they mainly use dip nets for harvesting and sort the Sockeye catch in nearby flat areas.

Trapping

Trapping within the plan area has been a traditional activity for aboriginal residents for many years and has important cultural significance. It is difficult to quantify the activity, but its importance and the negative impacts of the forestry industry have been emphasized numerous times by the aboriginal community. There are 11 registered trap lines in the study area and four are located completely within the plan area [MSRM 2003].

Marten is the most commonly trapped species, accounting for anywhere from two-thirds to three-quarters of the total number of trapped animals. The 2002/03 sale price at auction for marten averaged $62 and 100% was sold due to scarce supplies.[135] Trapping in the area appears to be opportunistic and not the basis for a steady income stream. Only seven of the 11 trap lines reported fur harvests for any one year and only two of the trap lines in the study area recorded steady annual fur harvests. All trapline holders are required to report their fur harvest to MWLAP if they are sold for commercial purposes. Furs used for personal consumption, such as clothing and crafts making, (i.e. crafts. clothing etc.), need not be reported.

[135] Fur sale auction price source available at http://www.nwtwildlife.rwed.gov.nt.ca/nwtfur/auction_sales_results_for_2002_03.htm

APPENDIX II – LOG TYPE BY STAND QUALITY

The following table details the class breakdown for stand quality used in this project. The class breaks and definitions are based on the Bulkley TSA TSR2 and local knowledge. Two criteria, species composition and site index is considered. Species composition is categorized by inventory type group (ITG) in the forest cover data, and is used for simplicity. Species composition is correlated to ITG in the following table. Site index (SI) is derived in the forest cover data, from age and height, both of which are critical attributes in determining stand quality.

Exhibit – Log Type by Stand Quality

Class	Species	Inventory type groups	SI
Saw log	Spruce – All	21, 23-26	All
Saw log	Pine – All	28, 30, 31	All
Saw log	Cedar – All	9-11	All
Saw log	Balsam – G	18 – 20	≥ 17
Marginal saw log	Balsam – M, P	18-20	<17
Pulp log	Hemlock	12, 14-17	All

The minimum harvestable age is 80 (age class 5+) with the exception of the Babine SMZ that is 140 yrs (age class 8+) and the lower site index is previously identified during development of the THLB. Stands within the operable land base (THLB) that are younger than the minimum age criteria are reported out as "young stands." Area that is outside the operable land base (THLB) is reported out as "no timber value."

APPENDIX III – TIMBER SUPPLY ESTIMATION[136]

Introduction

An assessment of impacts on timber flow due to proposed management direction in the West Babine SRMP was undertaken to help estimate the economic and social implications. This section describes the methodology and results of the timber impact assessment.

Methodology and Assumptions

The general approach to estimate timber flow impacts is based on an assessment of anticipated effects of proposed management direction in the West Babine SRMP coupled with results from sensitivity analyses in the Kispiox Timber Supply Review (TSR).[137] Enfor Consultants Ltd. worked closely with the Ministry of Sustainable Resource Management to develop the methods and assumptions used in this assessment. The assessment was undertaken in the following manner:

- ✧ Determine the information that was readily available.
- ✧ Develop a proxy model from existing information in the Kispiox TSR that could be applied to the SRMP.
- ✧ Identify and quantify the anticipated impact of management in the SRMP.
- ✧ Determine the impact of the SRMP on the Kispiox Timber Supply Area (TSA).

Information Used

The information used in the assessment includes the following:

- ✧ Xsu gwin lik'l'inswx: West Babine SRMP, Plan Review Draft Document, Draft 2.0, July 21, 2003
- ✧ A GIS analysis spreadsheet provided by MSRM, titled "West Babine Area Based Summary", detailing the area and volume of timber affected in the nine key groupings of management zones. It summarizes the key mapped resource indicators.
- ✧ Kispiox Timber Supply Area Analysis Report, May 2002

Proxy Model

A proxy model was developed based on results from the TSR, which provides an analysis of sensitivity to uncertainty to land base available for timber harvesting. *The TSR (Section 5.3) stated that changes in the timber harvesting land base (THLB) produce a proportional change in the entire harvest forecast. A drop of 10% of the THLB would equate to a 10% drop in the initial harvest rate and a 9% drop in long term harvest level.*

For the purposes of the SRMP, the proxy model assumed that a 1% loss of THLB in the SRMP would roughly equate to a 1% loss in harvest rate across the TSA, both short term and long-term. The current TSA allowable annual cut (AAC) is 977,000 m^3/yr, therefore a 1% loss in THLB is estimated to result in a 9,700 m^3/yr impact today, stepping down over 70 years to a long-term impact of 4,700 m^3/yr over time.

The TSR is based on forest management practices in the West Babine area prior to the completion of the SRMP, and includes management direction under the previous Babine LRUP.[138] The TSR was therefore considered a reasonable base case to compare the impacts of management practices in the SRMP.

Anticipated Impact of Management in the SRMP

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[136] Prepared by Enfor Consultants Ltd., North Vancouver, BC
[137] Kispiox Timber Supply Area Analysis Report, BC Ministry of Forests, May 2002
[138] Personal communication with Agathe Bernard, MSRM, February 2004.

In order to utilize the proxy model, area equivalents for key management direction were derived from the targets/measures identified in the SRMP, and applied to the areas identified in the West Babine Area Based Summary. Proposed management direction is expected to result in the following constraints on timber flow:

✧ **100% Constraint Areas**

Applies to areas where proposed management direction requires there will be no commercial logging, resulting in a 100% impact on timber flow. For example, the area in Core Ecosystems (also known as Old growth Management Areas) indicates there will be no logging or road building, and hence a complete removal from timber flows. Groupings of zones where this constraint is assumed to apply includes:

- Protected Areas (Resource Code 1)
- Old Growth Management Areas (Resource Code 2)
- Shelagyote/Babine Tourism Node (Resource Code 3)
- Atna/Shelagyote SMZ (Resource Code 4)

The 100% constraint is assumed to address overlapping management direction in these areas, such as Visual Quality Objectives.

✧ **Partial Constraint Areas**

Applies to areas where proposed management direction will allow timber harvesting provided that certain forest conditions exist (also known as forest cover constraints). For example, a Grizzly Bear habitat constraint in the Sperry Rosenthal requires that at least 50% of the forest must be at least 50 years old to allow harvesting. These areas will still contribute to timber flow, but possibly at a lesser rate than if unconstrained, including:

- Connectivity corridors (Resource Code 5)
- Shenismike Wildlife Movement Corridor (Resource Code 6)
- Babine SMZ (Resource Code 7)
- High Value Grizzly Bear Habitat (Resource Code 8)

An equivalent area netdown was derived for use in the proxy model for these areas. This was based on anticipated affects on timber flow, using the judgement and experience of the consultant and MSRM. Unless identified below, the cover constraint is expected to have no significant impact on timber flow.

✧ **Other Resource Indicators Constraints Qualifiers**

Management direction covers other resources in the SRMP. Some of the impacts have been incorporated in the above resources, but in a few instances the impacts are unclear (plus or minus). Since these are difficult to assess in this model without complex timber supply analysis, judgement was used to add a general qualifier amount indicating the anticipated increased (denoted by +) or decreased impacts on timber supply (denoted by -), added to the final impact statement. These resource values include:

- VQOs (Recreation and Tourism Resource Code 9)
- Biodiversity (Resource Code 10)
- Access Management Zones (Resource Code 11)
- Pine Mushroom Areas (Resource Code 12)

✧ **No Significant Constraints**
It is assumed that SRMP targets/measures affecting logistics of operations will have no significant effect on timber flow. For example, seasonal constraints in the High Value Grizzly Bear Habitat Zones might affect timing of operations but should not affect the flow of timber. Another example is restricting openings to < 15 ha in size in the Babine River SMZ. It is also assumed that there are no significant changes to THLB areas, and resulting impacts to timber flow, pre- and post-SRMP if they are not identified in the spreadsheet of information provided for analysis. These resource values include, in addition to the resource values noted above:
- Other Grizzly Bear Operational Considerations (Resource Code 13)
- Other Fish and Water (ECA) Considerations (Resource Code 14)
- Minerals/Petroleum (Resource Code 15)
- First Nations (Resource Code 16)
- Berry Management Areas (Resource Code 17)

Other Key Analysis Assumptions

Several other key assumptions have been made to undertake the assessment, in addition to those noted above, including the following:

✧ The pre-West Babine SRMP area management and growing assumptions is similar to the rest of the Kispiox TSA. The West Babine represents almost 25 per cent of the area of harvestable timber in the Kispiox TSA.[139]

✧ The impact of area constraints in the SRMP would be felt across the entire TSA by the proportional amount that they would normally contribute to the TSA.

Results

The derived information was applied to derive expected AAC impacts. The range of impacts expected is from 20,000 m^3/yr to 40,000 m^3/yr, with the anticipated impact of more than 30,000 m^3/yr. The impact summary is provided in the table below.

The area of key resources and areas affected were compiled and are provided in the second table.

Table A2 - West Babine SRMP AAC Impact Calculations

AAC Factors	THLB (ha)	% of Kispiox THLB Area	AAC (m^3/yr)	AAC Impact Rounded (m^3/yr)
Kispiox TSA Current Timber Harvesting Landbase	263,046	100%	977,000	**1,000,000**
West Babine plan area THLB	67,289	25.6%		
Minimum THLB Area Impact due to: West Babine SRMP Assuming 100% Impact on THLB on Resources 1 to 4 only	5,314	2.0%	19,735	**20,000**
Maximum THLB Area Impact due to: West Babine SRMP Assuming 100% Impact on THLB on Resources 1 to 8	10,622	4.0%	39,451	**40,000**

139 West Babine SRMP Public Review Draft July 21, 2003, pg. 9.

AAC Factors	THLB (ha)	% of Kispiox THLB Area	AAC (m^3/yr)	AAC Impact Rounded (m^3/yr)
Anticipated THLB Area Impact due to: West Babine SRMP Assuming 100% Impact on THLB on Resources 1 to 4 Partial Impacts on Resources 5 to 8	7,880	3.0%	29,269	**30,000**
Anticipated THLB Area Impact due to: West Babine SRMP Assuming 100% Impact on THLB on Resources 1 to 4 Partial Impacts on Resources 5 to 8 Additional Management Direction for Resources 9 to 17 which have been partially addressed in Resources 1 to 8	+			**30,000 +**

Source: Kispiox TSA Analysis Report, May 2002, pg 13

Table A3 - Summary of Key Resources and Areas Affected in THLB

Resource Value		1	2	3	4	5	6	7	8	
Key Mapped Resource Indicators for Plan Area (in hectares unless noted)	**Total SRMP Plan Area (ha, m3 or #)**	**Area in Protected Areas (ha)**	**Area In Old Growth Management Areas (ha)**	**Area In Shelagyote / Babine Tourism Node (ha)**	**Area in Atna / Shelagyote SMZ (ha)**	**Area In Connectivity Corridors (ha)**	**Area In Shenismike Wildlife Movement Corridor (ha)**	**Area in Babine SMZ (ha)**	**Area in High Value Grizzly Bear Habitat Zones (ha)**	**Total (ha)**
Plan Area Gross Land Base (ha)	**235,235**	**3**	**15,814**	**2,108**	**12,330**	**3,070**	**1,200**	**-1,117**	**13,814**	**47,222**
SRMP Reference Name (in either the document or on the maps)		Protected Areas	Core Ecosystems	Shelagyote / Babine Tourism Node	Atna / Shelagyote SMZ	Landscape Corridors	High Value Grizzly Bear Habitat	Babine SMZ	High Value Grizzly Bear Habitat	
SRMP Management Direction Sections			3.1.1 Biodiversity	3.3.2.4 Tourism	3.2.3.2 Atna / Shelagyote SMZ	3.1.1.2 Biodiversity	3.1.2.1 Grizzly Bears	3.2.3.1 Babine SMZ	3.1.2.1 Grizzly Bears	
SRMP Management Direction Objective		n/a	Objective 1	Objective 2b	Objective 1	Objective 3	Objective 3	Objective 1-4	Objective 7-9	
Management Consideration or Target/Measure Affecting Timber Flow		n/a	No harvesting	No Commercial logging	No Commercial logging	>70% retention of structure in Landscape Riparian Corridors	No roads built within the Shenismike	>30% of forest >140yrs old; 200 year rotation age	No alteration of Critical habitat unless no practical alternative exists; 100m buffers next to non-forested critical habitat	
SRMP Map		Map 1: Amalgamated Map	Map 5: Biodiversity	Map 7: Tourism Features and Facilities; Map 11: Access	Map 7: Tourism Features and Facilities; Map 11: Access	Map 5: Biodiversity	Map 6: High Value Grizzly Bear Habitat	Map 11: Access		
Page in Public Review Document July 21, 2003			15	43-44	36	16	25	34-35	26-27	
Approx. Resulting Netdown to THLB Area		**full**	**full**	**full**	**full**	**high**	**moderate**	**moderate**	**low**	
Rationale		no logging	no logging	no logging	no logging	high retention will reduce availability and growth potential	internal areas likely rendered inaccessible	causes deferrals and extended rotations	causes long term deferrals and extended rotations in some areas	
Forestry (ha)										
Timber Harvesting Land Base	**67,289**	**0**	**424**	**852**	**4,038**	**2,570**	**389**	**-569**	**2,919**	**10,622**
Maximum Net Effect on Timber Flow (ha)		**0**	**424**	**852**	**4,038**	**2,570**	**389**	**-569**	**2,919**	**10,622**
Anticipated equivalent area constraint on Timber Flow % on THLB		**100%**	**100%**	**100%**	**100%**	**75%**	**50%**	**50%**	**25%**	
Anticipated Net Effect on Timber Flow (ha)		**0**	**424**	**852**	**4,038**	**1,927**	**194**	**-285**	**730**	**7,880**

Study Limitations

The methods to undertake impact assessments range from highly detailed timber supply simulations to assessments that rely on professional judgement; each carries its own level of risk. The approach chosen in this assessment provides a reasonable gauge of impacts, using intermediate information derived during the planning process.

Results of the study are limited based on the assumptions noted above. It should be noted that the impacts on timber flow could be scheduled to occur sooner or later in the harvest schedule for the TSA, but it is more reasonable to assume that the impacts occur proportionately to assist in assessing the cost of the management direction.

This analysis is based on the best information available for the SRMP. However, professional judgment was used in assessing impacts of the management direction; a more accurate answer would be available if a timber supply analysis were undertaken to capture the subtleties and synergy effects of the new management direction. The information provided by this analysis are adequate for the purposes of undertaking a socio-economic assessment and assessing draft SRMP impacts, but should not be relied upon for other purposes.

APPENDIX IV - KISPIOX TSA FORESTRY EMPLOYMENT AND EMPLOYMENT INCOME COEFFICIENTS

The following table summarizes direct employment supported by the 1997 – 2000 average harvest in the Kispiox TSA, and the corresponding employment coefficients (i.e. employment per m^3 of harvested timber). This information was developed by the BC Ministry of Forests for the most recent provincial Timber Supply Review. The employment and coefficient estimates are separated into two groups:

- TSA employment and employment coefficients, which comprise residents of the Kispiox TSA who are employed within the Kispiox TSA; and
- Provincial employment and employment coefficients, which comprise all forest sector employment in the province that relies on the Kispiox TSA timber supply; including both residents of the Kispiox TSA and those who live elsewhere.

Kispiox TSA employment and employment income coefficients are presented in the following table.

Exhibit - Kispiox TSA Employment and Employment Coefficients

Activity	TSA person-years[140]	TSA coefficients	Provincial person-years	Provincial coefficients
Harvesting	195	0.21	216	0.24
Silviculture	81	0.09	90	0.10
Processing	222	0.25	451	0.50
Total Direct	497	0.55	757	0.84

Source: BC Ministry of Forests May 2002

From 1998 – 2000 the average annual income for direct forest sector employees was approximately $50 500 (depending on the type of forestry activity); and $31 500 for indirect and induced employment.

Kispiox TSA average annual forest industry incomes are presented in the following table.

Exhibit - Average annual direct and indirect/induced incomes and total employment income, 1997 - 2000

	Average annual Income (2000 dollar value)	Total annual Income ($ millions)	Total income ($ per '000 m3)
Direct	$50,500	$38.1	$42,075
Indirect / Induced	$31,500	$28.7	$31,700
Total income		**$66.8**	**$73,775**

Source: BC Ministry of Forests May 2002

[140] Employment estimates are person-years based on average 1997-2000 employment levels and the average 1997-2000 harvest of 905.6 thousand cubic metres. The employment data was collected through a survey of forest industry employers undertaken by BC Ministry of Forests. Person-years do not indicate individual jobs. Wood products transport, and road building and maintenance are included in indirect estimates.

Provincial government revenues from the forestry industry include stumpage, royalties and rent payments, other taxes such as logging, corporate capital, sales, property and electricity taxes, and income taxes from direct, indirect and induced employees.

Provincial government revenues per cubic metre of Kispiox TSA harvested timber are presented in the following table.

Exhibit - Average annual provincial government revenues, 1997 - 2000

	Average annual revenue 1997 - 2000 ($2000 thousands)	**Revenue** ($ per '000 m3)
Industry taxes	$6 875	$7 600
Provincial income tax	$5 700	$6 300
Total government revenues	$22 000	$24 300

Source: BC Ministry of Forests May 2002