Northwest Timberlands

Delivered Log Cost Analysis for the Kalum Forest District and select areas of the Kispiox TSA

An Addendum to the Report "Delivered Log Cost Analysis for the Kalum Forest District" of May 12th, 2009

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Executive Summary

In May 2009 Northwest Timberlands Ltd. (NWTL) prepared a report titled *'Delivered Log Cost Analysis for the Kalum Forest District'.* NWTL has been asked by the Northwest BC Forest Coalition (Coalition) to create an addendum to the May 2009 document by changing the destination point to Kitimat (Eurocan Facility).

The purpose of the Addendum is determine the average delivered log cost for delivery of 700,000 m³ of pulp logs per year to the Eurocan Facility.

This addendum can be considered as a stand alone document however it does not contain the background information as found in the Appendices of the May 2009 report.

The areas covered in this report include the Kalum TSA, TFL 1, TFL 41 and the Nass TSA in the Kalum Forest District and the chart areas of Gitxsan Forest Enterprises Inc. (GFEI) in the Kispiox TSA of the Skeena Stikine Forest District.

Delivered Log Cost is the total cost to deliver timber from the forest to its final destination. It is comprised of hauling, harvesting, administration, silviculture and road development. Stumpage or BC Timber Sales (BCTS) upset prices are not included in the analysis as they vary in a non-predictable fashion, depending on provincial policy / procedures.

The average cost to deliver 700,000 m³ of pulp logs per year ranges from **$60.52/m³ to $62.85/m³**. If members from the Coalition are willing to exclude their fixed costs (i.e. administration and silviculture) from the cost of production of their pulp logs the average cost to deliver 700,000 m³ of pulp logs per year declines to **$49.71/m³ to $51.91/m³**.

The range of $49.86/m³ to $51.91/m³ is still above the average fibre cost of $45/m³ that has been identified as a potential target. For the Coalition licensees to deliver pulp logs at an average of $45/m³ would require licensees to offset an additional $5-$7/m³ of costs onto their sawlogs.

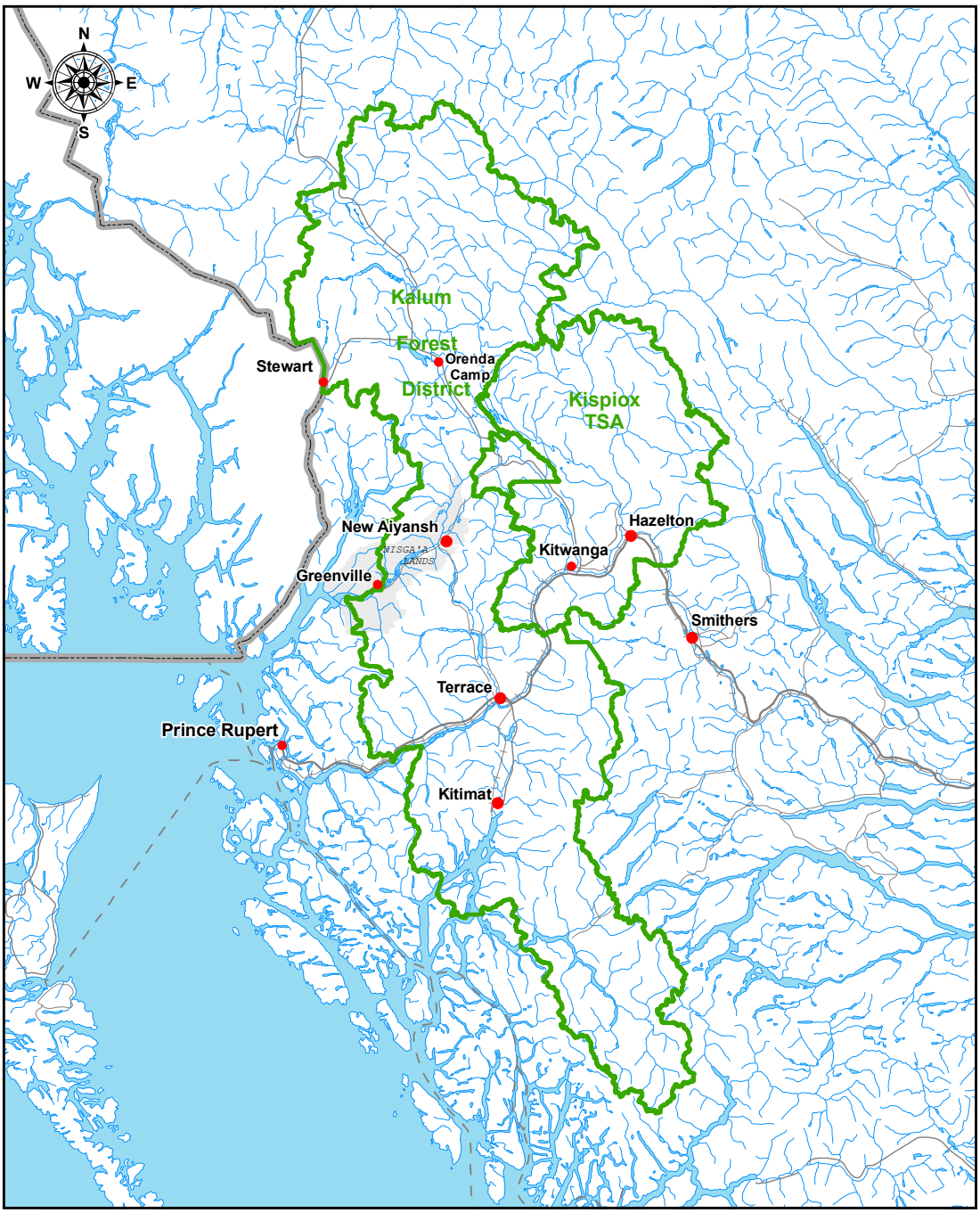
This analysis demonstrates that at an average price of $45/m³, suppliers are delivering pulp logs at a loss and any costs incurred in production above the purchase price of $45/m³ will have to be attributed to the sawlogs in the harvest unit.

The ability of the Coalition to supply the volume of pulp logs as required by the Eurocan Facility will entirely depend on the sawlog market (domestic and export) unless pulp logs are delivered at the cost of production.

The analysis also demonstrated that to supply the most cost effective 700,000 m³ will require volume to be delivered from outside of the Kalum Forest District, namely the western portions of the Kispiox TSA or those areas of the Kispiox TSA located close to Highway 16 and 37.

There are limitations to the methodology used in this analysis to derive an average log cost primarily with the broadness of some of the polygons/areas and the age of the data. More accurate delivered log cost calculations may be beneficial.

Key Map


N
W
E
S
Kalum
Forest
District
Orenda
Camp
Stewart
Kispiox
TSA
New Aiyansh
Hazelton
Kitwanga
Greenville
Smithers
Terrace
Prince Rupert
Kitimat

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1 Overview

In May 2009 Northwest Timberlands Ltd. (NWTL) prepared a report titled *'Delivered Log Cost Analysis for the Kalum Forest District'.* The purpose of that report was to provide a preliminary estimate for the delivery of logs from the Kalum Forest District to Terrace, Kitwanga and Stewart.

Since that time several licensees in the north western portion of B.C. have created the Northwest BC Forest Coalition (Coalition)[1], for the purposes of attracting industrial partners by creating a larger 'pool' of timber.

Also in October 2009 West Fraser Timber announced its Eurocan Pulp and Paper Mill in Kitimat would be permanently closed in January 2010. As a result of the closure, a consortium of interested parties created the Eurocan Industrial Viability Committee whose mandate is to examine the feasibility of operating the Eurocan Pulp and Paper Mill under a different business model.

The Coalition has been approached by the Eurocan Industrial Viability Committee regarding the ability to supply 700,000 m³ of pulp logs per year to the Eurocan Facility. To provide an estimate of what the average cost would be to supply 700,000 m³ of pulp logs the Coalition requested that NWTL amend the *'Delivered Log Cost Analysis for the Kalum Forest District'* by having Kitimat as the final destination point, instead of Terrace, Kitwanga and Stewart.

Consistent with the May 2009 *'Delivered Log Cost Analysis for the Kalum Forest District'* this report should be considered strategic and offers a preliminary estimate for the delivery of pulp logs to Kitimat.

Although it may be beneficial to the reader to read the May 2009 *'Delivered Log Cost Analysis for the Kalum Forest District'* for context, this addendum is to be considered as a stand alone document; however it does not contain the background information as found in the Appendices of the May 2009 report.

2 General Methodology

The Kalum Forest District was split into three distinct areas. The Kalum TSA, TFL 1 and the on-shore portion of TFL 41 was considered one area. The other two areas were the Nass TSA and the off-shore portion of TFL 41.

Each distinct area was further divided into smaller polygons (generally following watershed boundaries) from which a delivered log cost to Kitimat was calculated from. Each watershed had a Timber Harvest Landbase (THLB) attributed to it so an estimated timber volume could be attached to each polygon.

The Chart Areas of Gitxsan Forest Enterprises Inc. (GFEI) in the Kispiox TSA of the Skeena-Stikine Forest District was also included in the analysis[2]. Each Chart Area had a THLB attributed to it so timber volumes could be estimated.

Area outside of the Kalum Forest District was included into this Addendum as some of the western portions of the Kispiox TSA may have favourable delivered log costs due to a higher predominance of ground based harvesting in the Kispiox TSA. Chart areas other than GFEI's

[1] http://www.nwbc-forestcoalition.org/

[2] NWTL completed a Strategic Timber and Cost Analysis for GFEI Chart Areas in January 2010. GFEI, a Coalition Member, has granted NWTL permission to incorporate the data from the January 2010 analysis into this Addendum.

were not considered as that data was not available in an easily reportable format within the time constraints of this addendum report.

3 General Parameters

A 'delivered log cost' is comprised of hauling, harvesting, administration, silviculture and road development. Stumpage or BC Timber Sales (BCTS) upset prices were not included in the analysis as they vary in a non-predictable fashion, depending on provincial policy / procedures.

3.1 Hauling

A simple cycle time calculation was performed from the mid-point of each basin / polygon or chart area. For all of the areas the calculations were rounded to the nearest $0.50/m³.

In the Kalum Forest District, distance calculations were taken from the *Approved Kalum Forest District Appraisal Speeds and Hauling Distances Spread-sheet*. For the majority of the roads Empty / Loaded haul speeds were also taken from the *Appraisal Speeds and Hauling Distances Spread-sheet*. The exception was the Nisga'a Highway from Terrace to the Nass (Junction Y) and from Junction Y to Greenville. An assumption was made that the haul speeds for these road sections in the Appraisal Spreadsheet did not reflect the recent highway improvements.[3]

Individual cycle times were not calculated for the off-shore portion of TFL 41 as it is common practice along the Coast to incorporate the hauling cost into the On Truck Rate.

For the GFEI Chart Areas within the Kispiox TSA distance calculations were taken from *Haul Distances within the Kispiox Forest District (March 23, 1999)* and Google Earth. The spread-sheet *Kispiox District Haul Speeds* was used as a reference[4] to assign haul speeds.

An average of $3.05/tonne-hour was used for the cycle time calculation with a 1:1 conversion factor (1 tonne = 1 m³). The rationale for using such a high conversion factor for pulp is that currently the only market available for sawlogs is the export market which has a zero tolerance for rot. As this situation is not expected to change in the foreseeable future, a significant amount of low grade sawlog or high quality pulp is currently being decked or delivered as pulp. A sensitivity analysis could be run to see the effect, for example, of a 0.9 conversion but such an analysis was outside the scope of this addendum.

One hour was used for the load/unload/delay portion of the cycle time calculation, for all harvest methods.

For the calculation of the cycle times the final destination for each polygon or chart area was the Eurocan Plant in Kitimat. As an assumption was made that timber would be transported via the least expensive mode of transport, for some areas it was more cost effective to haul timber to either Greenville or Stewart, dump into the ocean and tow to Kitimat.

3.2 Harvest Rate (On Truck Rate)

For the Kalum TSA, TFL 1 and the on-shore portion of TFL 41 local experience[5] and past harvesting practices were used to determine the appropriate mix of ground based versus cable harvest. Non-conventional harvest methods (i.e. helicopter, long-line skyline) have very high

[3] Haul speeds were increased to 65 km/hr (loaded) and 75 km/hr (empty) for both sections. Haul speeds in the Appraisal Spreadsheet are 55 km/hr (loaded) and 65 km/hr (empty) for the portion from Terrace to the Nass (Junction Y) and 40 km/hr (loaded) and 60 km/hr (empty) for the portion from Junction Y to Greenville.

[4] It is an old document (1998) and road conditions have changed since then. Hence it was used for reference only.

[5] Personnel at NWTL have worked extensively throughout the Northwest of BC since the 1980s. In the past two years, NWTL personnel have conducted over 1,000,000 m³ of timber reconnaissance in a variety of areas through-out the Northwest.

operational costs and were not considered as a harvesting option due to the comparatively low value of forested stands in this area.

For the off-shore portion of TFL 41 the mix between conventional (ground based and cable) and non-conventional (helicopter) was determined in conjunction with BCTS (Skeena Business Unit), the primary licensee in the off-shore portion of TFL 41.

In the Nass TSA, Harvest Method Mapping (Ministry of Forests and Range, 2006) and field reconnaissance information provided by BCTS was used to delineate the proportion of ground based and cable harvest.

For the GFEI Chart Areas in the Kispiox TSA Harvest Method Mapping (Ministry of Forests and Range, 2004) was used to delineate the proportion of ground based and cable harvest.

Although the harvesting rates applied for ground based, cable, conventional and non-conventional in the delivered log cost analysis represents an average rate; the actual on truck rate will vary for each harvest unit depending on the location, terrain and timber quality.

Area	Ground Based ($/m³)	Cable ($/m³)	Off-shore conventional (i.e. non-heli) ($/m³)	Heli-Ocean ($/m³)	Heli-Land ($/m³)
Kalum TSA	20	28	-	-	-
TFL1	20	28	-	-	-
TFL 41 (on-shore)	20	28	-	-	-
TFL 41 (off-shore)	-	-	46 to 50	86	108
Nass TSA	22	30	-	-	-
Kispiox TSA (GFEI Chart Area)	20	30	-	-	-

3.3 Administration

Administration costs include forest planning, license fees, road maintenance and overhead. Through discussions with some licensees a cost of $7.50/m³ was viewed as an appropriate number for the majority of the Kalum Forest District. For the off-shore portion of TFL 41 administration was increased to $10.00/m³ to recognize that the area is only accessible via water or air transport. For the GFEI Chart Area in the Kispiox TSA an administration cost of $7.00/m³ was used to reflect the more moderate terrain.

3.4 Silviculture Rate

While actual silviculture costs will vary depending on the stand-level prescription for individual areas, average rates for silviculture were used. These are based on a combination of discussions with licensees and the review of the Interior Appraisal Manual *(effective July 2007)*.

	Predominant BEC Zone	Silviculture Rate ($/m³)
Kalum TSA	CWH ws1	3.50
TFL 1	CWH ws1	3.50
TFL 41 (on-shore portion)	CWH ws1	3.50
TFL 41 (off-shore portion)	CWH ws1	4.00
Nass TSA	ICH mc1	3.50
Nass TSA	ICH vc	5.00
Kispiox TSA (GFEI Chart Area)	ICH mc2	3.00

3.5 Road Development Cost

For the Kalum TSA, TFL 1 and TFL 41 (on-shore) an average road development cost ($/m³) for each polygon was calculated by estimating the amount of volume one kilometre of road would develop in that polygon divided by the estimated cost per lineal meter of road construction in that polygon. Generally in drainages that do not have significant prior development the volume of timber developed from one kilometre of road would be higher compared to a drainage that has an extensive harvest history as a substantial amount of road may be required to access small (residual) parcels of timber. Furthermore in constrained areas (i.e. terrain, visual), more road will be required to develop the same amount of timber when compared to an unconstrained area.

For the Nass TSA the above methodology was utilized in conjunction with calculations of development costs from prior BCTS Timber Sales in the Nass TSA.

In TFL 41 (off-shore) road development costs were based on calculations of development costs from prior BCTS Timber Sales in the off-shore portion of TFL 41.

From historical road rates and local knowledge the range of road costs ($/lineal m) used[6] in the above calculations were:

Area	*Range*
Kalum TSA, TFL 1, TFL 41 (on-shore):	*$45/m to $95/m*
Nass TSA:	*$35/m to $50/m*
TFL 41 (off-shore):	*$120/m*

For GFEI Chart Areas in the Kispiox TSA a different process was used to estimate the cost for road development. Given the variability in road costs (i.e. terrain and material type) and that some chart areas of GFEI will require substantial infrastructure development (i.e. major bridges, mainline construction) three categories of road development costs were created.

1) Chart Areas that are primarily developed (i.e. Andimaul, Murder, Sterritt, Big Slide) and new road construction would just mostly entail short to medium length spurs plus upgrade. Development Cost = $7.00/m3.

2) Chart Areas that are moderately developed (i.e. Blackstock, Murder, Cullon, Sweetin, Kuldo) and new road construction would be a combination of branch roads and spurs. Development Cost = $9.50/m3.

3) Chart Areas that require a fair amount of initial development (i.e. Sam Green, Larkworthy, Shedin, Shelagyote). Development Cost = $13.50/m3.

[6] Actual road construction costs for the areas will be higher on a road by road basis. However, the figures presented here are the range of **averages** that were used.

4 Polygon Designation

4.1 Kalum TSA, TFL 1, TFL 41 (on-shore) and Nass TSA

The polygons used to calculate the delivered log costs in the Kalum TSA, TFL 1, TFL 41 (on-shore) and the Nass TSA were from polygons delineated by the Ministry of Forests and Range through the Timber Reallocation Northwest Mountains Pricing Analysis Process in 2003/2004.

The decision was made to use the polygons from the Reallocation Process as each polygon already had a Timber Harvesting Landbase (THLB) attributed to it, eliminating the requirement to create a new data-set for each area. The calculation of the THLB in the Reallocation Process utilized the same information as was used during Timber Supply Review II (TSR II).

There are two limitations of using polygons from the Reallocation Process. The first limitation is the age of the data (2003 and prior) which will result in an overestimation of the THLB as the data does not reflect recent harvesting activity. Given that harvesting activity within the Kalum TSA, TFL 1, TFL 41 and Nass TSA has been limited since 2003 (no licensee has achieved their AAC) the possible over estimation of the THLB in the individual polygons is not considered a significant issue at this time, but it could be as more harvesting activity occurs. The second limitation is that the delineation of the polygons was for a Timber Reallocation Process, not for a Delivered Log Cost Analysis. The areas of some polygons are quite broad, significantly broader than would be preferable to calculate a delivered log cost.

The data provided by the Ministry of Forests and Range contained fields for the age of the timber in a polygon and fields for the quality of timber in a polygon. For the delivered log cost analysis only timber greater than 80 years in age was considered for the volume calculations. For the type of timber in a polygon (i.e. sawlog, marginal sawlog, pulp or other) it was the opinion of NWTL that the pulp percentage was over estimated for the majority of the polygons so it was decided to use local knowledge to determine the sawlog / pulp log percentage for each polygon. In addition to local knowledge for the Kalum TSA, TFL 1 and TFL 41 BCTS field reconnaissance data was also used to refine sawlog / pulp log percentages.

4.2 TFL 41 (off-shore)

The polygons used to calculate the delivered log costs for the off-shore portion of TFL 41 were from polygons delineated by the Ministry of Forests and Range through a Forest Cover Inventory Value Analysis Project completed by the North Coast Field Team of the Skeena Business Unit of BCTS in November 2008.

The polygons from the Value Analysis Project were used as each polygon had a THLB attributed to it, eliminating the requirement to create a new data-set for the off-shore portion of TFL 41.

There is no reference to stand quality for the off-shore portion of TFL 41 as the BCTS Skeena Business Area has requested that the average stand value of individual polygons remains confidential. In addition, the timber in the off-shore portion of TFL 41 is too diverse with too many grades within a species to estimate a sawlog or pulp percentage as was done for the other areas in the Kalum District.

4.3 Kispoix TSA (GFEI)

The areas used in the Kispiox TSA were the chart areas of GFEI, the major licensee within the Kispiox TSA. The source of data was a Ministry of Forests and Range (MoFR) data-set that divided the Kispiox TSA into its seventy-two (72) Chart Areas. For each Chart Area the data-set contained attributes such as area, volume, species composition and harvest method. The data-set is based on the THLB that was used for the latest Timber Supply Review (TSR III) in 2007.

It was once again the opinion of NWTL that the pulp percentage of the overall stand was over estimated for many of GFEI's chart areas. Therefore, a combination of the species composition of each chart area and local[7] knowledge were used to approximate the amount of pulp logs available in each chart area.

5 Results – Kalum TSA, TFL 1, TFL 41(on-shore)

Tables 1 and 2 provide the results of the delivered log cost analysis for the Kalum TSA, TFL 1 and the on-shore portion of TFL 41.

The analysis indicates that there is a range of delivered log costs in the Kalum TSA, TFL 1 and TFL 41 (on-shore) from **$45.50/m³ to $74.15/m³**.

Calculating the average delivered log cost from the midpoint of each polygon illustrates two limitations of the methodology utilized. The first limitation is using polygons intended for a Timber Reallocation Process as the sensitivity of the calculations is reduced (i.e. some polygons are too broad and encompass multiple main arterial road networks). The second limitation is the concept of averages. One has to remember the delivered log cost numbers calculated in Table 1 are averages only and variation exists within each polygon. The minimum variation in each polygon is $8.00/m³, the difference between an area 100% ground based and an area 100% cable based. Also all things being equal, the variation in a larger polygon is going to be greater when compared to a smaller polygon, due to the difference in hauling costs (cycle time) between the front and back of a drainage. Variation in a polygon will also occur for road development - some areas of the drainage may require capital expenditures such as bridges, whereas in other areas harvesting may be focussed on leave strips. Even silviculture costs can vary as on drier zonal sites natural regeneration maybe a viable alternative, whereas other areas may require planting and additional stand tending. Administration costs will not vary significantly within a polygon as a high proportion of it is comprised of fixed costs.

For the Kalum TSA, TFL 1 and TFL 41 an assumption that was made in the Delivered Log Cost Analysis is that there would be no helicopter logging (i.e. no costs were allocated to helicopter logging). As the volumes in Table 2 are derived from the THLB that was used for the Reallocation Process it is likely that some of the THLB incorporates areas that can only be harvested via helicopter. This plus the fact that the THLB does not incorporate the most up to date harvest activity (data from TSR II process as previously mentioned), could result in an inflated volume attributed to each polygon. Moreover, it is assumed that this potential decline in available timber will not have a significant effect on administration costs as administration costs are more closely aligned with the allowable annual cut of each licensee.

For some areas in TFL 1 it is more cost effective to haul timber to tidewater (Greenville), water the wood and tow to Kitimat versus hauling it directly to Kitimat. An assumption was made that any wood sent to Greenville would be scaled in Kitimat and no handling fee would be charged at the Greenville Dry Land Sort (DLS). This assumption was made so the delivered log costs within Tables 1 and 2 would be consistent and an 'apples to apples' comparison could be made, since no handling or scaling costs are incurred by the supplier in a direct truck haul of pulp logs to Kitimat.

[7] One of the principals of NWTL held positions of Forestry Manager and Operations Manager of Carnaby Operations when Skeena Cellulose Inc. (SCI) was the licensee for FL A16831. The majority of the current infrastructure in FL A16831 was installed during the time that SCI was the licensee.

Table 1 – Delivered Log Cost Breakdown: Kalum TSA, TFL 1, TFL 41 (on-shore)

Polygon ID[8]	Location	Administration ($/m³)	Road Development Cost ($/m³)	On Truck Cost ($/m³)	Truck Hauling Cost ($/m³)	Greenville to Kitimat Towing ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
sb2091	Sandur	7.50	5.00	20.00	9.50	0.00	3.50	45.50
ge3353	Kitimat	7.50	12.00	26.40	5.00	0.00	3.50	54.40
ge3530	Kitimat	7.50	12.00	26.40	5.00	0.00	3.50	54.40
ge2721	Kitimat Valley	7.50	12.50	24.40	8.50	0.00	3.50	56.40
ge3431	Bish Crk.	7.50	14.00	26.40	6.00	0.00	3.50	57.40
ge3394	Jesse Lake	7.50	14.00	26.40	7.00	0.00	3.50	58.40
av3431	Bish Crk.	7.50	14.00	26.40	7.00	0.00	3.50	58.40
av2631	Chist Crk.	7.50	12.50	26.40	8.50	0.00	3.50	58.40
sb19039	Skeena West II	7.50	8.50	24.00	15.00	0.00	3.50	58.50
ge2091	Williams Crk.	7.50	10.00	26.40	11.50	0.00	3.50	58.90
av3394	Jesse Lake	7.50	14.00	26.40	8.00	0.00	3.50	59.40
sb2346	Thunderbird-Johnstone	7.50	12.00	24.40	12.50	0.00	3.50	59.90
sb19030	Deep Creek	7.50	12.00	24.40	12.50	0.00	3.50	59.90
sb19040	Skeena West I	7.50	9.50	24.00	15.50	0.00	3.50	60.00
av3530	Wathl	7.50	14.00	26.40	9.00	0.00	3.50	60.40
av2986	Bolton/Mackay	7.50	12.50	26.40	10.50	0.00	3.50	60.40
ge1258	North Headley	7.50	8.00	21.60	13.50	6.50	3.50	60.60
un19039	Newton	7.50	10.00	25.60	14.00	0.00	3.50	60.60
av2721	Upper Kitimat River	7.50	12.50	26.40	11.00	0.00	3.50	60.90
ge19045	Erlandsen	7.50	9.50	27.20	13.50	0.00	3.50	61.20
ge1776	Lower Copper	7.50	11.00	27.20	13.00	0.00	3.50	62.20
av3016	Davies Crk.	7.50	12.50	26.40	12.50	0.00	3.50	62.40
ge2382	Lower Clore	7.50	9.50	25.60	16.50	0.00	3.50	62.60
sb1677	Limonite	7.50	8.50	27.20	16.00	0.00	3.50	62.70
ge19031	L.Big Cedar	7.50	9.00	25.20	17.50	0.00	3.50	62.70
ge19036	L.Cedar	7.50	9.50	27.20	15.50	0.00	3.50	63.20
av3330	N.Hirsch	7.50	15.00	26.40	11.00	0.00	3.50	63.40
ge19046	Beaver	7.50	9.00	26.40	17.00	0.00	3.50	63.40
ge19042	Nelson	7.50	9.50	27.20	16.00	0.00	3.50	63.70
av3353	S.Hirsch	7.50	15.00	26.40	11.50	0.00	3.50	63.90
ge1337	Beaupre / Lava	7.50	11.00	26.40	9.00	6.50	3.50	63.90
ge19032	Mayo	7.50	9.50	26.40	17.00	0.00	3.50	63.90
sb1435b	Limonite	7.50	9.50	24.40	19.50	0.00	3.50	64.40
ge2346	Furlong/Hatchery	7.50	17.50	27.20	9.00	0.00	3.50	64.70
un2382	Upper Clore	7.50	9.50	26.40	18.50	0.00	3.50	65.40
ge1677	Kleanza	7.50	13.00	27.20	14.50	0.00	3.50	65.70
ge19030	East Kalum	7.50	13.00	27.20	14.50	0.00	3.50	65.70
sb3330	N.Hirsch	7.50	15.00	26.40	13.50	0.00	3.50	65.90
ge1374	Anweiller	7.50	9.50	26.00	19.50	0.00	3.50	66.00
ge2094	Kitnayakwa	7.50	11.00	25.20	19.00	0.00	3.50	66.20

[8] Appendix A provides maps showing the location of the polygons.

Polygon ID	Location	Administration ($/m³)	Road Development Cost ($/m³)	On Truck Cost ($/m³)	Truck Hauling Cost ($/m³)	Greenville to Kitimat Towing ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
un1966	Hwy 16W-Exstew	7.50	14.50	28.00	13.00	0.00	3.50	66.50
ge19033	Kwiniak	7.50	11.00	27.20	11.00	6.50	3.50	66.70
ge1966	Whitebottom/Shames	7.50	14.50	27.20	14.50	0.00	3.50	67.20
ge19039	Skeena West / Chimdemash	7.50	16.50	27.20	13.00	0.00	3.50	67.70
av3130	L.Wedeene	7.50	23.50	26.40	7.00	0.00	3.50	67.90
un1337	Poupard / May	7.50	11.50	27.20	18.50	0.00	3.50	68.20
ge1535	Legate	7.50	15.50	27.20	15.00	0.00	3.50	68.70
ge1435	Upper Copper	7.50	10.50	26.40	21.00	0.00	3.50	68.90
ge1776a	Salmon Run	7.50	15.75	25.60	17.00	0.00	3.50	69.35
av2789	Wedeene	7.50	23.50	26.40	8.50	0.00	3.50	69.40
ge1290	Kiteen	7.50	9.50	25.60	24.00	0.00	3.50	70.10
ge1320	W.Kiteen	7.50	10.00	25.60	24.00	0.00	3.50	70.60
ge19034	Ishkheennickh	7.50	14.50	26.40	13.00	6.50	3.50	71.40
ge1255	L.Kiteen	7.50	13.50	27.20	13.50	6.50	3.50	71.70
ge19043	Exstew	7.50	18.00	27.20	15.50	0.00	3.50	71.70
ge1334	Stenstrom	7.50	10.50	26.40	24.00	0.00	3.50	71.90
av2346	Coldwater	7.50	23.50	28.00	9.50	0.00	3.50	72.00
ge19044	Zymacord	7.50	18.75	28.00	14.50	0.00	3.50	72.25
sb1966	Dasque	7.50	18.50	27.20	16.00	0.00	3.50	72.70
ge19040	Fiddler	7.50	18.75	26.40	18.00	0.00	3.50	74.15

Table 2 – Volume Attributes of Delivered Log Cost Polygons: Kalum TSA, TFL 1, TFL 41 (on-shore)

Polygon ID[9]	Location	Delivered Log Cost	TSA (ha)	TFL 41 (ha)	TFL 1 (ha)	Sawlog (%)	Pulp (%)	m³/ha	Volume (m³)	Pulp Volume (m³)
sb2091	Sandur	45.50	206	0	0	90	10	325	66,950	20,085
ge3353	Kitimat	54.40	415	0	0	55	45	475	197,125	59,138
ge3530	Kitimat	54.40	1,024	0	0	55	45	475	486,400	145,920
ge2721	Kitimat Valley	56.40	863	0	0	50	50	475	409,925	122,978
ge3431	Bish Crk.	57.40	1,462	0	0	70	30	550	804,100	241,230
ge3394	Jesse Lake	58.40	2,599	0	0	70	30	550	1,429,450	428,835
av3431	Bish Crk.	58.40	0	1,720	0	70	30	550	946,000	283,800
av2631	Chist Crk.	58.40	0	1,627	0	60	40	475	772,825	231,848
sb19039	Skeena West II	58.50	2,142	0	0	50	50	400	856,800	257,040
ge2091	Williams Crk.	58.90	3,767	0	0	55	45	425	1,600,975	480,293
av3394	Jesse Lake	59.40	0	1,491	0	70	30	550	820,050	246,015
sb2346	Thunderbird-Johnstone	59.90	1,405	0	0	65	35	425	597,125	179,138
sb19030	Deep Creek	59.90	780	0	0	65	35	425	331,500	99,450
sb19040	Skeena West I	60.00	270	0	0	50	50	400	108,000	32,400
av3530	Wathl / Clio Bay	60.40	0	5,697	0	70	30	550	3,133,350	940,005
av2986	Bolton/Mackay	60.40	0	1,758	0	60	40	475	835,050	250,515
ge1258	North Headley	60.60	0	0	2,105	55	45	350	736,750	221,025
un19039	Newton	60.60	1,562	0	0	65	35	425	663,850	199,155
av2721	Upper Kitimat River	60.90	0	7,079	0	60	40	475	3,362,525	1,008,758
ge19045	Erlandsen	61.20	0	0	559	55	45	425	237,575	71,273
ge1776	Lower Copper	62.20	0	0	3,269	60	40	425	1,389,325	416,798
av3016	Davies Crk.	62.40	0	1,994	0	60	40	475	947,150	284,145
ge2382	Lower Clore	62.60	0	0	2,540	60	40	425	1,079,500	323,850
sb1677	Limonite	62.70	171	0	0	60	40	425	72,675	21,803
ge19031	L.Big Cedar	62.70	0	0	3,876	60	40	425	1,647,300	494,190
ge19036	L.Cedar	63.20	0	0	935	55	45	425	397,375	119,213
av3330	N.Hirsch	63.40	0	216	0	55	45	475	102,600	30,780
ge19046	Beaver	63.40	0	0	2,014	55	45	450	906,300	271,890
ge19042	Nelson	63.70	0	0	565	55	45	425	240,125	72,038
av3353	S.Hirsch	63.90	0	1,572	0	55	45	475	746,700	224,010
ge1337	Beaupre / Lava	63.90	0	0	2,322	55	45	425	986,850	296,055
ge19032	Mayo	63.90	0	0	835	60	40	450	375,750	112,725
sb1435b	Limonite	64.40	0	0	3,762	60	40	450	1,692,900	507,870
ge2346	Furlong/Hatchery	64.70	1,945	0	0	55	45	425	826,625	247,988
un2382	Upper Clore	65.40	0	0	1,693	55	45	425	719,525	215,858
ge1677	Kleanza	65.70	3,238	0	0	55	45	425	1,376,150	412,845
ge19030	East Kalum	65.70	5,672	0	0	65	35	475	2,694,200	808,260
sb3330	N.Hirsch	65.90	0	1,109	0	55	45	475	526,775	158,033
ge1374	Anweiller	66.00	1,190	0	0	65	35	450	535,500	160,650
ge2094	Kitnayakwa	66.20	0	0	2,394	55	45	400	957,600	287,280
un1966	Hwy 16W-Exstew	66.50	93	0	0	65	35	400	37,200	11,160

[9] Appendix A provides maps showing the location of the polygons.

Polygon ID	Location	Delivered Log Cost	TSA (ha)	TFL 41 (ha)	TFL 1 (ha)	Sawlog (%)	Pulp (%)	m³/ha	Volume (m³)	Pulp Volume (m³)
ge19033	Kwiniak	66.70	0	0	1,543	60	40	450	694,350	208,305
ge1966	Whitebottom/Shames	67.20	0	0	2,740	60	40	475	1,301,500	390,450
ge19039	Skeena West / Chimdemash	67.70	6,724	0	0	60	40	425	2,857,700	857,310
av3130	L.Wedeene	67.90	0	532	0	60	40	475	252,700	75,810
un1337	Poupard / May	68.20	0	0	1,610	60	40	425	684,250	205,275
ge1535	Legate	68.70	814	0	0	50	50	425	345,950	103,785
ge1435	Upper Copper	68.90	0	0	4,318	40	60	400	1,727,200	518,160
ge1776a	Salmon Run	69.35	0	0	698	60	40	450	314,100	94,230
av2789	Wedeene	69.40	0	1,331	0	60	40	475	632,225	189,668
ge1290	Kiteen	70.10	0	0	4,369	65	35	425	1,856,825	557,048
ge1320	W.Kiteen	70.60	0	0	656	60	40	425	278,800	83,640
ge19034	Ishkheennickh	71.40	0	0	1,471	60	40	500	735,500	220,650
ge1255	L.Kiteen	71.70	0	0	3,593	40	60	350	1,257,550	377,265
ge19043	Exstew	71.70	1,137	0	0	60	40	400	454,800	136,440
ge1334	Stenstrom	71.90	0	0	930	60	40	425	395,250	118,575
av2346	Coldwater	72.00	0	0	910	60	40	475	432,250	129,675
ge19044	Zymacord	72.25	1,186	0	0	55	45	425	504,050	151,215
sb1966	Dasque	72.70	143	0	0	60	40	475	67,925	20,378
ge19040	Fiddler	74.15	970	0	0	55	45	425	412,250	123,675
			39,778	26,126	49,707				51,859,625	15,557,888

6 Results – Nass TSA

Tables 3 and 4 provide the results of the delivered log cost analysis for the Nass TSA.

The analysis indicates that there is a range of delivered log costs in the Nass TSA from **$61.70/m³ to $72.80/m³**. The comments regarding polygon delineation and the concept of averages in *Section 5* are also applicable to the Nass TSA.

As in *Section 5* for some areas in the Nass TSA it is more cost effective to haul timber to tidewater (Greenville or Stewart), water the wood and tow to Kitimat versus hauling directly to Kitimat. Once again an assumption was made that any wood sent to Greenville or Stewart would be scaled in Kitimat and no handling fee would be charged at the Greenville or Stewart DLS. This assumption was made so the delivered log costs within Tables 3 and 4 would be consistent with other areas (i.e. Kalum TSA) and an 'apples to apples' comparison could be made, since no handling or scaling costs are incurred by the supplier of pulp logs that are delivered to Kitimat via a direct haul.

Table 3 – Delivered Log Cost Breakdown: Nass TSA

Polygon ID[10]	Location	Administration ($/m³)	Road Development Cost ($/m³)	On Truck Cost ($/m³)	Hauling Cost Greenville ($/m³)	Greenville to Kitimat Towing ($/m³)	Hauling Cost Stewart ($/m³)	Stewart to Kitimat Towing ($/m³)	Silviculture Costs ($/m³)	Delivered Log Cost ($/m³)
sb1048	Orenda	7.50	8.00	23.20	0.00	0.00	12.00	7.50	3.50	61.70
ge1092	Meziadin Lake	7.50	9.00	23.20	0.00	0.00	11.00	7.50	3.50	61.70
ge1048	Wildfire / Upper Kwinageese	7.50	8.00	24.00	0.00	0.00	11.50	7.50	3.50	62.00
ge1156	Pas	7.50	7.00	24.40	0.00	0.00	13.00	7.50	3.50	62.90
ge1143	L.Pas	7.50	7.00	24.40	0.00	0.00	13.00	7.50	3.50	62.90
ge1038	Surveyor Creek	7.50	9.00	22.80	0.00	0.00	11.50	7.50	5.00	63.30
ge1112	White River	7.50	8.50	23.60	0.00	0.00	13.00	7.50	3.50	63.60
sb1134	Brown Bear	7.50	8.00	23.20	0.00	0.00	14.00	7.50	3.50	63.70
sb1156	Harper	7.50	7.00	24.40	0.00	0.00	14.00	7.50	3.50	63.90
sb1187	Harper	7.50	7.00	24.40	0.00	0.00	14.50	7.50	3.50	64.40
un1187	Harper	7.50	7.00	24.40	0.00	0.00	14.50	7.50	3.50	64.40
ge1134	Brown Bear	7.50	8.00	23.20	0.00	0.00	15.00	7.50	3.50	64.70
ge951	Irving / Kotcho	7.50	9.00	23.60	0.00	0.00	13.50	7.50	5.00	66.10
ge1115	Brown Bear	7.50	8.00	23.20	0.00	0.00	17.00	7.50	3.50	66.70
ge1208	Tchitin	7.50	8.50	25.20	17.00	5.50	0.00	0.00	3.50	67.20
ge845	Owl / Bell II	7.50	9.00	23.20	0.00	0.00	15.00	7.50	5.00	67.20
ge1010	Bowser Lake	7.50	10.00	22.80	0.00	0.00	14.50	7.50	5.00	67.30
sb1115	Bonnie Lakes	7.50	8.00	23.20	0.00	0.00	18.00	7.50	3.50	67.70
sb1089	Bonnie Lakes	7.50	8.00	23.20	0.00	0.00	18.00	7.50	3.50	67.70
sb1228	Harper	7.50	7.00	24.40	0.00	0.00	19.00	7.50	3.50	68.90
sb1143	Harper	7.50	7.00	24.40	0.00	0.00	19.00	7.50	3.50	68.90
ge1187	Kinskuch	7.50	8.50	26.00	18.00	5.50	0.00	0.00	3.50	69.00
ge1089	Bonnie Lakes	7.50	8.00	23.20	0.00	0.00	19.50	7.50	3.50	69.20
ge1174	Niska Lakes	7.50	7.00	24.40	0.00	0.00	20.00	7.50	3.50	69.90
ge1228	Kshadin	7.50	10.50	26.00	17.00	5.50	0.00	0.00	3.50	70.00
ge1094	Kwinageese	7.50	8.00	22.80	0.00	0.00	21.00	7.50	3.50	70.30
un1292	Kwinatahl	7.50	10.50	26.00	19.00	5.50	0.00	0.00	3.50	72.00
un1269	Kwinatahl	7.50	10.50	26.00	19.00	5.50	0.00	0.00	3.50	72.00
ge1269	Kwinatahl	7.50	10.50	26.00	19.00	5.50	0.00	0.00	3.50	72.00
ge1082	Kwinageese	7.50	8.00	22.80	0.00	0.00	23.50	7.50	3.50	72.80

[10] Appendix A provides maps showing the location of the polygons.

Table 4 – Volume attributes of Delivered Log Cost Polygons: Nass TSA

Polygon ID[11]	Location	Delivered Log Cost	TSA (ha)	Sawlog (%)	Pulp (%)	m³/ha	Volume (m³)	Pulp Volume (m³)
ge1092	Meziadin Lake	61.70	2,447	50	50	340	831,980	415,990
sb1048	Orenda	61.70	3,674	55	45	350	1,285,900	578,655
ge1048	Wildfire / Upper Kwinageese	62.00	16,722	40	60	325	5,434,650	3,260,790
ge1156	Pas	62.90	5,874	55	45	400	2,349,600	1,057,320
ge1143	L.Pas	62.90	2,769	55	45	400	1,107,600	498,420
ge1038	Surveyor Creek	63.30	1,454	50	50	340	494,360	247,180
ge1112	White River	63.60	6,360	55	45	350	2,226,000	1,001,700
sb1134	Brown Bear	63.70	6,618	45	55	350	2,316,300	1,273,965
sb1156	Harper	63.90	1,538	55	45	425	653,650	294,143
sb1187	Harper	64.40	679	55	45	425	288,575	129,859
un1187	Harper	64.40	1,213	55	45	425	515,525	231,986
ge1134	Brown Bear	64.70	2,783	45	55	350	974,050	535,728
ge951	Irving / Kotcho	66.10	11,782	50	50	340	4,005,880	2,002,940
ge1115	Brown Bear	66.70	1,129	45	55	350	395,150	217,333
ge845	Owl / Bell II	67.20	4,630	50	50	340	1,574,200	787,100
ge1208	Tchitin	67.20	1,959	50	50	400	783,600	391,800
ge1010	Bowser Lake	67.30	3,345	50	50	340	1,137,300	568,650
sb1115	Bonnie Lakes	67.70	1,568	40	60	325	509,600	305,760
sb1089	Bonnie Lakes	67.70	273	40	60	325	88,725	53,235
sb1228	Harper	68.90	655	50	50	400	262,000	131,000
sb1143	Harper	68.90	15,991	55	45	425	6,796,175	3,058,279
ge1187	Kinskuch	69.00	6,615	50	50	400	2,646,000	1,323,000
ge1089	Bonnie Lakes	69.20	8,021	40	60	325	2,606,825	1,564,095
ge1174	Niska Lakes	69.90	2,543	55	45	400	1,017,200	457,740
ge1228	Kshadin	70.00	2,068	55	45	425	878,900	395,505
ge1094	Kwinageese	70.30	2,018	30	70	300	605,400	423,780
un1292	Kwinatahl	72.00	397	55	45	425	168,725	75,926
un1269	Kwinatahl	72.00	391	55	45	425	166,175	74,779
ge1269	Kwinatahl	72.00	766	55	45	425	325,550	146,498
ge1082	Kwinageese	72.80	1,768	30	70	300	530,400	371,280
			118,050				42,144,015	21,458,444

[11] Appendix A provides maps showing the location of the polygons.

7 Results – TFL 41 (off-shore)

Tables 5 and 6 provide the results of the delivered log cost analysis for the off-shore portion of TFL 41. Due to higher timber values in the off-shore portion of TFL 41 helicopter logging can be a feasible method of harvesting; hence the costs of helicopter logging is recognized in the delivered log cost in Tables 5 and 6. Tables 7 and 8 are for conventional volume only. Table 7 has the cost of helicopter logging removed from the on truck rate and Table 8 has all helicopter volume removed (i.e. only the volume that is to be harvested conventionally is shown in Table 8).

The analysis indicates that the range of delivered log costs for all methods of harvesting in the off-shore portion of TFL 41 is between **$85.60/m³ to $120.10/m³**. Prior statements' regarding variability within delivered costs and the concept of averages also applies to the off-shore portion of TFL 41.

The cost range of conventional timber ($79.30/m³ to $86.75/m³) is narrower when compared to other portions of the Kalum District as the majority of conventional harvesting in the off-shore portions will be cable and as is common on the Coast, the on-truck rate includes hauling. To account for the differences in the length of the TFL 41 off-shore drainages (i.e. average haul distance to the dump site at tidewater) the on-truck rate varies from $46.00/m³ to $50.00/m³.[12]

BCTS (Skeena Business Area) staff has indicated that the likelihood of harvesting occurring in the Upper Kemano and the Caribou is remote due to a combination of high development costs and decadent timber. This results in a decrease of the available conventional volume from 7.0 million cubic meters to 6.2 million cubic meters.

Table 5 – Delivered Log Cost Breakdown: TFL 41 (off-shore)

Polgyon ID[13]	Location	Administration ($/m³)	Pro-Rated Road Development Cost ($/m³)	On Truck Cost ($/m³)	Towing to Kitimat ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
3	Heysham	10.00	14.80	55.40	1.40	4.00	85.60
20/21	Dala-Kildala	10.00	15.73	57.00	0.80	4.00	87.53
22	Eagle	10.00	14.80	58.40	0.80	4.00	88.00
13	Hugh	10.00	14.80	58.40	1.20	4.00	88.40
14	Upper Kemano	10.00	16.92	55.80	2.25	4.00	88.97
6	Barrie	10.00	14.80	58.40	2.25	4.00	89.45
16	Kitsaway	10.00	9.25	69.00	1.40	4.00	93.65
15	Sue Channel	10.00	7.40	71.20	1.20	4.00	93.80
7	Caribou	10.00	18.00	60.00	2.25	4.00	94.25
19	Kildala Arm	10.00	5.55	75.40	0.80	4.00	95.75
9	Kowesas	10.00	11.10	72.00	2.55	4.00	99.65
18	Devastation Channel	10.00	0.00	88.00	0.80	4.00	102.80
1	Maitland and Loretta Islands	10.00	0.00	88.00	1.20	4.00	103.20
12	Crab Lake	10.00	0.00	88.00	1.40	4.00	103.40
17	Gardner Canal	10.00	0.00	88.00	2.25	4.00	104.25
11	Weewanie	10.00	5.55	89.40	1.20	4.00	110.15
2	Falls	10.00	5.55	90.00	0.80	4.00	110.35
10	Horetzky	10.00	3.70	96.00	2.25	4.00	115.95

[12] Assuming a loaded haul speed of 25 km/hr and an empty haul speed of 35 km/hr, 10 km of road equates to a $2.00/m³ haul cost.

[13] Appendix A provides maps showing the location of the polygons.

Polgyon ID	Location	Administration ($/m³)	Pro-Rated Road Development Cost ($/m³)	On Truck Cost ($/m³)	Towing to Kitimat ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
8	South Seekwyakin Creek	10.00	1.85	102.00	2.25	4.00	120.10
4	Lower Kemano	10.00	0.00	108.00	2.25	4.00	124.25
5	Wachwas Creek	10.00	0.00	108.00	2.25	4.00	124.25

Table 6 – Volume Attributes of Delivered Log Cost Polygons: TFL 41 (off-shore)

Polgyon ID[14]	Location	Delivered Log Cost ($/m³)	TFL 41 (ha)	m³/ha	Volume (m³)
3	Heysham	85.60	374	478	179,220
20/21	Dala-Kildala	87.53	7,957	472	3,760,244
22	Eagle	88.00	1,074	478	513,222
13	Hugh	88.40	1,153	446	515,056
14	Upper Kemano	88.97	877	467	410,091
6	Barrie	89.45	586	506	296,656
16	Caribou	93.65	1,152	467	537,811
15	Kitsaway	93.80	1,988	381	756,902
7	Sue Channel	94.25	1,346	445	598,861
19	Kildala Arm	95.75	1,168	420	490,664
9	Kowesas	99.65	1,755	481	843,848
18	Devastation Channel	102.80	1,392	362	504,153
1	Maitland and Loretta Islands	103.20	482	367	176,860
12	Crab Lake	103.40	354	335	118,722
17	Gardner Canal	104.25	899	474	426,371
11	Weewanie	110.15	951	510	484,970
2	Falls	110.35	2,139	503	1,077,017
10	Horetzky	115.95	131	500	65,748
8	South Seekwyakin Creek	120.10	464	494	229,418
4	Lower Kemano	124.25	1,032	478	493,232
5	Wachwas Creek	124.25	899	542	487,913
			28,173		12,966,979

[14] Appendix A provides maps showing the location of the polygons.

Table 7 – Delivered Log Cost Breakdown (Conventional): TFL 41 (off-shore)

Polgyon ID	Location	Administration ($/m³)	Road Development Cost ($/m³)	On Truck Cost ($/m³)	Towing to Kitimat ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
22	Eagle	10.00	18.50	46.00	0.80	4.00	79.30
19	Kildala Arm	10.00	18.50	46.00	0.80	4.00	79.30
11	Weewanie	10.00	18.50	46.00	1.20	4.00	79.70
15	Sue Channel	10.00	18.50	46.00	1.20	4.00	79.70
13	Hugh	10.00	18.50	46.00	1.20	4.00	79.70
16	Kitsaway	10.00	18.50	46.00	1.40	4.00	79.90
3	Heysham	10.00	18.50	46.00	1.40	4.00	79.90
6	Barrie	10.00	18.50	46.00	2.25	4.00	80.75
20/21	Dala-Kildala	10.00	18.50	48.00	0.80	4.00	81.30
2	Falls	10.00	18.50	48.00	0.80	4.00	81.30
8	South Seekwyakin Creek	10.00	18.50	48.00	2.25	4.00	82.75
10	Horetzky	10.00	18.50	48.00	2.25	4.00	82.75
9	Kowesas	10.00	18.50	48.00	2.55	4.00	83.05
14	Upper Kemano	10.00	18.50	50.00	2.25	4.00	84.75
7	Caribou	10.00	22.50	48.00	2.25	4.00	86.75

Table 8 – Volume Attributes of Delivered Log Cost Polygons (Conventional): TFL 41 (off-shore)

Polgyon ID	Location	Delivered Log Cost ($/m³)	Volume (m³)
22	Eagle	79.30	410,578
19	Kildala Arm	79.30	147,199
11	Weewanie	79.70	145,491
15	Sue Channel	79.70	239,544
13	Hugh	79.70	412,045
16	Kitsaway	79.90	378,451
3	Heysham	79.90	143,376
6	Barrie	80.75	237,325
20/21	Dala-Kildala	81.30	3,196,207
2	Falls	81.30	323,105
8	South Seekwyakin Creek	82.75	22,942
10	Horetzky	82.75	13,150
9	Kowesas	83.05	506,309
14	Upper Kemano	84.75	369,082
7	Caribou	86.75	430,249
			6,975,052

8 Results - Kispiox TSA

Tables 9 and 10 provide the results of the delivered log cost analysis for GFEI's Chart Areas in the Kispiox TSA.

The analysis indicates that there is a range of delivered log costs in GFEI's Chart Areas from **$56.36/m³ to $77.68/m³**. Prior statements' regarding variability within delivered costs and the concept of averages also applies as only an average delivered log cost was calculated from the midpoint of each chart area.

For all of GFEI's Chart Areas the most economical method of transportation was a direct haul to Kitimat.

Table 9 - Delivered Log Cost Breakdown: Gitxsan Forest Enterprises Inc. Chart Areas

Polgyon ID[15]	Location	Administration ($/m³)	Road Development Cost ($/m³)	On Truck Cost ($/m³)	Truck Hauling Cost ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
Mill Creek	Mill Creek	7.50	7.00	20.45	18.91	3.50	56.36
Andimaul	Andimaul	7.50	7.00	22.08	17.82	3.50	56.90
Lower Kitsequecla	Lower Kitsequecla	7.50	7.00	20.43	22.23	3.50	59.65
Burdick	Burdick	7.50	7.00	20.11	22.62	3.50	59.73
Seven Sisters	Seven Sisters	7.50	9.50	20.11	20.27	3.50	59.88
Flint Creek	Flint Creek	7.50	9.50	20.48	20.27	3.50	60.25
Denison	Denison	7.50	7.00	20.50	23.65	3.50	61.15
Murder	Murder	7.50	7.00	20.09	26.87	3.50	63.96
Luno	Luno	7.50	9.50	22.98	21.82	3.50	64.30
West Kitsuns	West Kitsuns	7.50	9.50	21.52	23.47	3.50	64.49
Iltzul	Iltzul	7.50	9.50	22.11	22.91	3.50	64.52
Ironside	Ironside	7.50	7.00	20.37	27.25	3.50	64.62
Lower Suskwa	Lower Suskwa	7.50	12.50	20.14	22.74	3.50	65.38
Sterritt	Sterritt	7.50	9.50	21.03	24.86	3.50	65.40
Cullon	Cullon	7.50	7.00	20.12	28.67	3.50	65.78
Deep Canyon	Deep Canyon	7.50	12.50	23.07	20.71	3.50	66.28
Upper Suskwa	Upper Suskwa	7.50	9.50	20.73	26.13	3.50	66.36
Sweetin	Sweetin	7.50	7.00	20.23	30.00	3.50	67.23
Kitwanga	Kitwanga	7.50	12.50	22.02	22.83	3.50	67.35
Skeena West	Skeena West	7.50	12.50	20.26	25.08	3.50	67.83
Shewiliba	Shewiliba	7.50	9.50	22.48	27.94	3.50	69.92
Big Slide	Big Slide	7.50	7.00	21.78	31.72	3.50	70.50
Blackstock	Blackstock	7.50	9.50	21.12	29.97	3.50	70.59
Kuldo	Kuldo	7.50	9.50	20.43	32.35	3.50	72.28
Shedin	Shedin	7.50	12.50	20.19	32.36	3.50	75.05
Smokee	Smokee	7.50	9.50	20.96	34.74	3.50	75.20

[15] Appendix B provides maps showing the location of the Chart Areas.

Polygon ID	Location	Administration ($/m³)	Road Development Cost ($/m³)	On Truck Cost ($/m³)	Truck Hauling Cost ($/m³)	Silviculture Cost ($/m³)	Delivered Log Cost ($/m³)
Shelagyote	Shelagyote	7.50	12.50	20.22	32.49	3.50	75.22
Sam Green	Sam Green	7.50	12.50	24.15	30.97	3.50	77.62
Larkworthy	Larkworthy	7.50	12.50	21.77	33.41	3.50	77.68

Table 10 – Volume Attributes of Delivered Log Cost Polygons: Gitxsan Forest Enterprises Inc. Chart Areas

Polygon ID[16]	Location	Delivered Log Cost ($/m³)	Sawlog (%)	Pulp (%)	Volume (m³)	Pulp Volume (m³)
Mill Creek	Mill Creek	56.36	61%	39%	846,787	330,548
Andimaul	Andimaul	56.90	56%	44%	341,026	149,025
Lower Kitsequecla	Lower Kitsequecla	59.65	65%	35%	447,347	158,393
Burdick	Burdick	59.73	61%	39%	1,269,155	493,405
Seven Sisters	Seven Sisters	59.88	51%	49%	815,392	395,582
Flint Creek	Flint Creek	60.25	54%	46%	238,212	108,448
Denison	Denison	61.15	52%	48%	132,216	63,427
Murder	Murder	63.96	52%	48%	775,555	369,606
Luno	Luno	64.30	60%	40%	118,680	47,498
West Kitsuns	West Kitsuns	64.49	62%	38%	636,121	244,641
Iltzul	Iltzul	64.52	50%	50%	179,993	89,223
Ironside	Ironside	64.62	47%	53%	294,493	154,706
Lower Suskwa	Lower Suskwa	65.38	52%	48%	294,468	142,292
Sterritt	Sterritt	65.40	54%	46%	351,382	163,265
Cullon	Cullon	65.78	49%	51%	2,361,210	1,212,490
Deep Canyon	Deep Canyon	66.28	65%	35%	308,995	107,787
Upper Suskwa	Upper Suskwa	66.36	50%	50%	1,340,063	669,136
Sweetin	Sweetin	67.23	51%	49%	2,283,527	1,127,736
Kitwanga	Kitwanga	67.35	52%	48%	852,240	406,428
Skeena West	Skeena West	67.83	50%	50%	2,352,142	1,182,148
Shewiliba	Shewiliba	69.92	51%	49%	1,538,229	754,548
Big Slide	Big Slide	70.50	56%	44%	409,737	178,726
Blackstock	Blackstock	70.59	54%	46%	1,031,943	478,621
Kuldo	Kuldo	72.28	45%	55%	2,840,539	1,571,940
Shedin	Shedin	75.05	46%	54%	1,489,373	809,339
Smokee	Smokee	75.20	45%	55%	1,734,754	954,921
Shelagyote	Shelagyote	75.22	52%	48%	3,518,101	1,688,417
Sam Green	Sam Green	77.62	50%	50%	473,854	236,776
Larkworthy	Larkworthy	77.68	48%	52%	984,254	512,820
					30,259,788	14,801,892

[16] Appendix B provides maps showing the location of the Chart Areas.

9 Results - Weighted Delivered Log Cost

As previously mentioned the Eurocan Industrial Viability Committee has indicated a requirement for 700,000 m³ of pulp logs on an annualized basis. An assumption was made that Eurocan's business plan is for 30 years. Thirty years at 700,000 m³/yr equates to 21 million cubic meters of pulp logs. To determine the average cost for the supply of this volume the delivered log costs and pulp volumes from all of the polygons, watersheds and chart areas were amalgamated into one table and then sorted from the lowest to highest delivered log cost. Then an average delivered log cost was calculated (utilizing a weighted average for each unit) for a range of volumes. Three volumes were considered – 30 million m³, 20 million m³ and 14 million m³.

Although 30 million m³ is greater than the required volume over a 30 year time horizon it is the opinion of NWTL that the volumes attributed to the base data-set is over estimated when compared with actual harvest levels. While the extent of this over estimation is difficult to determine a 30% reduction factor was used to approximate more realistic expectations of recoverable volume from the landbase. To state it another way one would have the take 30 million m³ from Table 11 to realistically deliver 21 million m³ over a 30 year time horizon.

Conversely, if the business planning cycle is only 20 years then Eurocan is seeking to source 14 million m³ of fibre. Once again it is the opinion of NWTL that one would have to the take 20 million m³ from Table 11 to realistically deliver 14 million m³ over a 20 year time horizon.

If less than 50% firm wood is utilized, the pulp volume in Table 11 may be more reflective of the volume that can be delivered. If one assumes a 20 year business planning horizon, the volume required is 14 million m³.

Although different scenarios were considered in calculating a weighted delivered log cost the difference between the scenarios is minor.

Pulp Volume (m³)[17]	Weighted Delivered Log Cost ($/m³)
30,333,974	62.85
20,203,577	61.45
13,998,599	60.52

Table 11 is a summary of the delivered log costs for all the various areas and the associated pulp log volume.

Table 11 - Delivered Log Cost Ranking of all Areas

Polygon ID	Location	Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
sb2091	Sandur	45.50	20,085	20,085	0.03	20,085	0.05	20,085	0.06
ge3353	Kitimat	54.40	59,138	59,138	0.11	59,138	0.16	59,138	0.21
ge3530	Kitimat	54.40	145,920	145,920	0.26	145,920	0.39	145,920	0.53

[17] Given the size of the units it is impossible to exactly achieve a 30, 20 and 15 million volume criteria.

Polygon ID	Location	Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
Mill Creek	Mill Creek	56.36	149,025	149,025	0.28	149,025	0.42	149,025	0.56
ge2721	Kitimat Valley	56.40	122,978	122,978	0.23	122,978	0.34	122,978	0.46
Andimaul	Andimaul	56.90	178,726	178,726	0.34	178,726	0.50	178,726	0.68
ge3431	Bish Crk.	57.40	241,230	241,230	0.46	241,230	0.69	241,230	0.92
ge3394	Jesse Lake	58.40	428,835	428,835	0.83	428,835	1.24	428,835	1.66
av3431	Bish Crk.	58.40	283,800	283,800	0.55	283,800	0.82	283,800	1.10
av2631	Chist Crk.	58.40	231,848	231,848	0.45	231,848	0.67	231,848	0.90
sb19039	Skeena West II	58.50	257,040	257,040	0.50	257,040	0.74	257,040	1.00
ge2091	Williams Crk.	58.90	480,293	480,293	0.93	480,293	1.40	480,293	1.88
av3394	Jesse Lake	59.40	246,015	246,015	0.48	246,015	0.72	246,015	0.97
Lower Kitsequecla	Lower Kitsequecla	59.65	478,621	478,621	0.94	478,621	1.41	478,621	1.90
Burdick	Burdick	59.73	493,405	493,405	0.97	493,405	1.46	493,405	1.96
Seven Sisters	Seven Sisters	59.88	1,212,490	1,212,490	2.39	1,212,490	3.59	1,212,490	4.82
sb2346	Thunderbird-Johnstone	59.90	179,138	179,138	0.35	179,138	0.53	179,138	0.71
sb19030	Deep Creek	59.90	99,450	99,450	0.20	99,450	0.29	99,450	0.40
sb19040	Skeena West I	60.00	32,400	32,400	0.06	32,400	0.10	32,400	0.13
Flint Creek	Flint Creek	60.25	107,787	107,787	0.21	107,787	0.32	107,787	0.43
av3530	Wathl / Clio Bay	60.40	940,005	940,005	1.87	940,005	2.81	940,005	3.77
av2986	Bolton/Mackay	60.40	250,515	250,515	0.50	250,515	0.75	250,515	1.00
ge1258	North Headley	60.60	221,025	221,025	0.44	221,025	0.66	221,025	0.89
un19039	Newton	60.60	199,155	199,155	0.40	199,155	0.60	199,155	0.80
av2721	Upper Kitimat River	60.90	1,008,758	1,008,758	2.03	1,008,758	3.04	1,008,758	4.08
Denison	Denison	61.15	63,427	63,427	0.13	63,427	0.19	63,427	0.26
ge19045	Erlandsen	61.20	71,273	71,273	0.14	71,273	0.22	71,273	0.29
ge1092	Meziadin Lake	61.70	415,990	415,990	0.85	415,990	1.27	415,990	1.70
sb1048	Orenda	61.70	578,655	578,655	1.18	578,655	1.77	578,655	2.37
ge1048	Wildfire / Upper Kwinageese	62.00	3,260,790	3,260,790	6.66	3,260,790	10.01	3,260,790	13.43
ge1776	Lower Copper	62.20	416,798	416,798	0.85	416,798	1.28	416,798	1.72
av3016	Davies Crk.	62.40	284,145	284,145	0.58	284,145	0.88	284,145	1.18
ge2382	Lower Clore	62.60	323,850	323,850	0.67	323,850	1.00	323,850	1.35
sb1677	Limonite	62.70	21,803	21,803	0.05	21,803	0.07	21,803	0.09
ge19031	L.Big Cedar	62.70	494,190	494,190	1.02	494,190	1.53	494,190	2.06
ge1156	Pas	62.90	1,057,320	1,057,320	2.19	1,057,320	3.29	**13,998,599**	**60.52**
ge1143	L.Pas	62.90	498,420	498,420	1.03	498,420	1.55	-	-
ge19036	L.Cedar	63.20	119,213	119,213	0.25	119,213	0.37	-	-
ge1038	Surveyor Creek	63.30	247,180	247,180	0.52	247,180	0.77	-	-
av3330	N.Hirsch	63.40	30,780	30,780	0.06	30,780	0.10	-	-
ge19046	Beaver	63.40	271,890	271,890	0.57	271,890	0.85	-	-
ge1112	White River	63.60	1,001,700	1,001,700	2.10	1,001,700	3.15	-	-
ge19042	Nelson	63.70	72,038	72,038	0.15	72,038	0.23	-	-
sb1134	Brown Bear	63.70	1,273,965	1,273,965	2.68	1,273,965	4.02	-	-
av3353	S.Hirsch	63.90	224,010	224,010	0.47	224,010	0.71	-	-

Polygon ID	Location	Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
ge1337	Beaupre / Lava	63.90	296,055	296,055	0.62	296,055	0.94	-	-
ge19032	Mayo	63.90	112,725	112,725	0.24	112,725	0.36	-	-
sb1156	Harper	63.90	294,143	294,143	0.62	294,143	0.93	-	-
Murder	Murder	63.96	108,448	108,448	0.23	108,448	0.34	-	-
Luno	Luno	64.30	89,223	89,223	0.19	89,223	0.28	-	-
sb1435b	Limonite	64.40	507,870	507,870	1.08	507,870	1.62	-	-
sb1187	Harper	64.40	129,859	129,859	0.28	**20,203,577**	**61.45**	-	-
un1187	Harper	64.40	231,986	231,986	0.49	-	-	-	-
West Kitsuns	West Kitsuns	64.49	154,706	154,706	0.33	-	-	-	-
Iltzul	Iltzul	64.52	406,428	406,428	0.86	-	-	-	-
Ironside	Ironside	64.62	1,571,940	1,571,940	3.35	-	-	-	-
ge2346	Furlong/Hatchery	64.70	247,988	247,988	0.53	-	-	-	-
ge1134	Brown Bear	64.70	535,728	535,728	1.14	-	-	-	-
Lower Suskwa	Lower Suskwa	65.38	512,820	512,820	1.11	-	-	-	-
Sterritt	Sterritt	65.40	158,393	158,393	0.34	-	-	-	-
un2382	Upper Clore	65.40	215,858	215,858	0.47	-	-	-	-
ge1677	Kleanza	65.70	412,845	412,845	0.89	-	-	-	-
ge19030	East Kalum	65.70	808,260	808,260	1.75	-	-	-	-
Cullon	Cullon	65.78	142,292	142,292	0.31	-	-	-	-
sb3330	N.Hirsch	65.90	158,033	158,033	0.34	-	-	-	-
ge1374	Anweiller	66.00	160,650	160,650	0.35	-	-	-	-
ge951	Irving / Kotcho	66.10	2,002,940	2,002,940	4.36	-	-	-	-
ge2094	Kitnayakwa	66.20	287,280	287,280	0.63	-	-	-	-
Deep Canyon	Deep Canyon	66.28	47,498	47,498	0.10	-	-	-	-
Upper Suskwa	Upper Suskwa	66.36	330,548	330,548	0.72	-	-	-	-
un1966	Hwy 16W-Exstew	66.50	11,160	11,160	0.02	-	-	-	-
ge19033	Kwiniak	66.70	208,305	208,305	0.46	-	-	-	-
ge1115	Brown Bear	66.70	217,333	217,333	0.48	-	-	-	-
ge1966	Whitebottom / Shames	67.20	390,450	390,450	0.86	-	-	-	-
ge845	Owl / Bell II	67.20	787,100	787,100	1.74	-	-	-	-
ge1208	Tchitin	67.20	391,800	**30,333,974**	**62.85**	-	-	-	-
Sweetin	Sweetin	67.23	369,606	-	-	-	-	-	-
ge1010	Bowser Lake	67.30	568,650	-	-	-	-	-	-
Kitwanga	Kitwanga	67.35	236,776	-	-	-	-	-	-
ge19039	Skeena West / Chimdemash	67.70	857,310	-	-	-	-	-	-
sb1115	Bonnie Lakes	67.70	305,760	-	-	-	-	-	-
sb1089	Bonnie Lakes	67.70	53,235	-	-	-	-	-	-
Skeena West	Skeena West	67.83	395,582	-	-	-	-	-	-
av3130	L.Wedeene	67.90	75,810	-	-	-	-	-	-
un1337	Poupard / May	68.20	205,275	-	-	-	-	-	-

Polygon ID	Location	Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
ge1535	Legate	68.70	103,785	-	-	-	-	-	-
ge1435	Upper Copper	68.90	518,160	-	-	-	-	-	-
sb1228	Harper	68.90	131,000	-	-	-	-	-	-
sb1143	Harper	68.90	3,058,279	-	-	-	-	-	-
ge1187	Kinskuch	69.00	1,323,000	-	-	-	-	-	-
ge1089	Bonnie Lakes	69.20	1,564,095	-	-	-	-	-	-
ge1776a	Salmon Run	69.35	94,230	-	-	-	-	-	-
av2789	Wedeene	69.40	189,668	-	-	-	-	-	-
ge1174	Niska Lakes	69.90	457,740	-	-	-	-	-	-
Shewiliba	Shewiliba	69.92	809,339	-	-	-	-	-	-
ge1228	Kshadin	70.00	395,505	-	-	-	-	-	-
ge1290	Kiteen	70.10	557,048	-	-	-	-	-	-
ge1094	Kwinageese	70.30	423,780	-	-	-	-	-	-
Big Slide	Big Slide	70.50	1,688,417	-	-	-	-	-	-
Blackstock	Blackstock	70.59	754,548	-	-	-	-	-	-
ge1320	W.Kiteen	70.60	83,640	-	-	-	-	-	-
ge19034	Ishkheennickh	71.40	220,650	-	-	-	-	-	-
ge1255	L.Kiteen	71.70	377,265	-	-	-	-	-	-
ge19043	Exstew	71.70	136,440	-	-	-	-	-	-
ge1334	Stenstrom	71.90	118,575	-	-	-	-	-	-
av2346	Coldwater	72.00	129,675	-	-	-	-	-	-
un1292	Kwinatahl	72.00	75,926	-	-	-	-	-	-
un1269	Kwinatahl	72.00	74,779	-	-	-	-	-	-
ge1269	Kwinatahl	72.00	146,498	-	-	-	-	-	-
ge19044	Zymacord	72.25	151,215	-	-	-	-	-	-
Kuldo	Kuldo	72.28	1,182,148	-	-	-	-	-	-
sb1966	Dasque	72.70	20,378	-	-	-	-	-	-
ge1082	Kwinageese	72.80	371,280	-	-	-	-	-	-
ge19040	Fiddler	74.15	123,675	-	-	-	-	-	-
Shedin	Shedin	75.05	954,921	-	-	-	-	-	-
Smokee	Smokee	75.20	163,265	-	-	-	-	-	-
Shelagyote	Shelagyote	75.22	1,127,736	-	-	-	-	-	-
Sam Green	Sam Green	77.62	669,136	-	-	-	-	-	-
Larkworthy	Larkworthy	77.68	244,641	-	-	-	-	-	-
3	Heysham	85.60	179,220	-	-	-	-	-	-
20/21	Dala-Kildala	87.53	3,760,244	-	-	-	-	-	-
22	Eagle	88.00	513,222	-	-	-	-	-	-
13	Hugh	88.40	515,056	-	-	-	-	-	-
14	Upper Kemano	88.97	410,091	-	-	-	-	-	-
6	Barrie	89.45	296,656	-	-	-	-	-	-
16	Kitsaway	93.65	756,902	-	-	-	-	-	-
15	Sue Channel	93.80	598,861	-	-	-	-	-	-
7	Caribou	94.25	537,811	-	-	-	-	-	-
19	Kildala Arm	95.75	490,664	-	-	-	-	-	-

Polygon ID	Location	Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
9	Kowesas	99.65	843,848	-	-	-	-	-	-
18	Devastation Channel	102.80	504,153	-	-	-	-	-	-
1	Maitland and Loretta Islands	103.20	176,860	-	-	-	-	-	-
12	Crab Lake	103.40	118,722	-	-	-	-	-	-
17	Gardner Canal	104.25	426,371	-	-	-	-	-	-
11	Weewanie	110.15	484,970	-	-	-	-	-	-
2	Falls	110.35	1,077,017	-	-	-	-	-	-
10	Horetzky	115.95	65,748	-	-	-	-	-	-
8	South Seekwyakin Creek	120.10	229,418	-	-	-	-	-	-
5	Wachwas Creek	124.25	487,913	-	-	-	-	-	-
4	Lower Kemano	124.25	493,232	-	-	-	-	-	-
			65,201,193	-	-	-	-	-	-

Log markets have indicated that the market value of pulp logs is often in the mid $40 range, therefore the Coalition is interested in a targeted average pulp log cost of approximately $45/m³. However, as Table 11 indicates, to supply Eurocan with the fibre requested the average cost to produce those pulp logs varies between **$60.52/m³ to $62.85/m³**.

Another approach is to operate on a variable cost basis. If fixed costs (i.e. administration and silviculture) are removed from the delivered log cost the average cost to produce those pulp logs is between **$49.71/m³ and $51.91/m³**.

Table 12 is a summary of the delivered log costs for all the various areas and the associated pulp log volume with the fixed costs of administration and silviculture removed. Note that stumpage is not a factor in these costs as pulp log stumpage is set at $0.25/m³.

Table 12 - Adjusted Delivered Log Cost Ranking (Removal of Fixed Costs) of all Areas

Polgyon ID	Location	Adjusted Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
sb2091	Sandur	34.50	20,085	20,085	0.02	20,085	0.03	20,085	0.05
ge3353	Kitimat	43.40	59,138	59,138	0.08	59,138	0.13	59,138	0.17
ge3530	Kitimat	43.40	145,920	145,920	0.21	145,920	0.31	145,920	0.42
Mill Creek	Mill Creek	46.36	149,025	149,025	0.23	149,025	0.34	149,025	0.46
ge2721	Kitimat Valley	45.40	122,978	122,978	0.18	122,978	0.28	122,978	0.37
Andimaul	Andimaul	46.90	178,726	178,726	0.28	178,726	0.41	178,726	0.56
ge3431	Bish Crk.	46.40	241,230	241,230	0.37	241,230	0.55	241,230	0.74
ge3394	Jesse Lake	47.40	428,835	428,835	0.67	428,835	1.01	428,835	1.35
av3431	Bish Crk.	47.40	283,800	283,800	0.44	283,800	0.67	283,800	0.89
av2631	Chist Crk.	47.40	231,848	231,848	0.36	231,848	0.54	231,848	0.73

Polgyon ID	Location	Adjusted Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
sb19039	Skeena West II	47.50	257,040	257,040	0.40	257,040	0.60	257,040	0.81
ge2091	Williams Crk.	47.90	480,293	480,293	0.76	480,293	1.14	480,293	1.53
av3394	Jesse Lake	48.40	246,015	246,015	0.39	246,015	0.59	246,015	0.79
Lower Kitsequecla	Lower Kitsequecla	49.65	478,621	478,621	0.78	478,621	1.18	478,621	1.58
Burdick	Burdick	49.73	493,405	493,405	0.81	493,405	1.21	493,405	1.63
Seven Sisters	Seven Sisters	49.88	1,212,490	1,212,490	1.99	1,212,490	2.99	1,212,490	4.02
sb2346	Thunderbird-Johnstone	48.90	179,138	179,138	0.29	179,138	0.43	179,138	0.58
sb19030	Deep Creek	48.90	99,450	99,450	0.16	99,450	0.24	99,450	0.32
sb19040	Skeena West I	49.00	32,400	32,400	0.05	32,400	0.08	32,400	0.11
Flint Creek	Flint Creek	50.25	107,787	107,787	0.18	107,787	0.27	107,787	0.36
av3530	Wathl / Clio Bay	49.40	940,005	940,005	1.53	940,005	2.30	940,005	3.08
av2986	Bolton/Mackay	49.40	250,515	250,515	0.41	250,515	0.61	250,515	0.82
ge1258	North Headley	49.60	221,025	221,025	0.36	221,025	0.54	221,025	0.73
un19039	Newton	49.60	199,155	199,155	0.33	199,155	0.49	199,155	0.66
av2721	Upper Kitimat River	49.90	1,008,758	1,008,758	1.66	1,008,758	2.49	1,008,758	3.34
Denison	Denison	51.15	63,427	63,427	0.11	63,427	0.16	63,427	0.22
ge19045	Erlandsen	50.20	71,273	71,273	0.12	71,273	0.18	71,273	0.24
ge1092	Meziadin Lake	50.70	415,990	415,990	0.70	415,990	1.04	415,990	1.40
sb1048	Orenda	50.70	578,655	578,655	0.97	578,655	1.45	578,655	1.95
ge1048	Wildfire / Upper Kwinageese	51.00	3,260,790	3,260,790	5.48	3,260,790	8.23	3,260,790	11.05
ge1776	Lower Copper	51.20	416,798	416,798	0.70	416,798	1.06	416,798	1.42
av3016	Davies Crk.	51.40	284,145	284,145	0.48	284,145	0.72	284,145	0.97
ge2382	Lower Clore	51.60	323,850	323,850	0.55	323,850	0.83	323,850	1.11
sb1677	Limonite	51.70	21,803	21,803	0.04	21,803	0.06	21,803	0.07
ge19031	L.Big Cedar	51.70	494,190	494,190	0.84	494,190	1.26	494,190	1.70
ge1156	Pas	51.90	1,057,320	1,057,320	1.81	1,057,320	2.72	13,998,599	49.71
ge1143	L.Pas	51.90	498,420	498,420	0.85	498,420	1.28	-	-
ge19036	L.Cedar	52.20	119,213	119,213	0.21	119,213	0.31	-	-
ge1038	Surveyor Creek	50.80	247,180	247,180	0.41	247,180	0.62	-	-
av3330	N.Hirsch	52.40	30,780	30,780	0.05	30,780	0.08	-	-
ge19046	Beaver	52.40	271,890	271,890	0.47	271,890	0.71	-	-
ge1112	White River	52.60	1,001,700	1,001,700	1.74	1,001,700	2.61	-	-
ge19042	Nelson	52.70	72,038	72,038	0.13	72,038	0.19	-	-
sb1134	Brown Bear	52.70	1,273,965	1,273,965	2.21	1,273,965	3.32	-	-
av3353	S.Hirsch	52.90	224,010	224,010	0.39	224,010	0.59	-	-
ge1337	Beaupre / Lava	52.90	296,055	296,055	0.52	296,055	0.78	-	-
ge19032	Mayo	52.90	112,725	112,725	0.20	112,725	0.30	-	-
sb1156	Harper	52.90	294,143	294,143	0.51	294,143	0.77	-	-
Murder	Murder	53.96	108,448	108,448	0.19	108,448	0.29	-	-
Luno	Luno	54.30	89,223	89,223	0.16	89,223	0.24	-	-
sb1435b	Limonite	53.40	507,870	507,870	0.89	507,870	1.34	-	-
sb1187	Harper	53.40	129,859	129,859	0.23	20,203,577	50.57	-	-

Polgyon ID	Location	Adjusted Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
un1187	Harper	53.40	231,986	231,986	0.41	-	-	-	-
West Kitsuns	West Kitsuns	54.49	154,706	154,706	0.28	-	-	-	-
Iltzul	Iltzul	54.52	406,428	406,428	0.73	-	-	-	-
Ironside	Ironside	54.62	1,571,940	1,571,940	2.83	-	-	-	-
ge2346	Furlong/Hatchery	53.70	247,988	247,988	0.44	-	-	-	-
ge1134	Brown Bear	53.70	535,728	535,728	0.95	-	-	-	-
Lower Suskwa	Lower Suskwa	55.38	512,820	512,820	0.94	-	-	-	-
Sterritt	Sterritt	55.40	158,393	158,393	0.29	-	-	-	-
un2382	Upper Clore	54.40	215,858	215,858	0.39	-	-	-	-
ge1677	Kleanza	54.70	412,845	412,845	0.74	-	-	-	-
ge19030	East Kalum	54.70	808,260	808,260	1.46	-	-	-	-
Cullon	Cullon	55.78	142,292	142,292	0.26	-	-	-	-
sb3330	N.Hirsch	54.90	158,033	158,033	0.29	-	-	-	-
ge1374	Anweiller	55.00	160,650	160,650	0.29	-	-	-	-
ge951	Irving / Kotcho	53.60	2,002,940	2,002,940	3.54	-	-	-	-
ge2094	Kitnayakwa	55.20	287,280	287,280	0.52	-	-	-	-
Deep Canyon	Deep Canyon	56.28	47,498	47,498	0.09	-	-	-	-
Upper Suskwa	Upper Suskwa	56.36	330,548	330,548	0.61	-	-	-	-
un1966	Hwy 16W-Exstew	55.50	11,160	11,160	0.02	-	-	-	-
ge19033	Kwiniak	55.70	208,305	208,305	0.38	-	-	-	-
ge1115	Brown Bear	55.70	217,333	217,333	0.40	-	-	-	-
ge1966	Whitebottom/Shames	56.20	390,450	390,450	0.72	-	-	-	-
ge845	Owl / Bell II	54.70	787,100	787,100	1.42	-	-	-	-
ge1208	Tchitin	56.20	391,800	30,333,974	51.91	-	-	-	-
Sweetin	Sweetin	57.23	369,606	-	-	-	-	-	-
ge1010	Bowser Lake	54.80	568,650	-	-	-	-	-	-
Kitwanga	Kitwanga	57.35	236,776	-	-	-	-	-	-
ge19039	Skeena West / Chimdemash	56.70	857,310	-	-	-	-	-	-
sb1115	Bonnie Lakes	56.70	305,760	-	-	-	-	-	-
sb1089	Bonnie Lakes	56.70	53,235	-	-	-	-	-	-
Skeena West	Skeena West	57.83	395,582	-	-	-	-	-	-
av3130	L.Wedeene	56.90	75,810	-	-	-	-	-	-
un1337	Poupard / May	57.20	205,275	-	-	-	-	-	-
ge1535	Legate	57.70	103,785	-	-	-	-	-	-
ge1435	Upper Copper	57.90	518,160	-	-	-	-	-	-
sb1228	Harper	57.90	131,000	-	-	-	-	-	-
sb1143	Harper	57.90	3,058,279	-	-	-	-	-	-
ge1187	Kinskuch	58.00	1,323,000	-	-	-	-	-	-
ge1089	Bonnie Lakes	58.20	1,564,095	-	-	-	-	-	-
ge1776a	Salmon Run	58.35	94,230	-	-	-	-	-	-
av2789	Wedeene	58.40	189,668	-	-	-	-	-	-

Polgyon ID	Location	Adjusted Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
ge1174	Niska Lakes	58.90	457,740	-	-	-	-	-	-
Shewiliba	Shewiliba	59.92	809,339	-	-	-	-	-	-
ge1228	Kshadin	59.00	395,505	-	-	-	-	-	-
ge1290	Kiteen	59.10	557,048	-	-	-	-	-	-
ge1094	Kwinageese	59.30	423,780	-	-	-	-	-	-
Big Slide	Big Slide	60.50	1,688,417	-	-	-	-	-	-
Blackstock	Blackstock	60.59	754,548	-	-	-	-	-	-
ge1320	W.Kiteen	59.60	83,640	-	-	-	-	-	-
ge19034	Ishkheennickh	60.40	220,650	-	-	-	-	-	-
ge1255	L.Kiteen	60.70	377,265	-	-	-	-	-	-
ge19043	Exstew	60.70	136,440	-	-	-	-	-	-
ge1334	Stenstrom	60.90	118,575	-	-	-	-	-	-
av2346	Coldwater	61.00	129,675	-	-	-	-	-	-
un1292	Kwinatahl	61.00	75,926	-	-	-	-	-	-
un1269	Kwinatahl	61.00	74,779	-	-	-	-	-	-
ge1269	Kwinatahl	61.00	146,498	-	-	-	-	-	-
ge19044	Zymacord	61.25	151,215	-	-	-	-	-	-
Kuldo	Kuldo	62.28	1,182,148	-	-	-	-	-	-
sb1966	Dasque	61.70	20,378	-	-	-	-	-	-
ge1082	Kwinageese	61.80	371,280	-	-	-	-	-	-
ge19040	Fiddler	63.15	123,675	-	-	-	-	-	-
Shedin	Shedin	65.05	954,921	-	-	-	-	-	-
Smokee	Smokee	65.20	163,265	-	-	-	-	-	-
Shelagyote	Shelagyote	65.22	1,127,736	-	-	-	-	-	-
Sam Green	Sam Green	67.62	669,136	-	-	-	-	-	-
Larkworthy	Larkworthy	67.68	244,641	-	-	-	-	-	-
3	Heysham	85.60	179,220	-	-	-	-	-	-
20/21	Dala-Kildala	73.53	3,760,244	-	-	-	-	-	-
22	Eagle	74.00	513,222	-	-	-	-	-	-
13	Hugh	74.40	515,056	-	-	-	-	-	-
14	Upper Kemano	74.97	410,091	-	-	-	-	-	-
6	Barrie	75.45	296,656	-	-	-	-	-	-
16	Kitsaway	79.65	756,902	-	-	-	-	-	-
15	Sue Channel	79.80	598,861	-	-	-	-	-	-
7	Caribou	80.25	537,811	-	-	-	-	-	-
19	Kildala Arm	81.75	490,664	-	-	-	-	-	-
9	Kowesas	85.65	843,848	-	-	-	-	-	-
18	Devastation Channel	88.80	504,153	-	-	-	-	-	-
1	Maitland and Loretta Islands	89.20	176,860	-	-	-	-	-	-
12	Crab Lake	89.40	118,722	-	-	-	-	-	-
17	Gardner Canal	90.25	426,371	-	-	-	-	-	-
11	Weewanie	96.15	484,970	-	-	-	-	-	-
2	Falls	96.35	1,077,017	-	-	-	-	-	-

Polgyon ID	Location	Adjusted Delivered Log Cost ($/m³)	Pulp Volume (m³)	30 MILLION M3		20 MILLION M3		14 MILLION M3	
				Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)	Pulp Volume (m³)	Weighted Delivered Log Cost ($/m³)
10	Horetzky	101.95	65,748	-	-	-	-	-	-
8	South Seekwyakin Creek	106.10	229,418	-	-	-	-	-	-
5	Wachwas Creek	110.25	487,913	-	-	-	-	-	-
4	Lower Kemano	110.25	493,232	-	-	-	-	-	-
			65,201,193	-	-	-	-	-	-

10 Discussion

Due to the high operating costs in TFL 41 (offshore) the supply of pulp logs from this portion of the Kalum Forest District will be very limited or non existent, with the possible exception of some conventional harvest units near the head of the Douglas Channel.

An analysis of the supply of pulp logs from the North Coast Forest District was beyond the scope of this report. Nevertheless, as operations in the North Coast Forest District are similar to the off-shore portions of TFL 41 it is also anticipated that a very limited or no supply of pulp logs will be delivered from the North Coast Forest District.

As previously noted, the methodology utilized to determine the delivered log costs for the Kalum District and Kispiox TSA has its limitations, primarily with the broadness of some of the polygons/areas and age of the data (TSR II).

Smaller polygons/areas would reduce the variance in the range of delivered log costs in each polygon/area. The lower variance would primarily be the result of a more defined cycle time.

Sensitivity analyses around items such as silviculture, cycle time and conversion factors and to a lesser extent harvest system may provide additional value.

The analysis in this report is based on the delivery of logs assuming current and historic utilization. It does not consider the additional volume that might come from portions of the timber stands that are currently considered to have no economic value. As more of the timber in a forest is utilized, the cost to harvest the timber may lessen (less double-handling, decreased unit cost because more volume utilised, less volume put into the cull pile), however the cost to transport the wood on the truck may increase (trucks become fully loaded before they reach the maximum weight they can haul). Nevertheless, by utilizing more of the timber profile the overall delivered log cost may be lowered when compared with current utilization.

11 Conclusion

The results from this analysis provide an estimate of the cost to deliver a pulp log to the Eurocan Facility. This information can be used to provide the Coalition with an idea of what it would cost to supply the Eurocan Facility with 700,000 m³ of pulp logs per year and the approximate areas from where the timber would be harvested from.

The average cost to deliver 700,000 m³ of pulp logs per year ranges from **$60.52/m³ to $62.85/m³**. If members from the Coalition are willing to exclude their fixed costs (i.e. administration and silviculture) from the cost of production of their pulp logs the average cost to deliver 700,000 m³ of pulp logs per year declines to **$49.71/m³ to $51.91/m³**.

The range of $49.86/m³ to $51.91/m³ is still above the average market price of $45/m³ for pulp logs. For the Coalition licensees to deliver pulp logs at an average of $45/m³ would require licensees to offset an additional $5-$7/m³ of costs onto their sawlogs.

What this analysis demonstrates is that an average price of $45/m³, suppliers of pulp logs are delivering pulp logs at a loss and any costs incurred in production above the purchase price of $45/m³ will have to be attributed to the sawlogs in the harvest unit.

The ability of the Coalition to supply the volume of pulp logs as required by the Eurocan Facility will entirely depend on the sawlog market (domestic and export) unless pulp logs are delivered at the cost of production.

The analysis also demonstrated that to supply the most cost effective 700,000 m³ will require volume to be delivered from both the Kalum District, and the western portions of the Kispiox TSA or those areas of the Kispiox TSA that are located close to Highway 16.

It also needs to be reiterated that the methodology used in this analysis involves several layers of 'averaging', so more precise delivered log cost calculations may be beneficial.