

Appendix 13
Traffic Forecast

Traffic Summary

The PRO LOG Commercial Vehicle Traffic Forecast, September, 2002 , Conservative Case, has been accepted by the DCBC and GNWT as the basis for traffic forecasts and toll projections.

Table 4 of the PRO LOG report shows the Conservative forecasts of all commercial vehicles, by truck type. It includes forecasts of total northbound tonnage and two-way numbers for straight trucks, semi trailers and train combinations.

Table 13.1 shows these numbers, extrapolated to 2040 and with the truck numbers halved to reflect northbound trips only.

It has been agreed that tolls will be charged only on northbound commercial vehicles. The toll is to be based on truck configuration, with a flat rate charged for each of three configurations;

1. Tractor-train combination (two trailers)
2. Tractor-trailer combination
3. Straight truck

The semi trailer and straight truck rates will be 50% and 30% of the train rate, respectively.

For purposes of projecting revenues, Table B1 shows the tractor-train equivalents for all trucks, factored to reflect the lower rates for tractor-trailers and straight trucks.

This table also shows that the overall average load for the tractor train equivalent will be 35.71 tonnes. An average toll of \$5/tonne, would therefore translate into a tractor train toll of \$179.00 (35.71 T x \$5.00/T). The corresponding tolls for the semi and straight truck would be \$89.50 and \$53.70 respectively.

Appendix 13

Table 13.1 – PRO LOG Conservative Traffic Forecast

Year	Trucks		Tractor Trailer		Trains		TOTAL		Tractor Train Equivalents
	Tonnes	Number	Tonnes	Number	Tonnes	Number	Tonnes	Number	
		A		B		C		A+B+C	.3A+.5B+C
2001	5,054	517	136,457	8,154	363,886	10,470	505,397	19,140	14,701
2002	5,188	522	140,071	8,234	373,523	10,573	518,782	19,329	14,846
2003	5,172	521	139,639	8,210	372,370	10,542	517,181	19,273	14,803
2004	5,201	524	140,418	8,258	374,448	10,604	520,067	19,385	14,890
2005	5,457	548	147,328	8,638	392,875	11,092	545,660	20,278	15,575
2006	5,780	579	156,064	9,128	416,170	11,720	578,014	21,426	16,457
2007	5,902	591	159,352	9,314	424,939	11,960	590,193	21,864	16,794
2008	5,979	583	161,423	9,194	430,461	11,805	597,863	21,581	16,576
2009	6,010	586	162,279	9,246	432,745	11,872	601,034	21,704	16,671
2010	6,042	590	163,145	9,299	435,054	11,940	604,241	21,828	16,766
2011	6,075	593	164,020	9,353	437,386	12,009	607,481	21,955	16,863
2012	6,108	596	164,904	9,407	439,743	12,079	610,755	22,081	16,961
2013	6,141	600	165,797	9,461	442,125	12,149	614,063	22,209	17,059
2014	6,174	603	166,699	9,517	444,531	12,220	617,404	22,339	17,159
2015	6,208	607	167,611	9,572	446,962	12,291	620,781	22,470	17,259
2016	6,242	611	168,532	9,629	449,420	12,364	624,194	22,603	17,361
2017	6,276	614	169,463	9,686	451,902	12,437	627,641	22,736	17,463
2018	6,311	618	170,404	9,744	454,411	12,511	631,126	22,872	17,568
2019	6,346	621	171,355	9,802	456,946	12,586	634,647	23,008	17,673
2020	6,382	625	172,315	9,860	459,508	12,661	638,205	23,146	17,779
2021	6,418	629	173,286	9,920	462,096	12,737	641,800	23,285	17,885
2022	6,454	633	174,267	9,980	464,712	12,814	645,433	23,426	17,994
2023	6,491	637	175,258	10,040	467,355	12,892	649,104	23,569	18,103
2024	6,528	640	176,260	10,102	470,025	12,971	652,813	23,712	18,213
2025	6,566	644	177,272	10,164	472,725	13,050	656,563	23,858	18,325
2026	6,604	648	178,295	10,226	475,452	13,131	660,351	24,005	18,438
2027	6,642	652	179,328	10,289	478,208	13,212	664,178	24,153	18,552
2028	6,680	656	180,372	10,353	480,993	13,294	668,045	24,303	18,667
2029	6,720	661	181,428	10,418	483,807	13,377	671,955	24,455	18,783
2030	6,759	665	182,494	10,483	486,651	13,461	675,904	24,608	18,901
2031	6,799	669	183,572	10,549	489,525	13,545	679,896	24,762	19,020
2032	6,839	673	184,661	10,616	492,429	13,631	683,929	24,919	19,140
2033	6,880	677	185,762	10,683	495,364	13,717	688,006	25,077	19,261
2034	6,921	682	186,874	10,751	498,330	13,804	692,125	25,236	19,384
2035	6,963	686	187,997	10,819	501,327	13,892	696,287	25,397	19,507
2036	7,005	690	189,133	10,889	504,356	13,982	700,494	25,560	19,633
2037	7,047	695	190,281	10,959	507,416	14,072	704,744	25,725	19,759
2038	7,089	698	191,436	11,013	510,495	14,142	709,020	25,853	19,858
2039	7,132	702	192,598	11,080	513,592	14,227	713,322	26,010	19,978
2040	7,175	706	193,767	11,148	516,708	14,314	717,649	26,168	20,099
TOTAL	232,364	22,876	6,273,816	360,937	16,730,176	463,456	23,236,356	847,269	650,787
%	1.00%		27.00%		72.00%		100.00%		
Average load per train equivalent									35.71

extrapolated

PRO LOG Commercial Vehicle Traffic Forecast

COMMERCIAL VEHICLE TRAFFIC FORECAST

Mackenzie River Crossing

Fort Providence, NWT

September, 2002

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Department of Transportation
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COMMERCIAL VEHICLE TRAFFIC FORECAST

Mackenzie River Crossing – Fort Providence, NWT

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1. Introduction

The purpose of this report is to analyze available traffic statistics for commercial vehicles (CVs) traveling Yellowknife Highway (No. 3), and crossing the Mackenzie River (Deh Cho) at Fort Providence, and forecast future CV traffic to a 35 year timeline.

A permanent bridge has been considered for the crossing at various times since the Yellowknife Highway (No. 3) was completed in 1968. Such a structure would eliminate the current seasonal crossing delays due to ice conditions, water levels, mechanical breakdowns, and the suspension of services during spring breakup.

The Fort Providence Combined Council Alliance, composed of leaders of Fort Providence's Dene, Metis, and Hamlet Councils, has submitted a proposal to the GNWT to privately construct and operate the bridge under public/private financing partnership arrangement.

PROLOG has, for many years, carried out studies analyzing multi-modal freight flows into and between key shipping and destination points throughout the NWT, including community supply networks and resource development projects. This work will isolate the commercial truck traffic in the NWT Hwy 3 segment over the Mackenzie River near Fort Providence, and forecast future CV traffic at this location, to 2036.

2. Current Site Operations

A combination of ferry and winter ice bridge presently provides the Mackenzie River crossing service. While the ferry M.V. Merv Hardie operates well into January by maintaining a (relatively) ice-free channel, and well after the full capacity ice bridge is in place, traffic disruptions do occur at this time of the year due to low water, heavy ice, or as in 2000, mechanical problems with the ferry. Unscheduled disruptions ranged from the shortest period of 5 days in 1997 to 21 days in 1999, over the five consecutive years to 2000.

In the spring closure of the service is normally from mid April to early May, a period averaging 22 days from 1994 to 2000. Adding the two seasonal disruptions together, the crossing is unavailable for traffic approximately one month each year.

3. Commercial Vehicle Traffic

3.1 Traffic Components

The analysis in this report is restricted to commercial vehicles only. NWT Department of Highways defines a commercial vehicle as a truck which has a gross vehicle weight (GVW) exceeding 4500 kgs. Buses are included. The **Table 1** format is used for forecasting future CV traffic for the various traffic components, service characteristics, and assumed growth factors:

Table 1
Traffic Analysis Format

<u>Type</u>	<u>Season</u>	<u>Forecast Period</u>	<u>Traffic Growth Rate Factors/ Project Life</u>	
<u>Community Re-supply</u>			<u>Conservative</u>	<u>Probable¹</u>
Hwy 3 Communities	All	35 Years	1.0% per yr ²	1.6% per yr
WhaTi/Rae Lakes	Winter	35 Years	Included in Hwy 3	Included in Hwy 3
<u>Mining/Resource Project</u>			<u>Est. Mine Life</u>	<u>Est. Mine Life</u>
Lupin (gold)	Winter	Project Life	To 2007 ³	To 2012 ⁴
Ekati (diamonds)	Winter	Project Life	To 2015	To 2020
Diavik (diamonds)	Winter	Project Life	To 2025	To 2030
Snap L (diamonds)	Winter	Project Life	From 2006 to 2019	From 2006 to 2027
All Others	Winter	25 years	From 2007 - constant	From 2007 –1.6%/yr
<u>Other</u>				
Mack. Gas Project	Winter	3 years	Won't happen	Incl. Mining – Other
Disrupted Traffic	All	35 years	Included in Hwy 3	Incl. In Hwy 3 ⁵
Traffic "Lift"	All	35 years	2% lift	5% lift ⁶

¹ Probable case utilizes GNWT Bureau of Statistics forecast.

² Population growth factors Source: GNWT Bureau of Statistics – NWT Community Populations Forecast to 2019 – extrapolated to 35 years.

³ Source: "An Economic Overview of the NWT" – Department RWED, GNWT.

⁴ Source: NWT & Nunavut Chamber of Mines; Mining Company Interviews.

⁵ Traffic recovered from air freight upon availability of 12 month/yr service.

⁶ Reference: Bunt & Associates, Vancouver, B.C.; Province of PEI, Department of Highways re. Confederation Bridge traffic impacts

3.2 NWT Truck Service Analysis

Figures 1 and 2 demonstrate the nature and breakdown of the motor carrier activity on Highway 3.

Figure 1 presents an analysis of 2000 inbound **Highway 3 freight** breaking down the total volume into three basic categories of service, by percentage of the total:

- a) van (enclosed) trailer units (general freight, consumables, retail goods)
- b) tank trailers (fuel)
- c) open (e.g., flatdeck) trailers (building materials, equipment)

The average payloads for each category of truck service is offered, based on PROLOG's "NWT Freight Flow Analysis" January, 2002, - which included extensive motor carrier interviews. Each category of service carries an amalgam of axles and as gross vehicle weights (GVW) and attendant payloads are a function of axle spreads, vehicle tare weights, and seasonal road constraints (e.g., spring breakup), each table summarizes averages within each configuration category.

Figure 1

Highway 3 Mackenzie River Crossing

COMMODITY SPLIT AND TYPICAL TRAILER TYPES

Based On Year 2000 Inbound Freight Flows

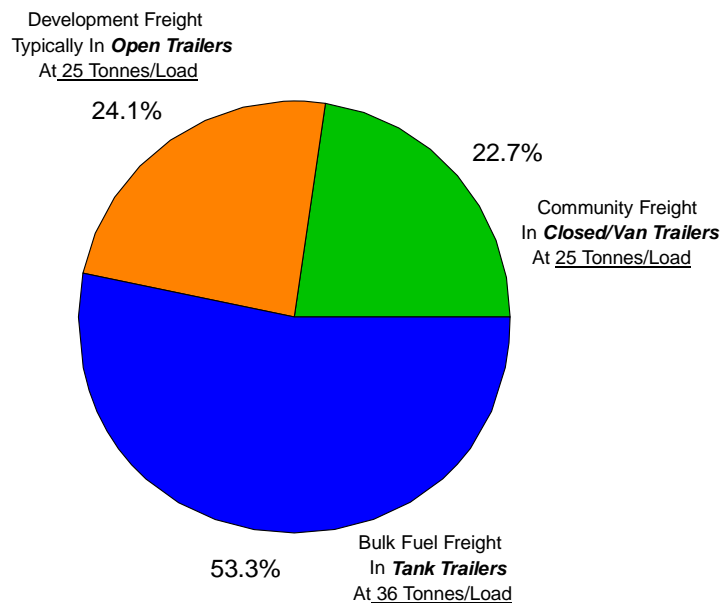
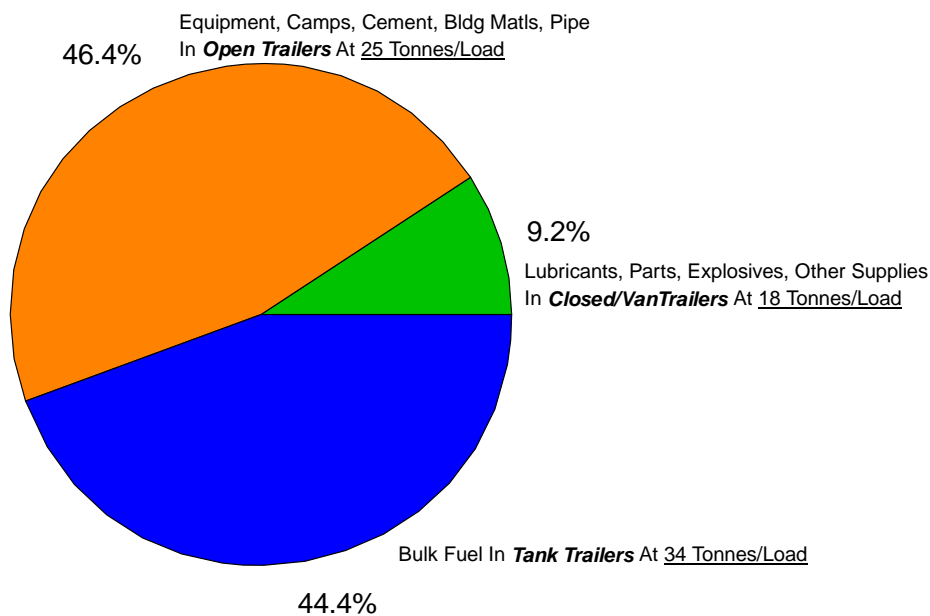


Figure 2 presents a current (2002) analysis of the **mining traffic** for the past winter's truck traffic on the Lupin winter road. The large elements of construction activity and commodities required for mine operations are obvious in the breakdown. The dry van trailer category includes "hopper" movements of ammonia nitrate prills which, in fact, are transported (mainly) in grain trailers. Other (e.g., trombone trailers, hotshot CV's) amounting to less than 1%, are included in the open trailer category.

Figure 2

Mine Development Freight Analysis COMMODITY SPLIT AND TYPICAL TRAILER TYPES

Based On Year 2002 Winter Road Freight Flows



Source: Echo Bay Mines Winter Road Records

3.3 Truck Configurations

As with virtually all communities whose commerce is facilitated by highways, Yellowknife Highway (No. 3) communities are serviced by the motor carrier industry, with the usual mix of trucks and truck trailer types demonstrating the normal wide variety of sizes, designs and axle configurations.

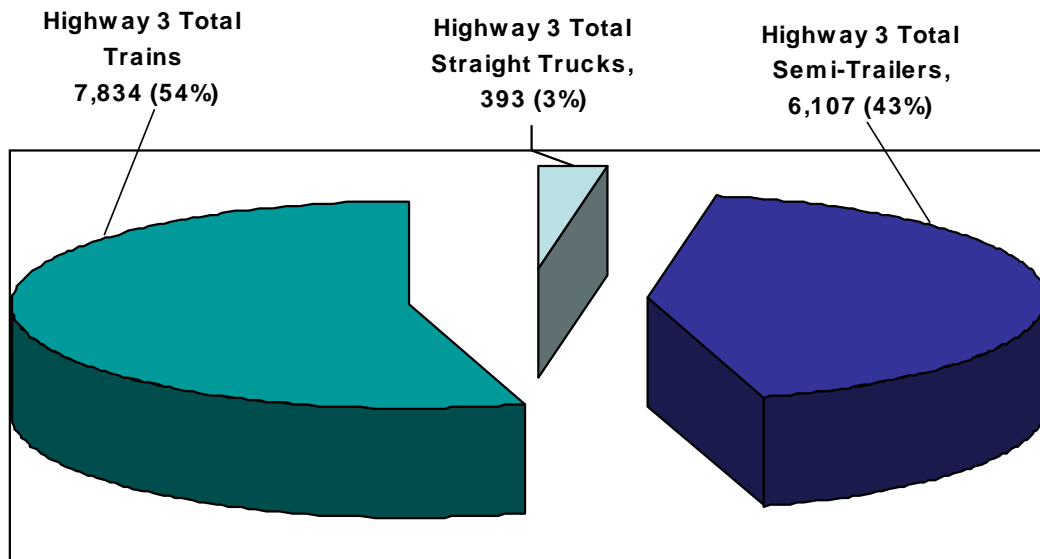
The GNWT Department of Transportation’s Enterprise weigh scale prepares a breakdown of vehicles by axle arrangements. The Lupin Winter Road operating group prepares detailed traffic statistics for each year’s operation, including freight volumes and truck trips by truck/trailer types. Discussions with the Department of Transportation’s Marine Department and selected motor carriers confirmed the mix is representative of commercial traffic at the Fort Providence Mackenzie River crossing. The total mix of truck axles for the traffic segments analyzed were consolidated into three groupings:

- a) straight trucks (2, 3 axles)
- b) tractor trailers (5,6 axles)
- c) trains (7,8 or 9 axles)

Figure 3 demonstrates the percentage mix of axle groupings for commercial vehicle traffic weighed at the Enterprise weigh scale. These numbers are a combination of community re-supply traffic and mining traffic, for 2001.

Figure 3

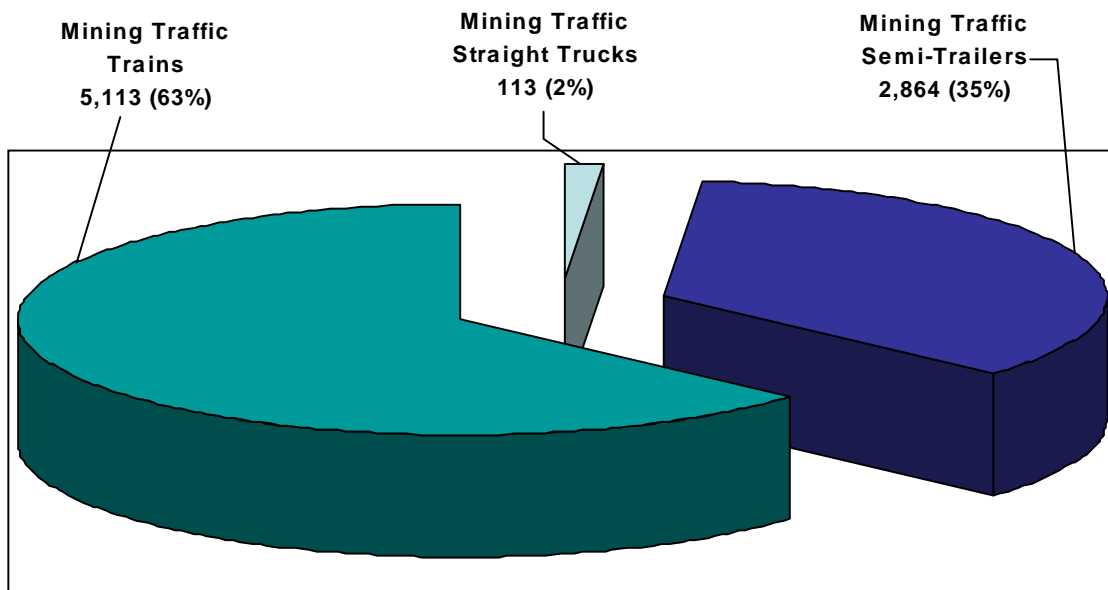
Truckload Configuration Split Highway 3



Source: Enterprise Weigh Scale Statistics for Year 2001
Verified by GNWT Dept of Transportation– Marine Services
and by GNWT Motor Carrier Survey.

Figure 4 provides a breakdown of the percentage mix of axle groupings for all mining traffic using the Lupin Winter Road during the 2001 operating season.

Figure 4
Truckload Configuration Split
Lupin Winter Road Traffic



Source: Echo Bay Mines Year 2001 Winter Road Traffic Summary

Tables 4 and 5 in Section 5 provide a forecast of future commercial vehicle tonnage and truck traffic for each of the axle groupings, for each of the conservative and probable cases, over the 35 year period.

Payloads used for each axle grouping for freight tonnage distribution were based on the actual figures reported by the Echo Bay Mine Lupin Winter Road summary truck statistics for the 2002 season, and verified by discussions with motor carriers active in the north.

3.4 Motor Carrier Industry Trends

NWT currently enjoys heavy commercial vehicle service utilizing the highest vehicle “size and weights” in the nation. Indeed, loads heavier than the legal limits are permitted on a regular basis, particularly during the winter months when road beds are frozen, to better facilitate mine and oil and gas industry traffic.

Through the sixties, seventies and early eighties, the motor carrier industry constantly sought higher gross vehicle weight limits, and expanded vehicle geometry. Starting from (generally) five axle semi-trailer units thirty years ago, the trucking industry effort was rewarded with GVW increases to 62,500 kgs, and lengths to 25 metres for groupings of up to 9 axles. This resulted in payloads in the 40 – 45 MT range depending on trailer weights. Over the years motor carriers have found many ways to lighten equipment, including the significant use of aluminum in trailers. Long combination vehicles (LCVs), i.e., tractor/trailer combinations exceeding 25 metres are permitted on selected highways and routes in Alberta, B.C. and Montana, - and in NWT on Highways 1 and 3, to Rae-Edzo.

Canadian provincial highway transport ministers adopted Roads, Transportation Association of Canada (RTAC, now TAC) recommendations for these higher weight and length limits in 1988, and these regulations now apply across the country, with minor exceptions. There is no current significant movement for further increases. The present focus is to bring U.S. regulations in line with Canada, recognizing the ever increasing north-south highway freight trade links.

In the NWT, truck sizes and payloads have **not** increased measurably during the period since highway traffic statistics have been reported in the current format (1993). Lupin winter road statistics, for example, reported an average payload of 32.5 tons in 1993, and 31.5 tons in 2002.

Discussions with motor carriers providing service into the two Canadian northern territories, including Trimac Limited, suggested that the higher GVW vehicles were likely utilized much more quickly than in other regions. Longer trip distances pushed trucking companies towards maximizing available payloads and using owner/operator power units capable of handling the bigger loads, as quickly as possible after 1988.

As tractors are normally depreciated over five years (their practical life), and because trailer ownership is a relatively small component of total trucking costs, by 1993 most of the adjustment in the industry towards the use of maximum sized tractors and trailer combinations, was complete.

Another factor which accelerated carriers to the use of maximum permissible size and weights in the early nineties was the effect of deregulation of the trucking industry through new regulations constituted in the National Transportation Act of 1987. No test of “public convenience and necessity” of truck service was required in Canada after 1987.

Aspiring new trucking companies only needed to prove compliance with truck safety standards to obtain a commercial license to get into the industry.

Shippers promoted new competition in the business, which resulted in most of the efficiencies created through enhanced competition and vehicle size and weights, passing through to them. Operating ratios (total pre-tax costs divided by gross revenues), an industry yardstick to measure profitability, increased from 90 – 92 range twenty five years ago to current 95 – 98 levels, demonstrating the impact of increased competition.

4. Forecast Assumptions and Methodology

4.1 Economic Outlook

After many years of mediocre economic performance generally related to maturing gold mines and depressed commodity prices on world markets, the NWT recently entered into a period of economic expansion driven by new sources of mineral wealth. The NWT will soon be the fourth largest producer of diamonds in the world, supplying 15% or more of the value of all of the world's annual production.

Add to the diamond base the apparent abundance of base metal and base metal resources and clearly mining is, and will likely continue to be, the territories most important long term industry.

There is also considerable activity in the energy field with extensive oil and gas reserves in place and substantial new exploration activity resulting in increases in these reserves at several points in the territory. With the availability of delivery systems for both oil and gas now and/or in the near future, continued growth in this sector seems certain.

Tourism should continue to flourish as a product of the draw of northern aurora; the appeal of “adventure travel”; the growing desire to experience first hand the culture of northern aboriginal peoples and wilderness; and to see the local natural spin-off processing activity associated with diamond processing and the gold mines. Similarly, Yukon is experiencing significant new tourism activity generally tied to their marketing of the “Klondike” historical events.

4.2 Population Growth Forecast

The effect of the above economic growth in resource development and tourism should ensure NWT of sustained population growth for the foreseeable future. The large current government employment base in NWT should also parallel this activity, given the need to facilitate expansion with infrastructure development; regulatory services; and the many publicly managed functions required to ensure improved living standards and social programs for its citizens and adequate returns to the territory for its resources.

This report will use the population growth forecast data prepared by NWT's Bureau of Statistics for the 20 years provided, and extrapolate to the 35 year horizon.

4.3 Traffic Components

A traffic forecast for the Mackenzie River Highway 3 crossing isolating commercial vehicle movements only, to a 35 year horizon, would have the following components reflecting traffic types with varying growth factors.

1. Community Re-supply – Hwy 3 and Winter Road accessible communities
2. Mining (Lupin, Ekati, Diavik, Snap Lake, Other)
3. Interrupted Traffic Recovery
4. Mackenzie Gas Project
5. Latent Traffic “Lift” – from permanent bridge presence

4.3.1 Community Re-supply, Highway 3 Communities

The movement of CV truck traffic for community supply consists of all manner of bulk fuel including aviation fuel, propane, motor gasoline and diesel fuel - for heating and vehicle use. It also consists of a broad range of general freight including building materials, equipment and supplies for commercial, industrial and retail markets for communities directly accessible by Highway 3. Industrial users would include the mining companies in and around Yellowknife, and 10% of the Lupin Winter Road traffic representing commodities destined for the mines but shipped from the south and stockpiled/stored at Yellowknife pending the opening of the winter road. Re-supply service is available for the full year less fall ice and low water disruptions and spring break-up totaling an average of just over one month in recent years. Consumables, supplies and other commodities required during these periods must be brought in by air freight.

PROLOG derives its base historical traffic data from its study for Transport Canada “Northwest Territories Freight Flow Analysis” – January, 2002; from NWT Department of Highways “Highway Traffic – 2000” report c/w 2001 updates available; and ferry crossing data from the Department of Highways.

As traffic counters cannot isolate CV traffic from non-CV traffic, Highway ferry data is considered more precise and since 1993 reported in a consistent format. For community re-supply freight volumes, only the “truck semi trailer” and “over size” categories in the annual ferry statistics were used in the tonne calculations. The Merv Hardie's Average Daily Traffic (ADT) for freight-carrying commercial vehicles is also assumed for freight tonnage calculations for the ice bridge period.

Total truck traffic and related freight volumes were adjusted by 10% to avoid double counting mine supplies relayed over Yellowknife.

Future Community Re-supply traffic is forecasted using a **1.0% growth rate** for the conservative case and **1.6%** for probable cases. While a higher growth factor could perhaps be used for the probable case based on economic trends, no attempt has been made by the Bureau of Statistics or any other qualified source to do so, - therefore 1.6% per year is used throughout for this category.

PROLOG's January, 2002 "Northwest Territories Freight Flow Analysis" determined that Community Re-supply freight over Enterprise into NWT is dominated by three classes of freight and truck types. General freight is moved in conventional vans; equipment and building materials on flat deck trailers, and fuel in (normally) 8-axle tank trucks. Carrier interviews and discussions with weigh scale personnel revealed that the combined average payload for this truck traffic mix is approximately 30 tonnes. This figure is used in this analysis.

4.3.2 Community Re-Supply, Winter Road Served Communities

Commercial Vehicle service is much as in 4.3.1 above, except that this minor traffic segment is only available for road service 8 – 10 weeks, generally from the end of January to mid-April. The Bureau of Statistics estimates the growth rate of the combined villages of Wha'Ti and Rae Lakes at **1% per year** (761 in 1999 to 912 in 2019).

While this is a distinct traffic segment, commercial truck service to these two communities involves mainly fuel. ADT statistics for the winter road are limited. Carrier discussions during previous PROLOG analysis for Transport Canada indicate that as few as 113 trucks carried products into the two communities during the winter of 2000. Accordingly, PROLOG includes these volumes with the Highway 3 communities as re-supply freight.

4.3.3 Mining Project Development/Supply

This traffic segment uses as a base the "Lupin Mine" Winter Road statistics, including current data (2002) acquired from Echo Bay Mining Co. and the Winter Road management committee. Actual truck counts are reported for re-supply activity for each of the two operating mines (Lupin and Ekati) and trucks servicing the construction work at Diavik used for that segment and for estimating Snap Lake. Snap Lake development and re-supply freight activity is assumed to be 50% of Diavik (Source: Chamber of Mines) as it is an underground mine.

The *conservative* case presented assumes development of the Snap Lake mine and a flat growth forecast for the re-supply program through the estimated mine production life as predicted by GNWT Department of Resources, Wildlife, and Economic Development, on to the 35 year horizon. Even though the existing mines play out during the forecast period (see Table 1) this case assumes current and future exploration activity will result in mine developments requiring Highway 3 truck service approximating the existing mine traffic plus Snap Lake.

The *probable* mine development scenario assumes ongoing growth in the mining sector served by Highway 3 and winter roads will increase by 1.6% per year, equal to the Bureau of Statistics population forecast over the study period.

The average payload of all trucks servicing the mines is 28.6 tonnes (31.5 tons) for the 2002 winter road program. This figure was used throughout the analysis for mining/project truck traffic calculations.

PROLOG believes NWT should feel secure with these mining traffic projections given recent developments in the industry, and the current level of exploration in the Slave Geological Province. Mining activity increased freight volumes an average of over 16% per year over the last five years. A future growth rate of 1.6% per year used by PROLOG in the “Probable Case,” amounting to only one tenth of the average growth rate in the industry over the last 5 years, may in itself be conservative.

Mine re-supply forecast volumes in this analysis are as per mine operator estimates. The Lupin Winter Road operators estimate that some commodities trucked to the mines are relayed over Yellowknife. Examples are Lupin Mine fuel, some Portland cement, and the explosive “Anfo” – a mixture of ammonia nitrate and diesel fuel used as an explosive. Accordingly, PROLOG has discounted the Community Re-supply traffic volumes by 10% of the winter road mining traffic to avoid double counting as these products would have been shipped into Yellowknife and counted on the Merv Hardie statistics, prior to the end of its season.

4.3.4 Interrupted Traffic Recovery

This traffic component recognizes the capture of freight lost to highway service for the periods of disruptions at the Dory Point crossing in the spring and fall. Spring disruptions averaged 22 days in the period from 1994 to 2000. Unscheduled disruptions in the fall averaged 9 days in the period from 1996 to 2000.

An average annual period of disruption of one month (31 days) was assumed for this calculation, commencing on the assumed date of completion of the bridge (2006). The volume of traffic was assumed to be one half of the general freight truck traffic now serving Highway 3 communities – that being consumables and other time-sensitive commodities air freighted to customer/users during the period. Source: PROLOG “Northwest Territories Freight Flow Analysis – January, 2002; Confirmed by carrier interview. After the calculations were made it was determined that (in 2000) this traffic amounted to less than 200 truck loads, primarily because the disruption period is currently so minimal due to the ferry operation generally lasting until late January. Accordingly, it is assumed that volumes recovered will be included in the growth rate assumed for the Community Re-supply category.

4.3.5 Mackenzie Gas Project

This will be a relatively small but high profile traffic segment covering the development period for the Mackenzie Valley natural gas pipeline. The developers will be inclined to

use NWT-based services for a wide variety of tasks starting with Right-Of –Way clearing and construction pad preparation, to the supply of consumables and equipment during the construction phase. Estimates of this activity were solicited from Trans Canada Pipe Line Co. and PROLOG’s current “Northern Gas Pipeline Transportation Impacts Study.”

The consensus is that up to 20% of this activity will likely be sourced from contractors and equipment suppliers in Yellowknife, Fort Providence and other Highway 3 communities. Again, while the overall economic impact in NWT will be significant, Highway 3 contractors will likely provide several hundred truck loads of consumables and equipment at best, over the 2 – 3 year construction period. It is therefore assumed that this traffic will be included in the Mining/Resource Project forecast numbers.

4.3.6 Latent Traffic Lift

This traffic segment assumes that once the bridge structure is in place, conventional traffic at the crossing will be “lifted” to some higher utilization. The very availability of a totally unconstrained highway connecting Highway 3 communities to the south will both attract new traffic and divert some portion of the existing full time commercial air freight traffic to truck. While tourism (non-commercial vehicles) is likely to provide the largest increment of new traffic, a review of the subject with Vancouver, B.C. – based Bunt & Associates suggests that a conservative “lift” of 2%-5% for commercial traffic could be assumed, but as high as 5%-10% for the probable case.

Discussions with the Province of Prince Edward Island’s Department of Highways revealed that their traffic to/from the Island after completion of the Confederation Bridge increased 50% during the first year of operation (4500 ADT vs. 3000 ADT), and has “lifted” an average of 30% over the last full year of ferry service. It is reasonable to assume that 20% of the incremental increase would be commercial traffic.

This analysis assumes a commercial vehicle traffic “lift” of 2% per year for the conservative case, and 5% per year for the probable case, upon completion of the bridge (est. 2006).

4.4 Bathurst Inlet

It is assumed that no development of a Bathurst Inlet port will occur during the forecast period.

If the port **was** to be constructed and included a tank farm such as is proposed for the development, all fuel volumes included in the mining traffic analysis herein would be displaced. In 2002 this would involve 134,000 tonnes representing 52% of the total traffic over the Lupin winter road.

Bulk cement could also be handled at the proposed port, adding a further 35,000 tonnes to the displaced freight. In 2002 cement represented 14 % of the total traffic.

Fuel and cement together representing 66% of the total Lupin winter road traffic in 2002, if removed from the supply system would remove a sizeable portion of the traffic volume used in the Deh Cho bridge traffic forecast in Section 5.

While the Lupin Winter Road has experienced significantly lower freight volumes in the past, the removal of 66% of the current total freight would require toll adjustments that the existing and future mining operations would have to bear.

5. Thirty Five Year Forecast

Tables 2 and 3 present the Conservative and Probable cases giving a range of sensitivity. Rather than provide arbitrary low, medium, and high calculations, PROLOG approached industry representatives and transportation experts with questions: a) what is likely to happen (probable), and b) the downside if the economy cools and resource projects re slow to develop (conservative).

Tables 4 and 5 break down the total commercial vehicles by axle configurations, and allocates the total commercial vehicle freight tonnage to each axle configuration category weighting the tonnage splits by “typical” payloads selected from truck statistics collected by PROLOG and trucking industry interviews.

Table 2
Thirty Five Year Forecast - CONSERVATIVE Case
One-Way Truck Trips

Year	Community Resupply		Mining/Projects		Traffic Demand Uplift		Total Traffic	
	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks
1997	215,974	18,104	129,060	9,556			345,034	27,660
1998	172,360	18,295	74,389	5,086			246,749	23,381
1999	176,325	17,810	51,899	3,688			228,224	21,498
2000	185,205	18,495	113,745	7,918			298,950	26,413
2001 actuals	282,600	22,100	222,797	16,180			505,397	38,280
2002 forecast	285,709	22,321	233,073	16,336			518,782	38,657
2003	288,566	22,544	228,614	16,000			517,180	38,544
2004	291,452	22,770	228,614	16,000			520,066	38,770
2005	294,366	22,997	251,294	17,558			545,660	40,555
2006	297,310	23,227	273,974	19,175	6,730	449	578,014	42,851
2007	300,283	23,460	283,046	19,810	6,865	458	590,193	43,728
2008	303,286	23,694	287,575	19,000	7,002	467	597,863	43,161
2009	306,319	23,931	287,575	19,000	7,142	476	601,035	43,408
2010	309,382	24,170	287,575	19,000	7,285	486	604,241	43,656
2011	312,476	24,412	287,575	19,000	7,430	496	607,481	43,908
2012	315,600	24,656	287,575	19,000	7,579	506	610,754	44,162
2013	318,756	24,903	287,575	19,000	7,731	516	614,062	44,419
2014	321,944	25,152	287,575	19,000	7,885	526	617,404	44,678
2015	325,163	25,403	287,575	19,000	8,043	537	620,781	44,940
2016	328,415	25,657	287,575	19,000	8,204	547	624,194	45,205
2017	331,699	25,914	287,575	19,000	8,368	558	627,642	45,472
2018	335,016	26,173	287,575	19,000	8,535	569	631,126	45,743
2019	338,366	26,435	287,575	19,000	8,706	581	634,647	46,016
2020	341,750	26,699	287,575	19,000	8,880	592	638,205	46,292
2021	345,167	26,966	287,575	19,000	9,058	604	641,800	46,570
2022	348,619	27,236	287,575	19,000	9,239	616	645,433	46,852
2023	352,105	27,508	287,575	19,000	9,424	629	649,104	47,137
2024	355,626	27,783	287,575	19,000	9,612	641	652,813	47,425
2025	359,183	28,061	287,575	19,000	9,804	654	656,562	47,715
2026	362,774	28,342	287,575	19,000	10,000	667	660,350	48,009
2027	366,402	28,625	287,575	19,000	10,200	681	664,178	48,306
2028	370,066	28,911	287,575	19,000	10,404	694	668,046	48,606
2029	373,767	29,201	287,575	19,000	10,613	708	671,954	48,909
2030	377,504	29,493	287,575	19,000	10,825	722	675,904	49,215
2031	381,280	29,787	287,575	19,000	11,041	737	679,896	49,524
2032	385,092	30,085	287,575	19,000	11,262	751	683,929	49,837
2033	388,943	30,386	287,575	19,000	11,487	766	688,006	50,153
2034	392,833	30,690	287,575	19,000	11,717	782	692,125	50,472
2035	396,761	30,997	287,575	19,000	11,951	797	696,287	50,794
2036	400,729	31,307	287,575	19,000	12,190	813	700,494	51,120
2037	404,736	31,620	287,575	19,000	12,434	830	704,745	51,450

Table 3
Thirty Five Year Forecast - PROBABLE Case
One-Way Truck Trips

Year	Community Resupply		Mining/Projects		Traffic Demand Uplift		Total Traffic	
	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks
1997	215,980	18,101	129,060	9,556			345,040	27,657
1998	172,400	18,295	74,389	5,086			246,789	23,381
1999	176,300	17,810	51,899	3,668			228,199	21,478
2000	185,205	18,495	113,745	7,918			298,950	26,413
2001 ^{actuals}	282,600	22,100	222,797	16,180			505,397	38,280
2002 ^{forecast}	287,406	22,454	233,073	16,336			520,479	38,790
2003	292,005	22,813	228,614	16,000			520,619	38,813
2004	296,677	23,178	228,614	16,000			525,291	39,178
2005	301,423	23,549	251,294	17,588			552,717	41,137
2006	306,246	23,925	273,974	19,175	15,312	1,021	595,532	44,121
2007	311,146	24,308	283,046	19,810	15,557	1,037	609,749	45,155
2008	316,125	24,697	287,575	20,126	15,806	1,054	619,506	45,877
2009	321,183	25,092	292,176	20,436	16,059	1,071	629,418	46,599
2010	326,321	25,494	296,851	20,763	16,316	1,088	639,489	47,344
2011	331,543	25,902	301,601	21,095	16,577	1,105	649,720	48,102
2012	336,847	26,316	306,426	21,432	16,842	1,123	660,116	48,871
2013	342,237	26,737	311,329	21,775	17,112	1,141	670,678	49,653
2014	347,713	27,165	316,310	22,124	17,386	1,159	681,409	50,448
2015	353,276	27,600	321,371	22,478	17,664	1,178	692,311	51,255
2016	358,928	28,041	326,513	22,837	17,946	1,196	703,388	52,075
2017	364,671	28,490	331,737	23,203	18,234	1,216	714,642	52,908
2018	370,506	28,946	337,045	23,574	18,525	1,235	726,077	53,755
2019	376,434	29,409	342,438	23,951	18,822	1,255	737,694	54,615
2020	382,457	29,879	347,917	24,334	19,123	1,275	749,497	55,489
2021	388,576	30,358	353,484	24,724	19,429	1,295	761,489	56,377
2022	394,794	30,843	359,139	25,119	19,740	1,316	773,673	57,279
2023	401,110	31,337	364,886	25,521	20,056	1,337	786,051	58,195
2024	407,528	31,838	370,724	25,930	20,376	1,358	798,628	59,126
2025	414,049	32,348	376,655	26,345	20,702	1,380	811,406	60,072
2026	420,673	32,865	382,682	26,766	21,034	1,402	824,389	61,033
2027	427,404	33,391	388,805	27,194	21,370	1,425	837,579	62,010
2028	434,243	33,925	395,026	27,629	21,712	1,447	850,980	63,002
2029	441,190	34,468	401,346	28,071	22,060	1,471	864,596	64,010
2030	448,249	35,019	407,768	28,521	22,412	1,494	878,430	65,034
2031	455,421	35,580	414,292	28,977	22,771	1,518	892,484	66,075
2032	462,708	36,149	420,921	29,441	23,135	1,542	906,764	67,132
2033	470,112	36,727	427,655	29,912	23,506	1,567	921,272	68,206
2034	477,633	37,315	434,498	30,390	23,882	1,592	936,013	69,297
2035	485,275	37,912	441,450	30,876	24,264	1,618	950,989	70,406
2036	493,040	38,519	448,513	31,370	24,652	1,643	966,205	71,533
2037	500,928	39,135	455,689	31,872	25,046	1,670	981,664	72,677

Table 4
Thirty Five Year Forecast - All CV Traffic: **CONSERVATIVE CASE**
TRUCK TYPES

Year	3 Axle Trucks		Semi Trailers		Trains		Totals	
	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks
2001 actuals	5,054	1,034	136,457	16,307	363,886	20,939	505,397	38,280
2002 forecast	5,188	1,044	140,071	16,468	373,523	21,145	518,782	38,657
2003	5,172	1,041	139,639	16,420	372,370	21,084	517,180	38,544
2004	5,201	1,047	140,418	16,516	374,448	21,207	520,066	38,770
2005	5,457	1,095	147,328	17,276	392,875	22,184	545,660	40,555
2006	5,780	1,157	156,064	18,255	416,170	23,439	578,014	42,851
2007	5,902	1,181	159,352	18,628	424,939	23,919	590,193	43,728
2008	5,979	1,165	161,423	18,387	430,461	23,609	597,863	43,161
2009	6,010	1,172	162,279	18,492	432,745	23,744	601,035	43,408
2010	6,042	1,179	163,145	18,597	435,054	23,880	604,241	43,656
2011	6,075	1,186	164,020	18,705	437,386	24,018	607,481	43,908
2012	6,108	1,192	164,904	18,813	439,743	24,157	610,754	44,162
2013	6,141	1,199	165,797	18,922	442,125	24,297	614,062	44,419
2014	6,174	1,206	166,699	19,033	444,531	24,439	617,404	44,678
2015	6,208	1,213	167,611	19,144	446,962	24,582	620,781	44,940
2016	6,242	1,221	168,532	19,257	449,420	24,727	624,194	45,205
2017	6,276	1,228	169,463	19,371	451,902	24,873	627,642	45,472
2018	6,311	1,235	170,404	19,487	454,411	25,021	631,126	45,743
2019	6,346	1,242	171,355	19,603	456,946	25,171	634,647	46,016
2020	6,382	1,250	172,315	19,720	459,508	25,322	638,205	46,292
2021	6,418	1,257	173,286	19,839	462,096	25,474	641,800	46,570
2022	6,454	1,265	174,267	19,959	464,712	25,628	645,433	46,852
2023	6,491	1,273	175,258	20,080	467,355	25,784	649,104	47,137
2024	6,528	1,280	176,260	20,203	470,025	25,941	652,813	47,425
2025	6,566	1,288	177,272	20,327	472,725	26,100	656,562	47,715
2026	6,604	1,296	178,295	20,452	475,452	26,261	660,350	48,009
2027	6,642	1,304	179,328	20,578	478,208	26,423	664,178	48,306
2028	6,680	1,312	180,372	20,706	480,993	26,587	668,046	48,606
2029	6,720	1,321	181,428	20,835	483,807	26,753	671,954	48,909
2030	6,759	1,329	182,494	20,966	486,651	26,921	675,904	49,215
2031	6,799	1,337	183,572	21,097	489,525	27,090	679,896	49,524
2032	6,839	1,346	184,661	21,231	492,429	27,261	683,929	49,837
2033	6,880	1,354	185,762	21,365	495,364	27,434	688,006	50,153
2034	6,921	1,363	186,874	21,501	498,330	27,608	692,125	50,472
2035	6,963	1,371	187,997	21,638	501,327	27,784	696,287	50,794
2036	7,005	1,380	189,133	21,777	504,356	27,963	700,494	51,120
2037	7,047	1,389	190,281	21,918	507,416	28,143	704,745	51,450

Table 5
Thirty Five Year Forecast - All CV Traffic: **PROBABLE CASE**
TRUCK TYPES

Year	3 Axle Trucks		Semi Trailers		Trains		Totals	
	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks	Tonnes	Trucks
2001 ^{actuals}	5,054	1,034	136,457	16,307	363,886	20,939	505,397	38,280
2002 ^{forecast}	5,205	1,047	140,529	16,524	374,745	21,218	520,479	38,790
2003	5,206	1,048	140,567	16,534	374,845	21,231	520,619	38,813
2004	5,253	1,058	141,828	16,690	378,209	21,430	525,291	39,178
2005	5,527	1,111	149,234	17,524	397,957	22,502	552,717	41,137
2006	5,955	1,191	160,794	18,796	428,783	24,134	595,532	44,121
2007	6,097	1,219	164,632	19,236	439,019	24,700	609,749	45,155
2008	6,195	1,239	167,267	19,544	446,044	25,095	619,506	45,877
2009	6,294	1,258	169,943	19,851	453,181	25,490	629,418	46,599
2010	6,395	1,278	172,662	20,169	460,432	25,897	639,489	47,344
2011	6,497	1,299	175,424	20,491	467,799	26,312	649,720	48,102
2012	6,601	1,320	178,231	20,819	475,283	26,733	660,116	48,871
2013	6,707	1,341	181,083	21,152	482,888	27,160	670,678	49,653
2014	6,814	1,362	183,980	21,491	490,614	27,595	681,409	50,448
2015	6,923	1,384	186,924	21,835	498,464	28,037	692,311	51,255
2016	7,034	1,406	189,915	22,184	506,439	28,485	703,388	52,075
2017	7,146	1,429	192,953	22,539	514,542	28,941	714,642	52,908
2018	7,261	1,451	196,041	22,900	522,775	29,404	726,077	53,755
2019	7,377	1,475	199,177	23,266	531,140	29,874	737,694	54,615
2020	7,495	1,498	202,364	23,638	539,638	30,352	749,497	55,489
2021	7,615	1,522	205,602	24,016	548,272	30,838	761,489	56,377
2022	7,737	1,547	208,892	24,401	557,044	31,331	773,673	57,279
2023	7,861	1,571	212,234	24,791	565,957	31,833	786,051	58,195
2024	7,986	1,596	215,630	25,188	575,012	32,342	798,628	59,126
2025	8,114	1,622	219,080	25,591	584,213	32,860	811,406	60,072
2026	8,244	1,648	222,585	26,000	593,560	33,385	824,389	61,033
2027	8,376	1,674	226,146	26,416	603,057	33,919	837,579	62,010
2028	8,510	1,701	229,765	26,839	612,706	34,462	850,980	63,002
2029	8,646	1,728	233,441	27,268	622,509	35,014	864,596	64,010
2030	8,784	1,756	237,176	27,705	632,469	35,574	878,430	65,034
2031	8,925	1,784	240,971	28,148	642,589	36,143	892,484	66,075
2032	9,068	1,813	244,826	28,598	652,870	36,721	906,764	67,132
2033	9,213	1,842	248,744	29,056	663,316	37,309	921,272	68,206
2034	9,360	1,871	252,723	29,521	673,929	37,906	936,013	69,297
2035	9,510	1,901	256,767	29,993	684,712	38,512	950,989	70,406
2036	9,662	1,931	260,875	30,473	695,667	39,128	966,205	71,533
2037	9,817	1,962	265,049	30,960	706,798	39,754	981,664	72,677