

# **Watson Lake Chamber of Commerce**

# Economic Assessment of Forest Industry in Southeast Yukon



August 2005

## Note to Reader

This Review has been prepared for use by the Government of Yukon and the Watson Lake Chamber of Commerce. Any use that a third party makes of this Review or reliance thereon, or any decisions to be made based on it, is the responsibility of such third party. PwC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Review.

The information contained in this Review is based on actual company results combined with reasoned interpretations of impacts related to the local operating environment, transportation limitations and geographic location of forests in Southeast Yukon. This Review is based on unaudited statistical and other information obtained through PricewaterhouseCoopers' proprietary benchmarking data, the Government of Yukon, and local stakeholder interviews and discussions. The data analysis and compilation activity undertaken does not constitute an audit and consequently we do not express an audit opinion on this Review.

## **Table of Contents**

Executive Summary	1
Introduction	3
Stakeholder Interview Feedback	4
Southeast Yukon Timber Supply	6
Forest Industry Development Challenges	
Markets and Marketing	11
Multi-jurisdiction Competitive Analysis	13
Tenure Allocation Policy Analysis	23
Economic Impact Assessment	26
Conclusions and Recommendations	27

## **Executive Summary**

The Town of Watson Lake and the Watson Lake Chamber of Commerce, with funding from the Government of Yukon, engaged PricewaterhouseCoopers (PwC) in June 2005 to assess the economic potential and impact of forest development in Southeast Yukon (the Review).

This Review evaluates the opportunities and challenges to the development of the forest products industry in Southeast Yukon. This Review has been prepared by PricewaterhouseCoopers LLP with cooperation and assistance from the Government of Yukon, the Watson Lake Chamber of Commerce, local stakeholders, financial institutions specializing in forestry development projects, as well as forest industry company decision makers.

To understand fibre supply, manufacturing options, competitive cost structures, challenges to forest industry development, and forest policy implications relating to tenure, this Review is based on a benchmark of 500,000 cubic meters of annual sustainable harvest volume located in and around the community of Watson Lake.

Successful development of a forest industry in Southeast Yukon is dependent on identifying and evaluating relevant forest values, adequate design of a suite of economic and policy instruments to encourage and sustain investment, strategies to bolster anticipated labour shortages, creation of effective and efficient alternative energy solutions, and development of sufficient infrastructure. Efforts to reduce costs and increase competitiveness need to be focused where industry and the Government of Yukon have the greatest span of control.

Forest products are by and large commodity products and competition for market space is fierce, price sensitive and global in scope. While manufacturers in the Yukon may have certain advantages that could be supported in the marketplace, it is important to understand that commodity forest products are subject to the forces of supply, demand, exchange rates, trade disputes and other macroeconomic influences. Overall, the Yukon forest product producer(s) will compete in the same North American and global markets as the other comparative jurisdictions and the Yukon's industry will not achieve strong sustainable growth unless its competitiveness is improved.

While there are certain, local/niche markets that can be served in the Yukon and Alaska, our research have determined that growth and development of these markets is limited simply due to a lack of scale. Economic viability within the forest sector is based on further processing of the fibre harvested from Yukon forests. Options for industry to start small and grow big will be limited. Operations that start small and supply local niche markets may be successful, however growth opportunities in these markets is limited.

Should industry pursue growth into the commodities marketplace, this fundamental shift in business strategy will mandate the need to capture sufficient economies of scale.

Overall, feasibility of a successful forest industry in the Southeast Yukon is possible based on a successful leveraging of First Nation, industry and government relationships building on a platform of reasonable cost structure, policy and regulatory reform. Length of tenure is also important for industry to manage both current costs as well as investment over time. It is imperative for the Yukon to identify and build on competitive advantages as well as actively manage disadvantages in order to meet the various stakeholder needs in the Territory.

## Introduction

The Government of Yukon has established an aggressive strategic approach to developing a sustainable competitive economy that builds upon the abundant natural resources, talented human capital and high quality of life that exists in Canada's north.

While most of the forest resources in North America have been effectively allocated, the Yukon is in the enviable position of having a substantial amount of underutilized and unallocated fibre that could foster economic growth and provide significant benefits to the territory.

Recognizing the benefits and contribution forests make to their economic, social and environmental wellbeing, the Town of Watson Lake, the Watson Lake Chamber of Commerce and the Government of Yukon engaged PricewaterhouseCoopers (PwC) in June 2005 to assess the economic potential and impact of forest development in Southeast Yukon.

With the objective of understanding fibre supply, manufacturing options, competitive cost structures, challenges to forest industry development, and forest policy implications relating to tenure, this economic impact assessment is based on a benchmark of 500,000 cubic meters of annual sustainable harvest volume located around the community of Watson Lake.

This Review evaluates the opportunities and challenges to the development of the Yukon forest products industry in Southeast Yukon. This Review has been prepared by PricewaterhouseCoopers LLP with cooperation and assistance from the Government of Yukon, the Watson Lake Chamber of Commerce, local stakeholders, financial institutions specializing in forestry development projects, as well as forest industry company decision makers.

Financial information presented in this Review has been compiled based on proprietary benchmarking data accumulated through annual benchmarking surveys of woodlands and lumber operations across Canada. The data was analyzed to select those companies with operating environments similar to those existing in the Yukon (i.e. landbase, forest profile, geographic location, etc.). Multi-jurisdictional competitive analysis was undertaken to understand the operating environments against which forest industry development in the Yukon will have to compete.

Financial information on previous Yukon forestry company endeavors was limited at best. As a result, detailed financial operating data was derived for the Southeast Yukon by applying additional information accumulated through stakeholder interviews and discussions, other jurisdictional industry company feedback, as well as information

obtained through PricewaterhouseCoopers' proprietary industry data, knowledgebase and networks.

### **Stakeholder Interview Feedback**

Critical to the success of this Review was that PwC begin the engagement by interviewing and obtaining feedback from key stakeholders in the Watson Lake community, the local Chamber of Commerce, government/regulatory, financing institutions as well as the forest industry to understand reasons for the historic failures of the industry within the region and the challenges facing future development.

There has been consensus amongst government, industry and local stakeholders that forest industry development in the Southeast Yukon could have social and economic benefits. PwC interviews focused on the issues constraining the success of the forest industry and have summarized this feedback into the following categories:

#### **Reasons for Historic Failures**

- Uncertainty regarding security of fibre supply and landbase;
- Inability to obtain financing based on short-term, nominal tenure;
- Inadequacy of size and duration of AAC to support profitable operations;
- Poor lumber recovery factors resultant from the use of old mill technology unsuited to existing wood supply;
- The belief that industry establishment was politically sponsored vs. established based on sound business plans;
- The belief that management of previous sawmills was poor and did not have adequate forest industry experience;
- Short logging season required the building of sufficient log inventory resulting in the inability of current working capital to meet this operating constraint;
- Inadequate business planning and under capitalization of forest development projects; and
- Difficulty in managing waste and by-products (e.g. chips).

#### **Challenges Facing Forest Industry Development**

- Inadequate current community infrastructure to support industry growth;
- Limited skilled workforce in community to support a new sawmill;
- Management of transportation costs through utilization of back hauls;
- The legacy of forest industry failures in Southeast Yukon is an impediment to future development. There is a need for the Watson Lake communities & Government of Yukon to set the environment to attract and reassure new investment in the forest industry;
- High energy costs need to be managed through pursuit of potential alternative energy solutions;
- > Workforce training is required to support forest industry development;
- The geographic location of the Southeast Yukon creates transportation disadvantages;
- The Forest Economics Benefit Agreement (i.e. memo of understanding) has been interpreted from many perspectives and to some has not achieved expectations for promotion of industry development in the Southeast Yukon;
- The forest profile (timber size, density and yield) presents a challenge related to managing delivered log costs;
- Small mills, while providing some benefit, have not provided a sufficient means to address the local economic problems and need for long-term community stability;
- Some Watson Lake citizens are apprehensive of forest industry development;
- Integration of diverse stakeholder perspectives regarding forest industry development in the Southeast Yukon;
- There is a perception that environmental assessments are too costly and burdensome on industry;
- Today's investment climate tends to require forestry companies to secure greater than 500,000 m<sup>3</sup> of renewable (i.e. 15-20 year) tenure; and

There is a need for clarity regarding First Nation's rights and entitlements as part of overall forest industry development.

## Southeast Yukon Timber Supply

The forests in the Yukon are on the northwest edge of the Canadian boreal forest, becoming relatively sparse within the central and northern areas of the territory as it gives way to the tundra. Much of the commercial forest can be found below the  $62^{nd}$  parallel and more specifically, the Southeastern portion of the Yukon within proximity of the community of Watson Lake.

While there has been support for development of a viable forest industry in the Yukon, there has been significant and ongoing debate over the amount of timber that should be harvested annually to support the current and future industry. Presently, detailed and multi-disciplinary regional forest management planning has not been conducted in Southeast Yukon. As such, sustainable annual allowable harvest levels have not been finalized as various stakeholder perspectives attempt to reconcile conservation with commercial development. Recognizing the need to establish some level of harvest to support immediate needs of existing industry players, an interim annual allowable harvest of 128,000m<sup>3</sup> has been set.

In addition, the Government of Yukon has performed several timber supply analyses to model the flow of timber in the region based on various assumptions and logical constraints and inputs. The Timber Supply Review (TSR 2003) for the Coal and Upper Liard Forest Management Units (January 2003) identified a number of potential timber supply alternatives for these forest management units, considering a number of constraints put on the landbase by varying parties and legislation (ranges from 50,000 to 1.6 million m<sup>3</sup> of sustainable annual harvest have been shown). The purpose of the TSR 2003 is to serve as an information source for which future planning can use as necessary to understand the linkages between harvest level and social, economic, environmental and cultural sustainability.

It is important to note that approved annual harvest levels have yet to be determined through detailed forest management planning processes. In order to complete our analysis there was a need to evaluate the timber supply in order to match development/manufacturing with the forest profile. For the purpose of this Review, the Town of Watson Lake and the local Chamber of Commerce have determined the need to evaluate the potential economic impact of forest industry development, based on utilization of 500,000 cubic meters of the timber harvest volume available annually within the Southeast Yukon.

In discussion with staff from the Yukon Forestry Branch, interviews with stakeholders in Watson Lake and review of the TSR 2003, it reasonable to assume the forest profile in

the Southeast Yukon will not change significantly regardless of how annual allowable harvest levels might be constrained as a result of ongoing and future detailed planning initiatives. Therefore the following generalizations have been extracted to provide context for the analysis; the Coal and Upper Liard forest management units serve as a proxy for forest profile in the region. Potential timber volumes located in the most Southeastern part of the Yukon have not been reviewed by PwC but may well serve as additional supply to support forest development in the region. It is also recognized that past timber supply analyses has focused solely on the softwood volume, with little commercial consideration for available hardwood. There may be a need to review the hardwood component in the future, however, it has not been considered in this Review.

#### **Coal Forest Management Unit (Y02)**

The Coal FMU includes the portions of the Coal River, Hyland River, Rock River and Irons Creek watersheds (TSR 2003). Approximately 950,000 hectares of forested landbase is contained within this unit (75% of which is estimated as productive). Dominant species include Spruce (white and black) accounting for 45%, with lodgepole pine representing approximately 34% of the species by area. It is also estimated that nearly 89% of the species fall into the late seral stage categories of mature (72%) and old (17%), indicating a potential longer term issue within this FMU. Site productivity within the Coal FMU is considered poor to medium, with limited amounts in higher productivity classes (less than 4% by area).

#### **Upper Liard Forest Management Unit (Y03)**

The Upper Liard FMU includes the Liard River, Rancheria River, Meister River and Frances River watersheds that are within the bounds of the Yukon border. It has been estimated that there is approximately 1.1 million hectares of forested land, and similar to the Coal FMU, approximately 75% of this is productive for commercial activity. Lodgepole pine (40%) and black/white spruce (46%) are the dominant species in this FMU, accounting for approximately 86% of the commercial stand profiles. The majority of the forested areas are in the mature and old seral stages (63% classed as mature; 28% as old). Site productivity has a higher proportion of poor to medium sites in comparison to Coal, while the good sites are found within almost 5% of the area.

## **Forest Industry Development Challenges**

The following summarizes the challenges that must be considered with both current and potential future developments.

#### **Uncertain Forest Policy Environment**

While interests are at times conflicting, the issues facing the Yukon are not new to forest development in Canada. In most provinces the vast majority of productive forests have been allocated to industry to support forest product manufacturing facilities, communities, and ultimately societal development goals. For many jurisdictions with developed forests, dealing with shifting societal values regarding development and management is straining their existing forest policy, legal and business development frameworks.

In the Yukon, with a relatively undeveloped forests, there exists a unique opportunity to approach forest development by satisfying socio-economic needs within the context of environmental capacity. However, this does not make the implementation of sustainable development any easier for the Yukon and perhaps it will arguably be more difficult to define the appropriate balance between social, environmental and economic dimensions of sustainable development without the benefit of a well developed industry.

With the recent devolution of government, the Yukon is positioned to realize upon the fullest potential and benefit from natural forest resources. To assist and facilitate the development of critical forest policy and legislation, Yukon Energy, Mines and Resources prepared a discussion paper entitled "Towards a Forest Policy Framework for the Yukon" based on significant consultative effort involving key government, industry and public stakeholders. Published in July 2004, the paper attempts to summarize and consolidate the forest policy work undertaken over the past decade and is a starting point and catalyst for establishing new forestry legislation.

The task of establishing and developing sustainable forestry legislation/policy is and will continue to be challenging as the Government of Yukon endeavors to address the range of issues that are important to its citizens. Consultation with all key stakeholders will be critical to the success of forest legislation/policy development. With the lack of industrial development in the Yukon, it will be important to establish advocacy representing an adequate cross section of industry to achieve desired results.

However, a lack of well defined policy in any jurisdiction will raise concern from private investors, and if left unaddressed, this uncertainty will be treated by investors as a risk or cost that will ultimately discount any benefits and opportunities related to their investments.

#### Uncertain forest landbase

The Yukon is engaged in planning initiatives to reconcile preservation with commercial development with an aim toward determining the extent to which access to Yukon forest lands will be constrained to address multi-stakeholder interests. It is fundamentally important to understand that a definitive forest landbase is the primary input that will determine sustainable annual harvest levels and in turn the size and scope of the industry development in the region. Constraints placed on the working forest landbase have a direct correlation to restricting the annual allowable cut.

At this time, the impacts of potential withdrawals on forest development are relatively unknown and this uncertainty must be addressed to re-assure any current and potential commercial investors.

#### **Ongoing losses from natural disturbance**

Fire, insects and disease impacts in the Southeast Yukon can devastate the already limited resources. With limited forest development in the area, forest protection priorities may be influenced to "limit" protection expenditures. Currently it appears that the Government of Yukon has made a decision to reduce the losses associated with wildfires, insects and disease, however, any increasing forest development in the Southeast Yukon may require a further strengthening of forest protection programs to support sustainable harvest levels.

#### Limitations of the tree species and tree characteristics

Development opportunities are challenged in the Yukon due to the relatively low volume, moderately short and sparsely stocked timber stands. However, natural wood characteristics of the trees growing in the commercial zones of the Yukon are considered to be of a quality suitable for manufacture into products consistent with other jurisdictions utilizing northern boreal fibre. As such, Southeast Yukon will compete to attract capital investment and industrial development. While our research did reveal some reports and anecdotal speculation regarding particularly high fibre quality characteristics, more detailed evaluation and analysis is required to determine if Yukon fibre would garner a premium in the marketplace.

#### **Distance to markets**

Like other jurisdictions in Canada, the Yukon's sparse population base provides limited domestic market opportunities making a larger commercial industry dependent upon intra-provincial and/or export markets in which to sell their products. The geographic locale of the Southeast Yukon forests does pose a significant challenge to the industry in terms of transportation costs to get manufactured products to market. Although there may be opportunity to supply products to local markets (i.e. Yukon and Alaska), these

commodity markets are not captive and are relatively small. The distance to the marketplace is only as effective in driving a competitive advantage when the cost to supply products from other regions is greater than the efficiency gained through economies of scale in the Southeast Yukon.

#### Labour

Obtaining the skilled labour required to build, operate and maintain a facility in the Southeast Yukon will be challenging. Our experience and research would suggest that the Yukon and the region of Watson Lake will experience both short and longer term problems with labour further complicated by a highly competitive marketplace.

In a recent survey conducted by the Government of Canada's Sector Council Program, almost 50% of businesses surveyed in 2003 identified a shortage of qualified labour as the most important issue facing them. According to the Conference Board of Canada, it is estimated that Canada could be short 1 million workers due to an ageing population and declining birth rates. Sectors experiencing particular problems include natural resources, construction, and manufacturing and information technology – areas of particular relevance to the forest industry.

In addition to direct employment in the forest industry, employment is generated in other sectors such as technology and transportation as well as supplying goods and services to the forest industry and its employees. The average compensation (wages and benefits) for the forest industry in Canada was \$69,100 (The Forest Industry in Canada, PricewaterhouseCoopers, 2003). However, despite average annual compensation far in excess of the national average, recruitment and retention of employees is an ongoing challenge for the forest industry. Many industry representatives attribute this to remoteness of forestry based communities, demographic shifts from rural to urban residency and competition from other industry sectors facing the same challenges. The Yukon serves as a striking example of how citizens are gravitating toward a more metropolitan environment with a significant proportion of the Territorial population living and working in and around Whitehorse.

Canadian industry is responding to these challenges through encouragement and expansion of capacity within Aboriginal communities. Recognizing social and geographic connections that exist, many companies are funding aboriginal education, scholarship and job skills development to address labour shortages, while strengthening Aboriginal economic capacity (Forest Products Association of Canada – 2004). This approach could prove advantageous for local First Nations in the Southeast Yukon.

#### **Infrastructure Analysis**

The community of Watson Lake is located in the Southeastern corner of the Yukon, 10 kilometers from the northern BC border. Like many communities in Canada's north,

Watson Lake grew in accordance with a resource based economy comprised of logging and mining, support of transportation, communication and distribution of these resources, connecting western and central Yukon and northern BC. However, general economic downturns combined with challenges in developing and sustaining the forest industry has resulted in significant job losses, business closures, migration of skilled labour and negative impacts on the once robust nature of the local economy.

Watson Lake is situated at Kilometer 1016.8 (Mile 635) of the Alaska Highway, at its junction with the Robert Campbell Highway, and is the first community encountered by highway travelers upon entering the Yukon. The community is located 460 kilometers Southeast of Whitehorse and also connects to the Northwest Territories via the Robert Campbell Highway and the Nahanni Range Road. Access to forest resources is rudimentary as there exists limited secondary/tertiary road development corresponding to the sporadic ad hoc requirements of the forest industry in the recent past. There will be a requirement to develop a road network to support a sustainable haul distance.

While construction of an Alaska-Canada rail link is currently under consideration, resolve to fund such a project is not anticipated in the immediate future. As a result, the community will continue to rely on trucking of goods and services as the mainstay method of transportation. Although this method of transportation provides for the immediate needs of the community when compared to other forest based communities, Watson Lake will be at a competitive disadvantage due to the high costs associated with trucking. However, given that most goods are transported to the Yukon through the community of Watson Lake to service Whitehorse, there could be an opportunity to mitigate transportation costs of getting forest products to market by accessing what is likely significant empty back hauls. Further transportation analysis would be required as part of a specific project feasibility assessment.

The community of Watson Lake is not serviced with natural gas and currently relies on the use of diesel generators to meet its energy requirements. Reliance on this type of energy generation to support growth in the community will continue to be an increasing cost burden in providing for the needs of Watson Lake.

## Markets and Marketing

Market conditions have significant influence on forest product manufacturing and development. The overall trends in North America suggest there will be relatively strong demand for most wood products to support the construction industry over the next decade based on current conditions and forecasted market demand.

Forest product manufacturing in Southeast Yukon has generally centered on the lumber industry in terms of both sawmilling enterprise as well as production of round logs to supply sawmills outside the region. Most of the finished product produced has been in

the form of green rough lumber and other specialized products for local and small niche markets. There have been many attempts to establish viable operations; however industry has not been sustainable. While there is debate regarding root causes for business failures the fact that producers in Southeast Yukon were participating in markets (lumber) served by established producers with more favorable cost/revenue structures provides the most likely explanation.

Certainly there will continue to be windows of opportunity where product prices will be sufficiently high that even the highest cost producers will be profitable. However, forest product pricing is a function of market cycles and inevitably high prices will fall and force high cost producers to shut down. Start up of production that has been shut down for extended periods of time is challenging at best as is currently the situation in Watson Lake.

For the Southeast Yukon, sustainable forest product manufacturing ventures must be based on the pursuit of least cost production strategies in order to withstand both the up and down sides of the market. This applies to both commodity markets and to a great extent niche markets as well because the characteristics of the Southeast Yukon fibre supply is not unique insofar as industry in other neighboring jurisdictions will look to supply both domestic as well as export markets. As such the Southeast Yukon forest industry will be competing for markets targeted or currently served by existing suppliers on the basis of price and quality. This does not mean that small operations that intend to service local or niche markets will not be viable. However, as soon as these operations attempt to grow into markets currently served by others they will have to compete solely on the basis of price and quality. All things being equal, Southeast Yukon producers will need a cost structure that is comparable to their competition.

Competitive cost structures in the forest product manufacturing industry require significant one-time and ongoing capital investment in order to develop sufficient economies of scale. The notion that steady incremental investment can be matched with market growth must be tempered with a clear understanding that competition in the forest industry is fierce. For example, there may well be opportunity for small one or two person milling operations to supply rough/planed/air-dried products to local and niche market. However, should market preferences change toward more finished or value-added products there will likely be a requirement for significant capital investment. It will be important to ensure there is sufficient economy of scale to amortize capital costs over production volumes. Without economy of scale producers in Southeast Yukon will be limited to local/niche markets and for periods of high product prices will remain on the economic margin relative to other producing regions.

In conducting our research we reviewed several reports that evaluated the spectrum of forest product manufacturing options potentially available in the Yukon. Based on our evaluation of this body of research and the benchmark fiber supply specified in this engagement, the most promising forest product manufacturing opportunity in Southeast

Yukon is the production of specialty sawn solid wood products to supply market demand for non-standard sized dimensional rough and finished lumber as well as rough and finished feedstock or blanks for value-added manufacturing.

While commodities lumber would likely make up a portion of the overall furnish our competitive cost/revenue analysis illustrates the need to generate higher revenues from the production of specialized or non-commodity products. This report does not make recommendation on specific products or markets to be pursued as this would require detailed feasibility analysis on a case by case basis.

Therefore, manufacturing costs presented in this Review utilize costs from sawmilling operations from comparative jurisdictions as a representative proxy for forest product manufacturing in general. While there are some limitations to this approach, wage rates, energy costs etc. are considered to be highly comparable across a wide variety of forest product manufacturing facilities and are considered suitable as a means for screening development options.

## **Multi-jurisdiction Competitive Analysis**

The following comparative analysis evaluates the Southeast Yukon's current standing versus competing jurisdictions in British Columbia, Alberta, the Prairies (Manitoba & Saskatchewan) and Eastern Canada (Ontario, Quebec, New Brunswick) based on major fibre procurement, manufacturing and general business environment costs. The analysis is based on industry information that PwC has assembled through its various benchmarking and industry studies. To improve the relevance of data for jurisdictional comparison, PwC has tailored each jurisdiction into specific groupings comprised of operations reflective of similar fibre and operational constraints as experienced and expected in the Southeast Yukon market.

While some limited financial information was provided during the stakeholder interviews, assumptions had to be made regarding the regulatory and operating environment of the forest industry in the Southeast Yukon. As there is limited local operating data and information from the Yukon industry upon which our financial analysis could be undertaken, PwC created a pro forma cost structure for Southeast Yukon to compare with actual operating results from other jurisdictions. The Yukon cost structure is based on a culmination of similar forest resource conditions experienced in other jurisdictions, feedback obtained during stakeholder interviews and discussions, as well as PwC industry knowledge. Using a collaborative approach, there may be options for a "Made in the Yukon" cost structure outside the realm of conventional thinking that could reflect a feasible balance of rights and obligations of both government and industry to achieve social, economic, environmental and cultural goals. The Southeast Yukon does not have sufficient industry presence, experience or data from which to conclude on the most suitable option. The following competitive analysis has been structured based on a benchmark annual allowable harvest volume of 500,000 m<sup>3</sup>. The comparative jurisdictional information is based on selected, similarly sized operations. As cost structures change in accordance with mill size and level of production, large scale, highly efficient operations were not included in this analysis as results would have been skewed due to significant cost advantages associated with economies of scale.

	Southeast Yukon	British Columbia	Alberta	Prairies	Eastern Canad	
Woodlands Co	osts (\$/m <sup>3</sup> )					
Logging to	\$24	\$17	\$13	\$19	\$20	
Roadside	524517513519520Logging costs are significantly affected by factors such as size of trees, volume of wood per hectare, terrain, workforce efficiency, economies of scale etc. The Yukon, due to its relatively small average tree size and relatively low wood density (approximately 150 m3/ha or less versus a Prairie wide average of greater than 200 m³/ha), is at a significant logging cost disadvantage. Because of these higher logging costs, the Yukon will need to obtain cost advantages in other areas to offset this disadvantage and be competitive.Discussions with local industry participants have revealed an average cost of \$20/m³ for historical logging costs. Taking into account the impact of stand density on overall costs as well as assessing the logging costs in current dollar values from historic activity, a conservative benchmark has been set for expected cost implications.With respect to workforce efficiency and economies of scale, our industry knowledge shows that logging operations conducted by large volume contractors (e.g. >300,000m³ per annum per contractor - in order to maximize machine utilization efficiencies) results in the most cost effective logging operations.					
Loading	\$1.50	\$1.50	\$1.50	\$1.50	\$1	
2000000	There is not a discernable loading cost advantage or disadvantage across any of the 4 jurisdictions. As such, the Yukon is competitive in this cost category.					
Hauling	\$10	\$9.50	\$9.50	\$9	\$11	
	The Yukon as a whole is approximately average for hauling costs. It is estimated that all harvesting will be undertaken within 100 kilometers of a Watson Lake mill. By managing haul distances, this will reduce the impacts of long-distance hauling on the woodlands cost structure. As the proximity of harvest operations to the processing facility increases, cost advantages will be turned into cost disadvantages.					
Roads	\$4	\$4	\$2.50	\$2	\$4	
	The local terrain in t construction easier a timber will require a	ficantly affected by t the Yukon consists o and less costly. How an increased road cos ess fiber to supply th	f a large gravely f a large gravely the lost to be incu	avel bar ma w stand den rred for mo	king road nsity and patchy pre roads to be	

## Competitive Cost Benchmarking Analysis

Economic Assessment of Forest Industry in Southeast Yukon					
South and Values Dritich Columbia Alberta Durinica England Country					
Yukon.			the Southe	ast Region of the	
\$8	\$3.50	\$6	\$6	\$3	
Reforestation costs a	re impacted by seed	ling, planti	ng, site prej	paration, and	
comparative jurisdic allocate silviculture	tions in this particula and reforestation cos	ar category sts over a la	as the indu rger fibre p	stry is unable to roduction base.	
\$4	\$16	\$13	\$4	\$12	
end uses of the wood products. Overall, the	Stumpage fees often vary based on type of wood (e.g. hardwood vs. softwood), end uses of the wood (e.g. sawlogs vs. pulplogs) and market prices for end products. Overall, the Yukon is very competitive in this area and this helps offset some of the cost disadvantages in other areas.				
N/A \$55.50 \$37.50 \$46 \$57					
A cost has not been established for purchased wood in the Yukon as transportation costs of wood from other jurisdictions makes the option infeasible to supply the appetite of a Watson Lake mill. All sources of fibre need to be procured from within the territory. Purchased wood costs do act as a proxy to evaluate the market, if any, of selling fibre to other jurisdictions. However, these average costs can be significantly affected by wood size, species, quality and desired end use.					
<b>\$7 \$5 \$3 \$2.50 \$2</b>					
<ul> <li>In Canada, overhead costs are principally driven by the complexity and cost operating on public land and to some degree by operational complexities. F example, a company with significant population centers, high recreational us multi stakeholder interests, active environmental groups, a high density of riparian areas, slope stability issues etc. in its operating area would be expect to have higher planning and management costs than a less complex operatin environment. The Yukon is currently not competitive on average in this are versus the other comparative jurisdictions.</li> <li>PwC recognizes that forest development and planning does not have a long history in the Yukon from which to impact guidance for future activities. However, based on the current and ongoing work of the Kaska Forest Stewardship Council, PwC expects higher than average overhead allocations.</li> </ul>				nplexities. For ecreational usage, a density of ould be expected plex operating ge in this area have a long activities. Forest	
	Southeast Yukon Discussion with locat considering the locat Yukon. \$8 Reforestation costs a transportation costs a comparative jurisdic allocate silviculture The current level of economies of scale. \$4 Stumpage fees often end uses of the wood products. Overall, th offset some of the co N/A A cost has not been of transportation costs to supply the appetit procured from within Purchased wood cos fibre to other jurisdic affected by wood siz \$7 In Canada, overhead operating on public I example, a company multi stakeholder int riparian areas, slope to have higher plann environment. The Y versus the other com PwC recognizes that history in the Yukon However, based on to Stewardship Council	Southeast YukonBritish ColumbiaDiscussion with local industry participant considering the location and composition Yukon.Industry participant composition Yukon.\$8\$3.50Reforestation costs are impacted by seed transportation costs etc. The Yukon is ne comparative jurisdictions in this particula allocate silviculture and reforestation cost The current level of harvesting activity ne economies of scale.\$4\$16Stumpage fees often vary based on type end uses of the wood (e.g. sawlogs vs. pr products. Overall, the Yukon is very cor offset some of the cost disadvantages in the sportation costs of wood from other j to supply the appetite of a Watson Lake in procured from within the territory.Purchased wood costs do act as a proxy the fibre to other jurisdictions. However, the affected by wood size, species, quality and \$7\$7\$5In Canada, overhead costs are principally operating on public land and to some dege example, a company with significant pop multi stakeholder interests, active enviror riparian areas, slope stability issues etc. it to have higher planning and management environment. The Yukon is currently no versus the other comparative jurisdictionPwC recognizes that forest development history in the Yukon from which to impa However, based on the current and ongo Stewardship Council, PwC expects higher	Southeast YukonBritish ColumbiaAlbertaDiscussion with local industry participants revealed considering the location and composition of fiber in Yukon.S8\$3.50\$6Reforestation costs are impacted by seedling, planti transportation costs etc. The Yukon is not competit comparative jurisdictions in this particular category allocate silviculture and reforestation costs over a la The current level of harvesting activity negates any economies of scale.\$16\$13Stumpage fees often vary based on type of wood (e. end uses of the wood (e.g. sawlogs vs. pulplogs) and products. Overall, the Yukon is very competitive in offset some of the cost disadvantages in other areas.\$37.50A cost has not been established for purchased wood transportation costs do act as a proxy to evaluate fibre to other jurisdictions. However, these average affected by wood size, species, quality and desired of species, active environmental gr riparian areas, slope stability issues etc. in its operati to supply the appetite of supplication cost for a some degree by ope example, a company with significant population cer multi stakeholder interests, active environmental gr riparian areas, slope stability issues etc. in its operati to have higher planning and management costs than environment. The Yukon is currently not competiti versus the other comparative jurisdictions.PwC recognizes that forest development and plannin history in the Yukon from which to impact guidance However, based on the current and ongoing work of state of the cost discurve and the supplication cer	Southeast YukonBritish ColumbiaAlbertaPrairiesDiscussion with local industry participants revealed \$4/m³ to b considering the location and composition of fiber in the Souther Yukon.\$8\$3.50\$6\$6Reforestation costs are impacted by seedling, planting, site prepr transportation costs etc. The Yukon is not competitive with the comparative jurisdictions in this particular category as the indu allocate silviculture and reforestation costs over a larger fibre p The current level of harvesting activity negates any ability to ta economies of scale.\$4\$16\$13\$4Stumpage fees often vary based on type of wood (e.g. hardwood end uses of the wood (e.g. sawlogs vs. pulplogs) and market pr products. Overall, the Yukon is very competitive in this area a offset some of the cost disadvantages in other areas.N/A\$55.50\$37.50\$46A cost has not been established for purchased wood in the Yuk transportation costs of wood from other jurisdictions makes the to supply the appetite of a Watson Lake mill. All sources of fil 	

	Southeast Yukon	British Columbia	Alberta	Prairies	Eastern Canada	
Total	\$58.50	\$56.50	\$48.50	\$44	\$53	
Delivered	Currently, total delive	vered fibre costs in th	ne Yukon a	re not comp	petitive with the	
Fibre	other jurisdictions due to resource constraints (e.g. size and density per hectare					
		of trees). Logging to roadside costs as well as silviculture and reforestation				
	costs are the main contributors to this disadvantage.					
	Overall, the Yukon forest product producer(s) will compete in the same North					
	American and globa	American and global markets as the other comparative jurisdictions. With				
	delivered fibre costs comprising approximately 50% of total costs of products					
	manufactured and sold, the Yukon must focus on actively managing these costs and maximizing the financial gains from efficient operations to remain					
	competitive.					

Discussion with local industry and interested party stakeholders revealed that the sale of raw logs to mills located in other jurisdictions was considered to be a viable option for forestry development in the Southeast Yukon. Consideration of viability is based on the historic analysis of the "green gold rush" during the mid 1990's.

However, the current economic environment reflects a market driven fibre pricing spectrum from a low of \$37.50/m<sup>3</sup> in Alberta up to \$57/m<sup>3</sup> in Eastern Canada. Even if a m<sup>3</sup> of fibre from the Yukon could attain the highest market pricing, this still is not enough to break even based on the woodlands cost structure set out above that pegs the Yukon woodlands costs from stump to mill gate at \$58.50/m<sup>3</sup>. This situation would be exacerbated by taking into account the impact of transportation from Watson Lake to a location such as Fort Nelson for a one-way distance of 525km. Transportation costs to transport logs to Fort Nelson could easily exceed \$40 per m<sup>3</sup>. The significance of this loss negates any consideration of such fibre sales/transfers at this time.

Another option considered was the sale of high value, high quality roundwood (i.e. veneer logs) through log sorting to other jurisdictions. The average purchase price for veneer logs is currently approximately \$68/m<sup>3</sup>. By undertaking the same exercise as previous and setting forth a woodlands cost structure for stump to dump of \$58.50/m<sup>3</sup>, this creates a perceived profit of \$9.50/m<sup>3</sup>. However, not taken into consideration in the cost structure is the handling costs associated with sorting activities. Not only are handling costs required to be included in this equation, but transportation costs need to be added which quickly negates the profitability perceived to exist on sales of such high value, high quality roundwood.

In order to assess economic viability within the Southeast Yukon forest sector, the industry would need to further process and add value to the fibre harvested from Yukon forests. A detailed evaluation of manufacturing costs and a high-level overview of the business environment (i.e. tax structures) has been undertaken to ascertain whether profitability can be achieved by further processing raw logs into finished product for sale within the marketplace.

	Southeast Yukon	British Columbia	Alberta	Prairies	Eastern Canad
Manufacturir	ng Costs (\$/Mfbm)				
from an average basis. (\$/Mfbi	e of comparing manufa ge sawmill expressed of m). This approach prov types of primary fores	n a dollar per thousa vides a realistic comp	nd board fe parison and	et of lumbe is highly tr	r production ansferable to
Labour and	\$90	\$55	\$65	\$85	\$67
Benefits	The Yukon will gen than the average of t results from the need northern community from which to draw Discussion with loca to developing plans	the comparative juris d to attract labour from where there exists of for resource needs.	dictions. Tom other jun only a limite only revealed	This increase risdictions t ed pool of s that labour	ed cost structure o a small, killed labour
Energy	\$30	\$11	\$15	\$14	\$10
	The Yukon has sign energy for Watson L able to obtain, throu methods of energy g of oil costs combine local Watson Lake g cost estimates put er a mill in Watson Lak	Lake is being produce gh client networks, a generation in remote d with the need for a grid (i.e. acquisition of hergy at \$30/Mfbm to ke.	ed through actual comp communition additional en- of new dies o meet the o	diesel gene any related es. With th nergy to be el generator consumptio	rators. PwC was costs for similar e continued rise available on the rs), conservative n requirements o
	This is a competitive in an order of magni manufacturing costs	tude of 100 - 200%	-		•
Other Direct	\$105	\$40	\$51	\$94	\$59
Manufacturin g Costs	This category includ overhead and admin where an industry cl The Yukon's curren this area. Material a due to the remotenes suppliers. Mill over individual company management oversig	istrative costs. Mate uster exists and there t limited forest indus and supply costs will ss of the Watson Lak head and administration operating philosoph	erials and su e is strong of stry has sign exceed like the communi- tive costs an ies includin	applies are properties of the	usually lower from suppliers. ative impacts in her jurisdictions of competitive ntly impacted by nt of

Total Direct Manufacturin g Costs\$225\$106\$131\$193\$136Currently the Yukon is estimated to have forest product manufacturing costs th are significantly above the average of the comparative jurisdictions by approximately 60%. The industrial environment of the Yukon does not provid any competitive advantages over the other 4 jurisdictions.Interest and Depreciation CostsInterest and depreciation costs have not been analyzed by jurisdiction as they vary based on factors mainly unrelated to the geographic jurisdiction (i.e. they are based on company capital structures and the depreciation policies and costs of manufacturing facilities). However, a discussion regarding Return on Capita Employed is undertaken later in this Review.Transportation Costs\$90\$62\$55\$53\$39The Yukon faces a transportation disadvantage related to the remoteness of the Watson Lake community in comparison to final markets. In addition, the non- existence of a railroad line places significant reliance on trucking as the primar method of final good transportation.Other jurisdictions have more favorable transportation costs due to factors such as proximity to major North American markets and/or larger markets existing within a jurisdiction for final products. While it is recognized that a Watson Lake mill will have a competitive transportation advantage in the Yukon and Alaska markets, these markets are small and will not consume the production level of a mill size needed to achieve the necessary economies of scale.Given that most goods are transported to the Yukon through the community of Watson Lake to service Whitehorse, there could be an opportunity to mitigate transportation costs of gesting forest products to market by accessing what is <th></th> <th>Southeast Yukon</th> <th>British Columbia</th> <th>Alberta</th> <th>Prairies</th> <th>Eastern Canada</th>		Southeast Yukon	British Columbia	Alberta	Prairies	Eastern Canada		
g Costsare significantly above the average of the comparative jurisdictions by approximately 60%. The industrial environment of the Yukon does not provid any competitive advantages over the other 4 jurisdictions.Interest and Depreciation CostsInterest and depreciation costs have not been analyzed by jurisdiction as they vary based on factors mainly unrelated to the geographic jurisdiction (i.e. they are based on company capital structures and the depreciation policies and costs of manufacturing facilities). However, a discussion regarding Return on Capit Employed is undertaken later in this Review.Transportation Costs\$90\$62\$55\$53\$39The Yukon faces a transportation disadvantage related to the remoteness of the Watson Lake community in comparison to final markets. In addition, the non- existence of a railroad line places significant reliance on trucking as the primar method of final good transportation.Other jurisdictions have more favorable transportation costs due to factors such as proximity to major North American markets and/or larger markets existing within a jurisdiction for final products. While it is recognized that a Watson Lake mill will have a competitive transportation advantage in the Yukon and Alaska markets, these markets are small and will not consume the production level of a mill size needed to achieve the necessary economies of scale. Given that most goods are transported to the Yukon through the community of Watson Lake to service Whitehorse, there could be an opportunity to mitigate		\$225 \$106 \$131 \$193 \$136						
Depreciation Costsvary based on factors mainly unrelated to the geographic jurisdiction (i.e. they are based on company capital structures and the depreciation policies and costs of manufacturing facilities). However, a discussion regarding Return on Capita Employed is undertaken later in this Review.Transportation Costs <b>\$90\$62\$55\$53\$39</b> The Yukon faces a transportation disadvantage related to the remoteness of the Watson Lake community in comparison to final markets. In addition, the non- existence of a railroad line places significant reliance on trucking as the primar method of final good transportation.Other jurisdictions have more favorable transportation costs due to factors such as proximity to major North American markets and/or larger markets existing within a jurisdiction for final products. While it is recognized that a Watson Lake mill will have a competitive transportation advantage in the Yukon and Alaska markets, these markets are small and will not consume the production level of a mill size needed to achieve the necessary economies of scale.Given that most goods are transported to the Yukon through the community of Watson Lake to service Whitehorse, there could be an opportunity to mitigate		are significantly abo approximately 60%.	ve the average of the The industrial envir	e comparati ronment of	ve jurisdict the Yukon	ions by		
CostsThe Yukon faces a transportation disadvantage related to the remoteness of the Watson Lake community in comparison to final markets. In addition, the non- existence of a railroad line places significant reliance on trucking as the primar method of final good transportation.Other jurisdictions have more favorable transportation costs due to factors such as proximity to major North American markets and/or larger markets existing within a jurisdiction for final products. While it is recognized that a Watson Lake mill will have a competitive transportation advantage in the Yukon and Alaska markets, these markets are small and will not consume the production level of a mill size needed to achieve the necessary economies of scale.Given that most goods are transported to the Yukon through the community of Watson Lake to service Whitehorse, there could be an opportunity to mitigate	Depreciation	vary based on factor are based on compar of manufacturing fac	s mainly unrelated to ny capital structures cilities). However, a	the geogra and the dep discussion	aphic jurisd	liction (i.e. they olicies and costs		
<ul> <li>Watson Lake community in comparison to final markets. In addition, the non-existence of a railroad line places significant reliance on trucking as the primar method of final good transportation.</li> <li>Other jurisdictions have more favorable transportation costs due to factors such as proximity to major North American markets and/or larger markets existing within a jurisdiction for final products. While it is recognized that a Watson Lake mill will have a competitive transportation advantage in the Yukon and Alaska markets, these markets are small and will not consume the production level of a mill size needed to achieve the necessary economies of scale.</li> <li>Given that most goods are transported to the Yukon through the community of Watson Lake to service Whitehorse, there could be an opportunity to mitigate</li> </ul>	Transportation	\$90	\$62	\$55	\$53	\$39		
likely significant empty back hauls. Further transportation analysis would be required as part of a specific project feasibility assessment.		<ul> <li>existence of a railroad line places significant reliance on trucking as the method of final good transportation.</li> <li>Other jurisdictions have more favorable transportation costs due to fact as proximity to major North American markets and/or larger markets erwithin a jurisdiction for final products. While it is recognized that a W Lake mill will have a competitive transportation advantage in the Yuko Alaska markets, these markets are small and will not consume the prod level of a mill size needed to achieve the necessary economies of scale.</li> <li>Given that most goods are transported to the Yukon through the comm Watson Lake to service Whitehorse, there could be an opportunity to m transportation costs of getting forest products to market by accessing w likely significant empty back hauls. Further transportation analysis wo</li> </ul>						

#### **Business Environment**

While there are many different factors that affect the overall business environment in a particular jurisdiction, environmental regulation, policy stability, labour laws, etc. have an effect on the overall competitive business environment. Taxation plays a significant role in the overall competitiveness of a jurisdiction and is a useful proxy for the overall business climate.

	Southeast Yukon	British Columbia	Alberta	Prairies	Eastern Canada		
Taxes –	24.62	35.62	33.62	34.62*	33.42*		
Current (%)	Tax rates are the combined federal and provincial manufacturing & processing rates. The Yukon is currently very competitive with respect to taxes as compared to the other jurisdictions. This increases the ability for potential profitability and attractiveness of investing in the Yukon.						
	* Rate derived from simple average calculation based on individual Provincial/Territoria in effect for the 2005 taxation year.						

Maintaining a competitive edge in the commodity lumber market is based solely on managing the operating cost structure. Fully managing costs to either equate or create an advantage over competition will result in profitability both in the short-term as well as long-term. From a woodlands cost perspective, the Yukon has a significant advantage over the other 4 jurisdictions through lower stumpage rates. However, the gains achieved by this advantage are soon neutralized with the primary disadvantages of higher costs from logging to roadside, silviculture and reforestation, as well as overhead.

From a manufacturing cost perspective, energy costs create a significant disadvantage of at least \$15/Mfbm when compared with other jurisdictions. However, there is an opportunity for manufacturing by-products (i.e. chips) to be sold for potential alternative energy solutions in the Watson Lake community. This in turn would create an additional source of revenue to offset the impact of high energy costs. Creation of effective and efficient alternative energy solutions may also be able to drive down the cost of energy impacting the feasibility and cost structure of forest sector development and sustainability within the Southeast Yukon region.

A fundamental principle directly affecting cost structures and competitiveness for any jurisdiction relates to economies of scale. Essentially this is a situation when the longrun average costs of producing any product decreases as the output rises (in this case the output is lumber). It is critical to understand that operations must be of sufficient size to promote profitability through economies of scale rather than approach industry development through a "start small – grow big" strategy. Although operations that start small and supply local niche markets may be successful, growth opportunities in these markets is limited. Should industry pursue growth into the commodities marketplace, this fundamental shift in business strategy will mandate the need to capture sufficient economies of scale.

For example, any sawmill requires a compliment of human resources to move fibre from log inventory through processing to the kiln and final planing and packaging. Wage costs and benefits will be static based on the number of shifts the mill decides to utilize. By increasing or maximizing production output, these same costs are allocated over a

significant increase in unit production volume (i.e. board feet of lumber produced) thereby reducing their impact on a per unit basis (e.g. \$ per Mfbm).

As an example, the national average manufacturing labour and benefits (from PwC benchmarking data) amounted to \$13.2Mfbm on an average annual production level of 220,150 Mfbm (i.e. \$60/Mfbm). By maintaining consistent employment costs, the labour and benefit unit cost fluctuates between \$87/Mfbm and \$45/Mfbm based on a range of national production levels of 151,151 Mfbm and 270,964 Mfbm respectively. A mill that operates on a larger scale allocates costs over a greater population of manufactured units thereby driving down the unit cost and achieving a higher profitability – economies of scale.

Even if costs can be driven down through economies of scale, it is imperative that every business understands their break-even point of current and expected operations. The break-even point in any business is that point at which the volume of sales exactly equals total expenses - the point at which there is neither a profit nor loss - under varying levels of activity. The break-even point tells management what level of output or activity is required before the company can make a profit. This break-even point reflects the relationship between costs, volume and profits.

Using an average prairies' lumber recover factor of 255 fbm/m<sup>3</sup>, woodlands costs have been converted from a massarements massarements massarements massarements are structure through to final sale to the end user. This quantitative analysis is as follows:

	Southeast Yukon	British Columbia	Alberta	Prairies	Eastern Canada
Total	\$229	\$222	\$190	\$173	\$208
Delivered					
Fibre					
Total Direct	\$315	\$168	\$186	\$246	\$175
Manufacturin					
g &					
Transportation					
Costs					
Break-Even	\$544	\$390	\$376	\$419	\$383
Point					

In order for the Southeast Yukon to break-even under the current working environment and cost structure, a commodity price of \$541/Mfbm must be achieved. Historic analysis of the lumber commodity market has revealed a revenue spectrum between a low of \$381/Mfbm to a high of \$512/Mfbm based on the performance achieved in the comparative jurisdictions combined. Even with the highest prices achieved during the most recent history, this pricing level does not support an industry in the Southeast Yukon that is, at a minimum, able to cover its operating costs.

There is the opportunity for the Government of Yukon and industry to explore options which support industry development and ongoing operational sustainability. For example, road construction and infrastructure development provide cross industry/sector in addition to social benefits. The costs attributed to this development and these benefits could be allocated to the Government of Yukon. All things being equal, this impacts industry profitability by adding \$4/m<sup>3</sup> (\$16/Mfbm) back to the bottom line.

Should cost structures be managed to drive competitiveness and profitability in the Southeast Yukon, and long-term tenure of sufficient size be available for allocation, forestry companies will only invest should they receive a sufficient return on capital employed (ROCE). ROCE is a measure of profitability of a company's total capital investments or how effective a company is using its total capital invested in the business as the forest industry is very capital-intensive. The industry target of 10% - 12% or greater is the standard by which investment and performance is evaluated. The current cost structure and operating environment of the Southeast Yukon forestry sector, being negative, is far short of this benchmark.

## **Tenure Allocation Policy Analysis**

During the course of document review and stakeholder consultations it became apparent that the current tenure system is impacting forest development in the Yukon. By limiting access to fibre through 3-year permits, the Territorial government is restricting the ability of industry to access capital for improvement/development of sawmills as well as limits the level of production, ultimately reducing corporate profitability.

The forest industry in most of Canada and many other countries has developed under economic theory that recognizes ultimate public ownership of forest land with private rights to harvest and process timber. Forest tenures along with jurisdictional policy and regulatory environments ultimately dictate how forest companies operate and more importantly define property rights for governments and forest companies. It is this mix of public and private ownership and control that provides a basis for determining value. On public land it is important to influence the behavior of private tenure holders.

Even though tenure holders have "ownership" to timber, social considerations in the form of regulation, policy and tenure constraints imposed by governments influence the value of timber rights and in turn the forest tenure as a private asset. The greater the level of constraint or restriction placed on tenure holders the lower the asset value. The challenge for government policy makers is determining the balance between rights and obligations that meets the needs of society and also attracts and maintains private investment. In most provinces the vast majority of productive forests have been allocated to industry to support forest products manufacturing facilities, communities and ultimately government development goals. For these jurisdictions, dealing with the shifting societal values regarding forest development and management is straining their existing forest policy, legal and business development frameworks. As British Columbia, Alberta and Ontario, for example, move from sustained yield timber management to sustainable forest management, they face problems stemming from tenure systems that were not designed to accommodate a wide range of social objectives.

While conflicting interests is not new to forest development in Canada, the ever increasing list of competing interests and demands has outstripped society and industry's ability to reconcile and rationalize economic, social and environmental dimensions of sustainability.

Due to the state of forest industry development in the Yukon, a unique opportunity exists to approach forest development by satisfying socioeconomic needs within the context of environmental capacity. However, this does not make the implementation of sustainable forest development any easier for the Yukon and perhaps it will arguably be more difficult to define the appropriate balance between social, environmental and economic dimensions of sustainable forest development without the benefit of a well developed industry.

For investors, valuation is based on the ability to secure access to competitive fibre and operate within a certain policy environment. Companies must match the size of their investment to the ability to make profits. Profits in the forest industry generally require significant investments and are based on the ability to manage cost structure over the long-run. As a result, fibre security and policy environments are not mutually exclusive.

#### **Balancing Investment, Rights and Obligations with Tenure**

Fibre costs are a combination of operational costs (logging, hauling etc.) and costs incurred to meet regulatory/policy obligations (planning, reforestation, and stumpage). In both instances, these costs are allocated over the period which benefits are received. For example, logging costs would be allocated to the current year in which the activity took place while, the cost of a mill, road building and infrastructure would be allocated over the period of time used to access fibre or the useful life of the assets (perhaps 10-30 years).

Therefore, length of tenure or the period of time in which a forest company would have access to fibre is critical in order to manage both current costs as well as investments over time. The length of forest tenure must support the need to manage costs to build facilities, access fibre and meet social and regulatory obligations. To this end it is conceivable that the Yukon could have a variety of tenures in terms of length and balance of rights and obligations.

Clearly, there may be a need to develop small short-term tenures to meet the needs of companies supplying local or niche markets as well as long-term tenures to support more significant investment and participation in specialty and commodity markets. Correspondingly, the length of tenure would directly reflect the significance of investment, volume of fibre required, the degree to which the tenure holder would be obligated under policy or regulation and the ability of the tenure holder to absorb costs.

Currently, there has been significant apprehension regarding the allocation of large volume, long-term tenure to support industry growth in the Yukon. While this is understandable from the perspective of protecting the public and communities from possible failures in the market, short term, small volume tenure will not provide the business foundation on which to attract long term investment.

#### **Costs and Certain Policy Environment**

From a policy perspective, the Discussion Paper – Towards a Yukon Forest Policy Framework, prescribes an overall vision as follows: "Our vision is to work together so our forest ecosystems continue to provide for all living things, while providing environmental, economic, social and cultural benefits for present and future generations of Yukon people."

In addition, the policy vision in the Yukon centers on stated principles of sustainability and stewardship and recognizes that Yukon forests are complex ecosystems that can support commercial wood-based industries, commercial non-wood based industries and non-commercial goods and services. With the relatively unencumbered policy environment, the Yukon is in a position to take advantage of lessons learned from other jurisdictions struggling with sustainable development.

In pursuit of these challenging goals, there will be a tendency to maintain significant flexibility in policy development in the Yukon to address gaps in information and data, shifting societal values and changing political climates. However, building in flexibility does not come without a price. It is important for policy makers to understand that while governments desire to ensure the best interest of the public are protected, industry investors need to understand the process by which changes in policy will be made and what remedies exist to address business impacts.

### **Economic Impact Assessment**

Should all economic, regulatory, environmental and social conditions allow the establishment of a forestry sector in the Southeast Yukon, an assessment of the economic impact of an operational mill needs to be considered. If 500,000m<sup>3</sup> of annual allowable cut could be made available within an approximate 100 km radius of a given manufacturing location, the following potential benefits could accrue to the Yukon:

- Companies could be attracted to bid on the right to the forest tenure thereby giving rise to a one-time fee for the Territorial government. Prices for such tenures have not only fluctuated greatly from one jurisdiction to the next but there is no history of tenure pricing within the Yukon. As such, a determination of value could not be reasonably applied.
- The cost to construct a world class (500,000-600,000 Mfbm) sawmill is approximately \$100M (e.g. Canfor – Vanderhoof, B.C.). For purposes of PwC's analysis, it is expected that the capital outlay required to adequately construct an efficient sawmill in the Southeast Yukon to be in the range of \$30M - \$40M.
- Once the sawmill is operational, the Yukon could expect approximately 130+ high paying direct and indirect permanent jobs between those employed at the mill and personnel required for woodlands operations (average annual wage/salaries and benefits of Canadian forest workers are \$69,100).
- Ongoing operations of the sawmill and related woodlands activities could result in approximately \$1.5 million (based on an average historic stumpage rate of \$3/m<sup>3</sup>) paid on an annual basis in stumpage fees to the Territory, along with personal income taxes of approximately \$2.2M (being paid by the employees and contractors on a tax base of approximately \$9M). Tax revenues would also be bolstered through corporate tax collected on the profitability of the sawmill.
- In addition to the above direct benefits, the Yukon would see significant economic activity and jobs generated through supplies and services that would be required by the mill operations and the families employed. An economic multiplier of 1.5-2.0 would be used to estimate the indirect and induced benefits.

## **Conclusions and Recommendations**

- Successful development of a forest industry in Southeast Yukon is dependent on identifying and evaluating relevant forest values, followed by the design of a suite of economic and policy instruments to encourage and sustain investment.
- Industry development in Southeast Yukon will be challenged by labour shortages. The significant First Nations population in the region could provide a source and potential solution to bolster anticipated labour shortages through the implementation of long-term training and employment strategies designed to build skills capacity. Strategies to maximize productivity while optimizing the reliance on scarce labour will be a key to success.
- Due to the geographic location and overall lack of highly developed infrastructure to support resource development, the Southeast Yukon will continue to have challenges to attract forest industry investment. Efforts to reduce costs and increase competitiveness need to be focused where industry and the Territorial government have the greatest span of control.
- Forest products are by and large commodity products and competition for market space is fierce, price sensitive and global in scope. While manufacturers in the Yukon may have certain advantages that could be supported in the marketplace, it is important to understand that commodity forest products are subject to the forces of supply, demand, exchange rates, trade disputes and other macroeconomic influences. With the cost disadvantages in the Southeast Yukon, price advantage will most certainly be challenging regardless of the market.
- While there are certain, local/niche markets that can be served in the Yukon and Alaska, our research have determined that growth and development of these markets is limited simply due to a lack of scale.
- Overall, the Yukon forest product producer(s) will compete in the same North American and global markets as the other comparative jurisdictions and the Yukon's industry will not achieve strong sustainable growth unless its competitiveness is improved.
- Economic viability within the forest sector is based on further processing of the fibre harvested from Yukon forests. Selling significant volumes of roundwood outside the local Yukon marketplace is not viable.

- Energy costs are a significant competitive disadvantage in the Southeast Yukon. Creation of effective and efficient alternative energy solutions may be able to drive down the cost of energy impacting the feasibility and cost structure of forest sector development and sustainability.
- Options for industry to start small and grow big will be limited. Operations that start small and supply local niche markets may be successful, however growth opportunities in these markets is limited. Should industry pursue growth into the commodities marketplace, this fundamental shift in business strategy will mandate the need to capture sufficient economies of scale.
- The industry target return on capital employed of 10% 12% is the standard by which investment and performance is evaluated. The current cost structure and operating environment catches in the Southeast Yukon forestry sector will likely not see returns near this threshold.
- Length of tenure, or the period of time in which a forest company would have access to fibre, is important in order to manage both current costs as well as investments over time. Short term, small volume tenure will not provide the business foundation on which to attract long term investment.
- Overall, feasibility of a successful forest industry in the Southeast Yukon is possible based on a successful leveraging of First Nation, industry and government relationships building on a platform of reasonable cost structure, policy and regulatory reform. It is imperative for the Yukon to identify and build on competitive advantages as well as actively manage disadvantages in order to meet the various stakeholder needs in the Territory.