CAPE BRETON ISLAND

Transportation Services and Infrastructure Market Analysis

FINAL REPORT

Report Prepared For:
Enterprise Cape Breton Corporation
and the Government of Nova Scotia

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Executive Summary

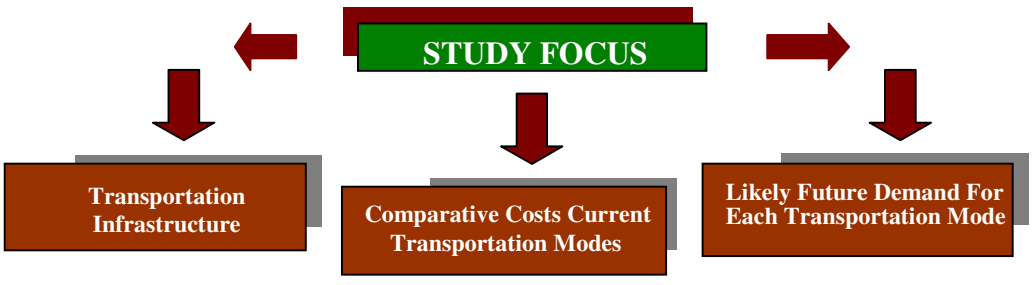
Economic growth, prosperity and opportunity are linked to investments in infrastructure, and transportation systems are a vital subset. Highways, harbours, airports and rail systems support modern economies. Transportation-related goods and services are a significant component of the nation's overall Gross Domestic Product.

The industrial economy that characterized Cape Breton, particularly Cape Breton County, throughout much of the past century relied on access to diverse transportation systems. Efficient reliable movement of cargo on and off the Island by a variety of modes has been central to the community's overall viability.

The composition of Cape Breton's economy has changed of late. Service industries now account for the majority of jobs. Regardless, some economic fundamentals continue to be important. Overall accessibility for goods to and from the Island, and local shippers' competitive access to materials and markets, remain key to future growth and prosperity.

A. Study focus

As illustrated below, this study is a transportation market analysis, focused on: Cape Breton's current transportation infrastructure and services for shipping goods onto and off the Island; the comparative costs of current modes of available transportation; likely demand for each mode over the next two to five years; and requirements to meet the future transportation needs of the Island. Research coupled with stakeholder interviews, the expert input of key informants, a quantitative shipper survey and broad data analysis largely formed the basis for key conclusions on Cape Breton's goods transportation services and infrastructure.



B. Principal conclusions

Principal conclusions are presented below for truck transport, rail freight, marine freight and air freight, followed by other findings.

1. Truck transport

Cape Breton highways are able to accommodate current levels of vehicle traffic, including trucks. Significant problems are not anticipated in the event of a modal shift to truck for existing or future rail freight volumes. Highways are generally considered to be in at least adequate condition to handle current traffic volumes as well as modal shifts to truck that may take place over the next five years.

2. Rail freight transportation

The needs of existing rail users are being satisfactorily addressed by the current level of service. While existing users anticipate future growth in rail usage, projected growth would not significantly offset the shortfall from traffic levels of the recent past. In addition, based on a review of near-term traffic opportunities from proposed developments, a market-driven solution for a sustainable, viable rail service across Cape Breton is not evident in the short term (within the next two years).

3. Marine freight transportation

The Port of Sydney has considerable unused capacity and existing infrastructure appears adequate to meet current demand. Specialized improvements would assist future efforts to market the port. Access to rail will impact on the future potential of the port, particularly to attract general cargo.

The natural attributes of the Strait of Canso make it attractive for certain shippers of bulk cargo and the needs of current shippers appear to be adequately met.

4. Air freight transportation

Sydney's newly upgraded airport infrastructure appropriately accommodates current carriers. While the frequency of scheduled air service has been reduced of late, there were no indications from shippers that this would impact their business operations.

C. Transportation infrastructure

1. Highways

Three 100-series highways serve the Island, complemented by one Trunk route linking the Canso Causeway to Sydney. Based on information provided by the Department of Transportation and Public Works (DOTPW), the 100-series highways on the Island are generally in good condition, while Trunk 4 is not.

Some 8,300 vehicles of all types cross the Canso Causeway each day; trucks make up 13% of the total. About 4,000 vehicles daily use the Trans-Canada Highway (Highway 105) and of this total nearly 350 are longer trucks. Traffic volumes vary considerably on Highway 125 depending on the particular segment.

DOTPW data clearly establish that the total number of vehicles daily at the Canso Causeway have been gradually increasing over the past ten years (from 6,610 in 1993 to 8,290 in 2001). However, the percentage accounted for by all trucks has not necessarily been rising (14% in 1993 and 1994 compared with 13% in 1999).

2. Railways

Cape Breton & Central Nova Scotia Railway (CBNS) provides freight rail service from Truro to Sydney. A portion of the Sydney Subdivision east of St. Peter's Junction (Point Tupper) has been approved for abandonment. While the condition of the rails is considered good, other roadway infrastructure has seen a lack of capital improvements in recent years. Several major structures on the line were constructed at the beginning of the last century. Service on the rail line consists of a freight train between Port Hawkesbury and Sydney twice weekly.

CBNS traffic on the Sydney Subdivision originating east of St. Peter's Junction has declined from 11,808 cars in 1996 to 520 in 2002. This largely followed the closure of steel and coal production in Cape Breton County. Combined originating and terminating traffic for the Sydney Subdivision east of St Peter's Junction in 2002 was 1,287 carloads.

Logistec Corporation utilizes the former Cape Breton Development Corporation Railway (DEVCO) under contract to Nova Scotia Power Corporation Incorporated (NSPI). Logistec moves more than 17,800 carloads annually from the former DEVCO piers at the port of Sydney to the Lingan Power Generating Station.

3. Ports

Port infrastructure at Sydney and Port Hawkesbury serves Cape Breton Island. Sydney has seven major port installations. Within the Strait of Canso, a natural deepwater port, there are two public harbours: Port Hawkesbury and Mulgrave. In addition to the Port Hawkesbury pier and Mulgrave Marine Terminal, the port has five private terminals. Some 427 ships loaded or discharged cargo at Port Hawkesbury and Mulgrave last year, while 70 cargo ships loaded or discharged at Sydney.

4. Airports

Two airports, at Sydney and Port Hawkesbury, serve Cape Breton Island. In the past five years itinerant aircraft movements at Sydney have declined from 12,300 to 7,700. With the introduction of turbo-prop aircraft at Sydney, some cargo has shifted modes from air to truck. Port Hawkesbury has a 5,000-foot runway capable of landing corporate aircraft and some commercial aircraft.

D. Current traffic flows

1. Highways

Freight is moved via highways by for-hire and private trucking. Based on a series of assumptions outlined in Chapter III, we estimate that annual freight traffic carried by truck to and from Cape Breton approximates 4.7 million tonnes yearly.

2. Rail

Currently-active rail users generate some 66,000 tonnes of rail freight per year originating or terminating east of St. Peter's Junction. CBNS carries large quantities of cargo by rail to and from the Strait Area, in addition to the figure cited above for the rest of Cape Breton.

3. Marine

Principal in-bound cargos at Sydney include gasoline, petroleum products, and coal. In 2002 a total of 2,050,000 tonnes was unloaded, and 88,000 tonnes of general cargo were shipped out. In addition, Marine Atlantic handled approximately 79,000 commercial vehicles at its North Sydney terminal in 2002. Marine tonnages loaded and unloaded at Port Hawkesbury and Mulgrave in 2002 totalled almost 17 million tonnes, comprising petroleum products, aggregate, gypsum, coal, and general cargo.

4. Air

Air cargo data are not compiled by the Sydney Airport Authority. Statistics Canada data indicate that loaded and unloaded cargo volumes at Sydney Airport in 2001 by major scheduled carriers approximated 130 tonnes.

E. Expected changes in traffic flows

Consideration of expected changes in traffic flows played an important part of our market analysis of Cape Breton's transportation sector. We undertook the assessment largely to ascertain the likelihood of additional significant traffic in the near term for each mode. We estimated expected changes in traffic flows based on current and anticipated volumes from existing shippers, our review of perceived business opportunities, and a detailed assessment of NSPI's coal transportation economics within Cape Breton.

1. Current rail users

In percentage terms expected increases compared to current rail volumes for active users are noteworthy, at increases of 70% over current levels in two years and 50% over current levels in five years. In terms of carloads, this equates to an increase from current users' levels of about 910 carloads to 1,620 cars in two years, declining somewhat to 1,475 cars in five years. Such increases would still be considerably short of the volumes seen in the recent past.

2. Perceived new business opportunities

We examined eight business opportunities for their potential to generate new traffic flows. The majority concerned mining or quarrying prospects potentially involving bulk cargo movements. Others focused on the transport of by-products from thermal generating, opportunities linked to offshore oil and gas exploration, and the transport and reload of minerals to optimize the capacity of a marine vessel. Many of the prospects face significant challenges and therefore their potential to generate new traffic in the foreseeable future is questionable. However, in the near term,

surface coal mining could conceivably generate increased truck volumes within Cape Breton County believed to be in the range of 7,000 trucks yearly.

3. Other business potential

The Government of Nova Scotia is proceeding with plans for re-use of the former Sydney Steel plant site. While the site comprises considerable infrastructure, to date redeployment efforts have centred on the development of a bulk commodities terminal. Coal appears to be a bulk commodity with the potential to increase marine traffic at Sydney between 0.5 to 2.0 million tonnes yearly. In addition, indications are that road salt will be landed at Sydney, initially in quantities approximating 60,000 tonnes yearly and transported by truck to various Nova Scotia destinations.

4. Nova Scotia Power

Transportation and handling cost differentials make it prohibitively expensive for NSPI to ship coal by rail from Sydney to Point Tupper/Trenton or from Auld's Cove/Point Tupper to Point Aconi/Lingan, as outlined in Chapter IV and Appendix H.

NSPI has indicated it would provide annual support to a Cape Breton rail line over a ten year period with a net present value of $1.0 to $2.0 million as part of a contingency plan to transport coal to its generating stations should one of its port unloading facilities suffer a catastrophic event. While the potential for such a catastrophic event may be remote, this would be the only circumstance under which coal would likely be shipped by rail between Sydney and Auld's Cove/Point Tupper to meet NSPI power generation needs.

F. Changes for current shippers

The majority of current rail users propose to continue business operations in Cape Breton in the event of a loss of rail service. Combined impacts include capital modifications to plant and equipment at a cost of about $1.1 million, annual transportation cost increases totalling approximately $1.6 million, and other annual recurring costs of about $370,000. Without access to rail service, current rail users would shift about 45,000 tonnes of freight to highways, thereby generating additional volume of about 1,800 loaded trucks yearly. This amounts to approximately three percent of large truck traffic in Cape Breton at present. A modal shift to truck would produce off-setting positive impacts for trucking companies, such as incremental revenues, purchase of local supplies and additional employment.

Four rail users indicate that in the event of rail closure they would either discontinue operations in Sydney (involving transhipment of freight to Newfoundland) or experience a reduction in their business activities. This would result in lost sales in Cape Breton approximating $3.7 million, the termination of 13.5 FTE's of employment and a payroll of about $290,000 as well as a decline of about $240,000 in sales among current local suppliers of materials. One of the transhipment companies identified capital expenditures for relocation of some $900,000 in storage facilities. Other respondents did not quantify one-time investment impacts. We estimate also that Marine Atlantic would see a reduction in tariffs of $470,000 from the loss of traffic.

G. Future traffic flows

Current truck traffic to and from Cape Breton of about 4.7 million tonnes yearly is expected to increase modestly over the short to medium term, with overall volumes largely unaffected by a potential modal shift from rail to truck. Results specific to shippers surveyed for this study indicate that inbound truck flows to Cape Breton are expected to remain consistent, assuming continued rail service. Without rail service, inbound truck traffic can be expected to increase modestly. Outbound freight by truck is expected to remain quite consistent between 2004 and 2007 with or without rail service.

Estimated freight volumes by rail for current shippers located east of St. Peter's Junction in the 2004-2007 period may increase up to 70% over current levels in two years and 50% over current levels in five years. Total rail volumes in this period would nevertheless remain well below levels from the recent past.

Freight volume increases at the Port of Sydney in the near term will largely be as a result of anticipated transhipment of bulk cargos. Forecast volumes at Port Hawkesbury and Mulgrave are anticipated to increase only marginally over 2002 levels in the next five years. Future air cargo volumes are anticipated to remain flat or decline slightly in the near to mid-term.

I Introduction

This chapter provides the background and context for this transportation market analysis, identifies the study's purpose and objectives, briefly describes our approach and methodology, and sets forth the structure for the remainder of the report.

A. Study background

The Cape Breton economy faces a number of challenges as it continues to undergo a period of transition. One of those challenges pertains to the adequacy of local transportation services and infrastructure as the Island continues to diversify its economic base. As many of the industries on Cape Breton Island are in various phases of growth, there is a need to discern the most efficient way to utilize the Island's transportation services and infrastructure, and to understand the overall transportation situation and dynamics in Cape Breton. In order for existing and new industries to grow on the Island, efficient and cost competitive transportation services and infrastructure are essential.

B. Study purpose and objectives

The objectives of the market analysis, as identified in the Terms of Reference, are to undertake:

1. *an analysis of all the current transportation services and infrastructure for shipping goods into and out of Cape Breton Island, taking into consideration the origin/destination of the products;*

2. *a cost comparison analysis of the current modes of transportation available to Cape Breton users, including rail, road, water and air;*

3. *for each mode of transportation, a two and five year traffic forecast, keeping in mind the potential cargo related to offshore development and other bulk commodities.*

In discussions with the Steering Committee, it was recognized that the study should place particular attention on identifying expected changes in traffic flows for each mode of transportation.

C. Study approach and methodology

Our approach was based on obtaining as much information as possible directly from the users of transportation services in Cape Breton. The advantage of such an approach is the opportunity to collect direct, accurate and timely information. The risk of such an approach is with survey respondent fatigue or disinterest.

We placed a primary reliance on a survey of shippers and receivers of Cape Breton traffic, to understand the current flows of traffic, the relative reliance on various modes of transportation, the cost competitiveness of various modes, and projected volumes and modal choices in the future. This approach required developing a comprehensive list of major shippers and receivers serving Cape Breton, developing a survey instrument, distributing surveys and encouraging participation, and collating and analyzing responses. Appendix A contains a copy of the shippers' survey, and Appendix B contains the distribution list for the survey.

We also devoted considerable effort to personal and telephone interviews with current users of transportation services, to understand their transportation needs and issues. We also interviewed proponents or others knowledgeable of potential business opportunities that would result in additional movement of goods. We systematically identified and researched a series of opportunities. Appendix C contains a list of contacts interviewed in this regard.

We also collected data and information pertaining to transportation infrastructure and services for Cape Breton, to develop a rounded picture of the Island's transportation profile.

D. Report structure

In this report we review the current situation with respect to Cape Breton transportation infrastructure, traffic, and goods movement; identify expected changes to the flow of goods; and forecast expected traffic in future. The appendices contain supporting detail and analyses. The remainder of the main body of the report is structured as follows:

Chapter II describes current transportation infrastructure, operations, and traffic on Cape Breton Island;
Chapter III describes current volumes of goods movement by mode of transportation to and from Cape Breton Island;
Chapter IV identifies expected changes in traffic levels and flow of goods;
Chapter V proposes forecasted traffic flows by mode; and
Chapter VI provides our conclusions regarding the transportation services and infrastructure of Cape Breton Island.

II Cape Breton Transportation Infrastructure

This chapter describes the attributes, facilities, services, and traffic associated with transportation infrastructure on Cape Breton Island.

A. Highways

This section describes the highway infrastructure on Cape Breton Island and relevant highway traffic statistics. All highways in Cape Breton are two-lane highways.

1. Highway infrastructure

Cape Breton Island has three 100-series highways, as follows:

- Highway 104, linking the Canso Causeway to a point in Richmond County where it joins Trunk 4; Highway 104 measures approximately 40 route-kilometres[1]
- Highway 105 (the Trans-Canada Highway—TCH), essentially linking the Canso Causeway[2] to the Marine Atlantic ferry terminal in North Sydney; Highway 105 measures approximately 143 route-kilometres
- Highway 125, a partial ring road around the Sydney area, connecting with Highway 105 (some 3 kms from the ferry terminal), Trunk 4 at Sydney River (south of greater Sydney), and Trunk 4 again east of greater Sydney; Highway 125 measures approximately 28 route-kilometres.

The Island has one Trunk route (#4), essentially linking the Canso Causeway to Sydney, and continuing eastbound to Glace Bay. Trunk 4 measures approximately 157 route-kilometres. A portion of Trunk 4 is basically parallel to Highway 104 in southern Richmond County.

The National Highway System (NHS) in Cape Breton covers the southern route linking the Canso Causeway with the Marine Atlantic ferry terminal, encompassing portions of Highway 104,

[1] *The total distance from the Canso Causeway to the interchange of Highway 104 and Trunk 4 is approximately 8 kilometres longer than the length of Highway 104, as the routing requires some travel on Trunk 4 through Port Hastings and Port Hawkesbury*

[2] *Highway 105 in fact commences at the Port Hastings Rotary, some 2.8 kilometres from the Canso Causeway weigh station*

Trunk 4, and Highway 125. (The NHS is made up of selected major arteries other than the Trans-Canada Highway.)

Information on highway capacity profiles (i.e., the designed capacity of each highway, expressed as a number of passenger cars[1] per hour per lane) and highway volume profiles (i.e., the actual number of passenger cars per hour per lane) was not available from the Department of Transportation & Public Works (DOTPW). Information on pavement condition was provided by DOTPW for a number of representative segments of Cape Breton highways. Appendix D contains detailed descriptions for each segment. The results are summarized below in Exhibit II-1. In the descriptions by DOTPW, "Good" corresponds to a comfortable ride, while "Fair" corresponds to an uncomfortable ride. The reader is directed to the Appendix for more detail.

Exhibit II-1
Summary of pavement conditions for representative segments of Cape Breton highways (kilometres and percent)

High-way	Between	Excellent	Good	Fair	Poor	Total
4	St. Peter's to	–	20.49	5.28	46.50	72.27
	Sydney Forks	–	29%	7%	64%	100%
104	Pt. Tupper to	12.84	24.29	–	–	37.13
	St. Peter's	35%	65%	–	–	100%
105	Orangedale	5.56	52.56	24.37	–	82.49
	Rd. to C.B. County	7%	64%	29%	–	100%
125	Highway 105	4.42	–	7.13	–	11.55
	to Route 239 exit	38%	–	62%	–	100%
125	Sydney River	9.20	–	–	–	9.20
	to Grand Lake	100%	–	–	–	100%

Source: KPMG summary of data from Nova Scotia Department of Transportation & Public Works

The condition of Trunk 4 is generally poor. Highway 104 is consistently good or excellent. Highway 105 is generally good. The condition of divided Highway 125 can vary depending on the direction of travel. A large part of the portion between the interchange with Highway 105 and

[1] *A truck is counted as multiple cars, although the appropriate multiplier factor can depend on a number of factors including terrain, road curvature and sightlines, etc.*

the interchange with Highway 239 is in only fair condition. The sections between Sydney River and Grand Lake were entirely repaved in 2002 and are in very good condition.

Highways 105 and 125 are not subject to spring weight restrictions. The Highway 104/Trunk 4 combined routing is subject to spring weight restrictions over about 50% of its length.

Based on detailed data provided by DOTPW we determined the distances across Cape Breton Island for several origins/destinations, both via the TCH and the Highway 104/Trunk 4 routings, rounded to the nearest five kilometres. These are shown in Exhibit II-2.

Exhibit II-2
Cape Breton highway distances (kilometres)

From	To	via 105	via 104 / 4
Canso Causeway weigh station	North Sydney ferry	145	150
Canso Causeway weigh station	North Sydney industrial park	145	150
Canso Causeway weigh station	Sydport	165	140
Canso Causeway weigh station	Reserve Mines / airport	180	150
Point Tupper	North Sydney industrial park	145	145
Point Tupper	Sydport	165	130
Canso Causeway weigh station	Little Narrows	60	n.a.
Little Narrows	North Sydney industrial park	85	n.a.

Source: KPMG estimates based on data from Nova Scotia Department of Transportation & Public Works

According to the DOTPW, the following significant projects are planned for Cape Breton highways:

- Highway 125: twinning from Balls Creek to Sydney River, including a new interchange at Coxheath Road and widening of the Sydney River bridge on Highway 125 (this is planned in the 2003/04 capital program, and was announced in 2002);

- Trunk 4: upgrading 3 kilometres between Middle Cape and Big Pond (planned in the 2003/04 capital program); and

- Highway 104: new 2-lane, 100-series controlled access highway from the Canso Causeway to Port Hawkesbury, and from St. Peter's to Highway 125 (this is a long-range plan estimated at some 15 to 20 years in the future, as part of the NHS Vision).

2. Highway operations

We obtained from DOTPW information related to vehicle traffic counts and collision rates for Cape Breton highways.

a) Vehicle traffic

Vehicle traffic counts are expressed as Annual Average Daily Traffic (AADT). These figures are based on automated counts of vehicles travelling over a stretch of highway. The vehicle counts are typically carried out for a one- or two-week period annually. The initial average vehicle count is then adjusted based on the time of year it occurred, to recognize the seasonal peaking factor of traffic. The original count is thus re-calculated as a daily average that has had any peaking characteristics smoothed out. The counts include traffic moving in either direction.

The vehicle counts for various highway segments did not all take place at the same time. Also, a vehicle travelling through one segment may not necessarily continue through the next segment (i.e., if it exits the highway). Therefore, some variation between segments for a given highway should be expected, based on the nature of the surrounding area (e.g., urban versus rural) and the number of exits within a segment.

Where the relative proportion between cars and trucks is known, one can derive the Annual Average Daily Truck Traffic (AADTT). In this case, "trucks" excludes light trucks such as pick-ups (which are counted with cars), and includes all other types of trucks and buses. In some cases finer detail is available, distinguishing between three classes of trucks, with the largest class including tractor-semi-trailers and other large truck combinations. Both loaded and empty trucks are included in all cases.

Exhibit II-3 provides aggregated information on daily vehicle traffic travelling on Cape Breton's highways, considering data from recent years and particular segments. Appendix E contains the detail by highway segment from which the averages below were derived.

Exhibit II-3
Typical vehicle traffic counts for Cape Breton highways

High-way	Between	Typical AADT	Cars & Light Trucks	Buses, Straight Trucks	Tractor-Semi-Trailers	All Trucks	Typical AADTT (Trailers)
		#	%	%	%	%	#
104	Causeway to Pt. Hastings Rotary	8,300	87.0%	n/a	n/a	13.0%	n/a
104	Pt. Tupper to St. Peter's	3,500	n/a	n/a	n/a	n/a	n/a
4	St. Peter's to Sydney Forks	2,500	92.7%	4.3%	3.0%	7.3%	75
105	Orangedale Rd. to C.B. County	4,000	86.4%	4.9%	8.7%	13.6%	348
125	Highway 105 to Route 239 exit	5,900	92.0%	n/a	n/a	8.0%	n/a
125	Sydney River to Grand Lake	16,800	n/a	n/a	n/a	n/a.	n/a

Source: KPMG summary based on data from Nova Scotia Department of Transportation & Public Works

In recent years, some 8,300 vehicles of all types cross the Causeway each day. All trucks make up 13% of the total; greater detail is not available to know what proportion of that 13% is accounted for by trucks over 48 feet (e.g., tractor-trailers).

Some 3,500 vehicles travel each day on Highway 104 (between Point Tupper and St. Peter's). No information is available on cars versus trucks. The total vehicle traffic drops considerably on Trunk 4 further east (between St. Peter's and Sydney Forks), averaging 1,000 fewer vehicles per day. On this routing, just 3.0% of the vehicles are trucks of tractor-semi-trailer length or greater, numbering 75 trucks per day.

The Trans-Canada Highway (105) typically sees 4,000 vehicles per day. Nearly 350 per day are longer trucks, and longer trucks make up close to two-thirds of all truck types on this highway. The daily total of about 350 longer truck types compares with a typical daily total for longer truck types of 1,410 on Highway 104 between Exit 8 [Collingwood Rd. Interchange] and Cobequid Pass Toll Booth (i.e., north of Truro); and 1,025 on Highway 104 between Exit 15 [Highway 102-Truro] and Exit 17 [Valley Cross Road] (i.e., east of Truro).

Traffic volumes vary considerably on Highway 125. The stretch from the Highway 105 interchange to Exit 4 at Route 239 has a daily traffic count of around 5,900 vehicles. The other end of Highway 125, from the interchange with Trunk 4 at Sydney River to the interchange with Trunk 4 at Grand Lake, averages much higher volumes of around 16,800 vehicles per day. In between, traffic is heavier to the west of the Sydport interchange at 12,600 vehicles per day, while traffic is lighter to the east of the Sydport interchange at 5,400 vehicles per day.

b) Collision rates

Based on detailed annual data for the five-year period from 1997 to 2001, we determined typical collision occurrences for the two representative sections of cross-Island highways: Trunk 4 between St. Peter's and Sydney Forks, and the TCH between Orangedale Road and the Victoria/Cape Breton County Line. Collisions are classed as one of three types: property damage only (PDO), injury, or fatality.

Exhibit II-4
Typical collision rates for Cape Breton highways

High-way	Between	Typical PDO Annual #	Typical Injury Annual #	Typical Fatality Annual #	Typical PDO per HMVK	Typical Injury per HMVK	Typical Fatality per HMVK
4	St. Peter's to Sydney Forks	25	18	0.4	37	27	0.6
105	Orangedale Rd. to C.B. County	32	20	1.6	24	15	1.2

Source: KPMG estimates based on data from Nova Scotia Department of Transportation & Public Works

Exhibit II-4 indicates that on an annual basis, a total each year of 25 collisions involving property damage only can be expected on Trunk 4, between St. Peter's and Sydney Forks (a distance of 72 kms). On Highway 105, a somewhat higher number of property-damage-only collisions (i.e., 32) could be expected each year between Orangedale Road and the Victoria/Cape Breton County Line (a distance of 82 kms). However, Exhibit II-3 demonstrated that Highway 105 carries more vehicle traffic daily, so a somewhat greater number of collisions might be expected. In fact, when one accounts for the different number of vehicles, and the different distances of the segments being compared, it becomes apparent that the property damage collision *rate* (expressed as the number of collisions that occur per hundred million vehicle-kilometres—HMVK) is

actually lower on Highway 105 than Trunk 4. Likewise, the *rate* for collisions involving injury is also lower on Highway 105. Conversely, the fatality *rate* is higher on Highway 105.

3. Truck traffic to and from Cape Breton

Historical vehicle counts at the Canso Causeway are shown in Exhibit II-5, below. The DOTPW provided figures back to 1993, which indicate that the total number of vehicles has been gradually increasing, from a low of 6,610 per day in 1993. On the other hand, the percentage accounted for by all trucks has not necessarily been increasing. In 1993 and 1994, trucks made up 14% of the total, while in 1995 they were 13% of all vehicles. No breakdown was available for 1999 or 2000.

Exhibit II-5
Vehicle counts at the Canso Causeway, 1996 to 2001

Count	1996	1997	1998	1999	2000	2001
Vehicles per day (AADT)	7,180	7,780	7,990	7,670	8,100	8,290
Vehicles per year (000s)	2,621	2,840	2,916	2,800	2,957	3,026
Percent trucks (all types)	12%	13%	13%	n.a.	n.a.	15%
Trucks per year (all types)	314,000	369,000	379,000	n.a.	n.a.	454,000

Source: Nova Scotia Department of Transportation & Public Works

Based on the records available for the past decade, all truck types typically account for 13% of total vehicle traffic crossing to and from Cape Breton Island. Greater detail is not available to know what proportion of vehicles is accounted for by trucks over 48 feet (e.g., tractor-trailers). Again based on data from DOTPW, it is evident that the traffic flows are extremely evenly balanced between traffic onto and off of the Island (as one would expect).

B. Rail

Two freight railways serve Cape Breton Island: the Cape Breton & Central Nova Scotia Railway (CBNS) and the Sydney Coal Railway.

1. CBNS infrastructure

The CBNS extends from Truro to Sydney. For administrative purposes, CBNS' rail line is divided into two subdivisions. The Sydney Subdivision is the area under focus in this study, as it extends from Havre Boucher to Sydney. The portion of the line approved for abandonment by the Utilities and Review Board commences immediately east of Point Tupper at St. Peter's Junction, identified as mile 17.02 of the Sydney Subdivision, and terminates approximately 98 miles east of that point at Sydney at mileage point 113.9 (plus sidings and yards).

a) Rail and other track material

The rail in place is continuously welded, 115 lb. rail. According to CBNS' General Manager, the steel is in fair to very good condition. Ties, surfacing and vegetation control have generally suffered from lack of capital since 1998, and some erosion of their quality has occurred.

The presence of passenger rail service on the line, in the form of a seasonal excursion train operated by VIA Rail, requires the rail and its roadbed to be inspected and maintained to a higher standard than would normally apply for freight railways.

It may be noted that the Government of Nova Scotia has commissioned the Canadian Transportation Agency to undertake a study of the net salvage value of the line approved for abandonment. Such an analysis carefully reviews the rail and other track materials in place as to their type and condition, identifies a market value for those assets along with other assets including buildings and land, evaluates the cost involved in removing (i.e., salvaging) assets and transporting them to buyers, and determines the net worth of the line's assets.

b) Structures

There are four major structures on the subject section of the Sydney Subdivision:

- Ottawa Brook viaduct is 516 feet long, at mileage point 49.35
- Walker Gulch viaduct is 455 feet long, at mileage point 50.70
- Grand Narrows swing span is 1,697 feet long, at mileage point 57.80, and
- George's River structure is 352 feet long, at mileage point 87.50.

The Truro–Sydney rail line has served Cape Breton Island since the late 1800s and virtually all structures on the Sydney Subdivision date from that era. The railway's General Manager characterizes them as in fair condition. Capital spending on the Sydney Subdivision has declined in recent years reflecting the declines in volumes handled.

2. CBNS operations

The maximum operating speed for the Sydney Subdivision is 40 mph. Trains currently average approximately 28 mph between Port Hawkesbury and Sydney, due to slow orders at various places along the line.

The current service profile consists of a freight train operated between Port Hawkesbury and Sydney two days per week (Mondays and Thursdays), and a local switching assignment also two days per week (Tuesdays and Fridays). Additional work trains and snow clearing trains are present as required.

3. Sydney Coal Railway

Nova Scotia Power Incorporated (NSPI) has a ten-year service agreement expiring in 2012 with Logistec Corporation related to the handling and transportation of coal in the Sydney area. Among other aspects, the agreement covers the delivery of coal by rail from the former CBDC International Pier in Sydney to NSPI's Lingan generating station, a distance of approximately 20 miles. The rail line was formerly operated by CBDC as the Devco Railway.

Annual coal volumes transported on the rail line correspond very closely to NSPI's requirements for solid fuel at Lingan. NSPI indicates the annual requirement for coal or pet coke at Lingan is approximately 1.6 million tonnes. This volume corresponds to approximately 17,750 carloads at 90 tonnes per carload.

Logistec Corporation specializes in materials handling and transportation, including providing stevedoring services in some 27 ports throughout eastern Canada, the eastern U.S., and the Great Lakes. Logistec holds a minority interest (approximately 15%) in the Quebec Railway Corporation, which operates a number of short line railways in central and eastern Canada.

4. Rail car traffic to and from Cape Breton

Rail car traffic levels originating or terminating on the Sydney Subdivision west of St. Peter's Junction were not available from CBNS. This segment serves primarily large shippers located in the Strait of Canso area, including the following:

- Stora Enso calendar paper plant in Port Hawkesbury
- NSPI power generating station in Point Tupper
- NSPI coal imports landed at the Martin Marietta terminal at Auld's Cove
- Sable Offshore Energy Inc. in Point Tupper

Until very recently, CBNS also served Canadian Gypsum in Point Tupper, which closed its operation in the fall of 2002.

Several key developments in the recent history of Cape Breton's economy have affected the traffic base for CBNS east of Point Tupper. The closure of coal mining operations by the Cape Breton Development Corporation (Devco) and the closure of the steel making facility owned by Sydney Steel Corporation (Sysco) in recent years reduced the level of rail activity originating on the Sydney Subdivision. In addition, the decision to move intermodal traffic to Newfoundland via Halifax rather than via North Sydney affected rail shipments terminating on the Sydney Subdivision. These three traffic flows accounted for over 94% of all rail cars handled in revenue service on the rail line east of Point Tupper in 1996. None of these commodities are expected to be handled in 2003.

Traffic for CBNS since 1996 is presented below, in terms of revenue carloads originating (Exhibit II-6) and terminating (Exhibit II-7) per year. These figures reflect recent trends in rail activity on the section of line approved for abandonment. They do not include revenue movements between the Strait Area and points west of the Strait of Canso. The figures below were provided by CBNS. For a couple of commodity groupings representing fairly small carloadings, some assumptions were made regarding the split of originating versus terminating traffic. These assumptions do not materially affect the overall results.

Exhibit II-6
Traffic originating on the Sydney Subdivision east of St. Peter's Jct. (carloads)

Commodity type	1996	1997	1998	1999	2000	2001	2002
Coal	9,836	9,528	5,148	718	1,097	2,173	286
Steel or related	1,919	1,165	2,234	2,351	838	6	1
Logs and poles	53	59	112	203	103	138	143
Scrap	0	0	0	0	7	74	90
Total originating	11,808	10,752	7,494	3,272	2,045	2,391	520

Source: CBNS

Exhibit II-6 illustrates the decline in traffic originated on the Sydney Subdivision from points east of St. Peter's Junction. Coal shipments in 2002 occurred during May and June. It is CBNS' understanding that those shipments were the last rail movement of former Devco coal from its

stockpile at Victoria Junction. Similarly, the steel movements were formerly all for the account of Sysco and no further steel movements can be expected.

Exhibit II-7 identifies recent trends for terminating traffic in central and eastern Cape Breton.

Exhibit II-7
Traffic terminating on the Sydney Subdivision east of St. Peter's Jct. (carloads)

Commodity Type	1996	1997	1998	1999	2000	2001	2002
Intermodal	743	532	194	0	0	0	0
Building supplies	242	206	197	232	299	269	282
Petro products in bulk	192	195	308	284	297	177	155
Resins	93	104	143	152	141	164	153
Scrap	65	98	93	77	0	0	0
Cement in bulk	60	62	50	51	59	84	77
Feed (animal)	27	59	56	52	70	80	79
Logs and poles	0	0	0	0	94	48	21
Miscellaneous	5	17	16	1	2	6	0
Total terminating	1,427	1,273	1,057	849	962	828	767

Source CBNS

The impact of the loss of intermodal traffic to Newfoundland is apparent on the levels of traffic terminating on the Sydney Subdivision east of St. Peter's Junction. Some movements of scrap steel have occurred in recent years. These are expected to dwindle as the supply of scrap from the Sysco site is used up, and in light of the often favourable economics of shipping scrap by ship rather than rail. Traffic levels for most remaining commodity types have remained fairly consistent over the time frame presented. Terminating traffic exceeded originating traffic last year, perhaps for the first time in the railway's history. This was not due to increases in terminating traffic, but rather due to continued declines in originating traffic.

The combined originating and terminating traffic for the line east of St. Peter's Junction in 2002 was 1,287 revenue carloads. Assuming for convenience that all of the traffic traveled the entire length of the line (which is not the case for much of the logs and poles or the animal feed movements), then for the 98 miles of mainline track this represents a traffic density of 13 carloads per mile of track. The level of traffic density required for sustainable, profitable operations can vary somewhat depending on the characteristics of particular rail lines. However, it is instructive to note that the *Cape Breton Rail Opportunities Final Report* of 2001, prepared for ECBC and the

Government of Nova Scotia, noted that "short line investment decisions are based on a business case (industry standard for short lines is 100 carloads annually per mile of track) …"

Looking ahead to 2003, given the length of time generally involved in developing new rail-based traffic, even with some increase among current rail users (say on the order of 5% for conjecture), the elimination in 2003 of Devco coal movements would have the result of reducing the traffic density for the line still further.

C. Ports

This section describes Cape Breton's port infrastructure and vessel traffic at the ports of Sydney and Port Hawkesbury. Goods volumes transported by ship are detailed in the next chapter.

1. Sydney Harbour infrastructure

Depths for main channels within Sydney Harbour run generally 40 to 50 feet, and the harbour can accommodate Panamax-style bulk vessels laden with up to 58,000 tonnes of cargo. The harbour does have a sand bar in the main entrance some 38 feet below the surface at low tide. This sand bar helps to protect the inner harbour from drift ice floating down from the Gulf of St. Lawrence, although when drift ice does enter the harbour an icebreaker is required. Drift ice can be an issue approximately one year out of every two. The majority of ships that call on Sydney Harbour are ice-class vessels and are suited to dealing with harbour ice that may form between January and March. Tides in the harbour average five feet.

The harbour itself is the property of Transport Canada. The Cape Breton Regional Municipality together with the Transport Committee of the Board of Trade acquired from Transport Canada the Sydney Marine Terminal. This is leased to the Sydney Ports Corporation, a not-for-profit corporation. It is a public facility. Other major installations within the harbour are owned and operated by private concerns, although access for other users is available. The major installations within the harbours are briefly described below.

- Sydney Marine Terminal—is a public facility, with a paved wharf surface, a waterline, two oil pipelines, and one rail spur. A steel frame warehouse refurbished in 1992 is available for storage. SMT at present receives inbound petroleum product shipments and cruise vessels. [West facing: berthing length of 900 feet, low tide depth of 39 feet; South facing: berthing length of 370 feet (285 feet available), low tide depth of 32 feet.]

- Sydport Terminal—located at the Sydport Industrial Park; marine structures and roadways are owned by ECBC and operated by the Laurentian Group, which owns the industrial park land. The terminal is served by rail and has a common user area on site.

[In total the terminal has 3,890 feet of berthage on five quay walls. However, water depths for most of this berthing length measure 20 feet or less. The main jetty has a berthing length of 850 feet with a depth of 38 feet.]

- North Sydney Wharf—is privately owned, and receives very little traffic. It is used mainly for shrimp vessels and includes a cold storage facility. [Berth: 345 feet; Depth: 25 feet]

- Sydney Steel Corporation—has leased its dockside facilities to private-sector operator Provincial Energy Ventures (PEV), a subsidiary of American Metals & Coal International (AMCI) for a period of ten years. The facilities consist of two piers (#3 and #4), a gantry crane suitable for general cargo, and considerable lay-down area. The lease agreement requires PEV to allow other users access to the terminal. PEV intends to use the terminal for transhipping bulk cargos such as coal, and for receiving other local cargos such as road salt. [Berths: two at 695 feet each; Depth: 36 feet at low tide]

- Emera—acquired the former International coal-handling pier as part of its acquisition of assets from the Cape Breton Development Corporation. Emera receives coal delivered by vessel to its Sydney pier for its power generating stations at Lingan and Point Aconi. Emera entered into a ten-year agreement with Logistec Corporation to provide stevedoring services at the site. Coal is railed from the dockside to Lingan, and trucked from the pier to Point Aconi. Material handling equipment installed at the pier was originally intended for loading of coal onto vessels. More recently a ship unloader and hopper has been installed to facilitate the unloading of import coal vessels, although the facility is best suited to accommodating geared self-unloader vessels.

- North Sydney Ferry Terminal—owned and exclusively used by Marine Atlantic for ferry service between North Sydney and Port aux Basques and Argentia, Newfoundland.

- Irving Tank Farm—on the Sydney River, is now closed. All inbound petroleum products are now received at the Sydney Marine Terminal and piped underground to the Imperial Oil Tank Farm.

2. Sydney vessel traffic

The number of commercial ship visits to Sydney harbour is shown below for each year from 1996 to 2002. These figures include cargo ships, cruise ships, factory-type fishing vessels, tugboats, and government vessels such as Coast Guard ships. They exclude Marine Atlantic ferries.

Exhibit II-8
Sydney vessel traffic (number of ships)

1996	1997	1998	1999	2000	2001	2002
108	164	141	158	145	126	153

Source: Sydney Harbourmaster

The Harbourmaster indicates that the peak in vessel traffic in 1997 was likely due to more fishing vessels calling than in other years, in particular herring seiners from northern New Brunswick whose calls have dropped off considerably since then. In 2001 no cargo was loaded or discharged at the Sydney Steel docks, explaining the reduction in vessel traffic that year. Traffic for other years has been fairly consistent. In 2002, the breakdown of ship types was as follows:

Coal carriers	38
Tankers	32
Subtotal	70
Cruise ships	34
Fishing	5
Tugs	12
Government	32
Total	153

Marine Atlantic operates three combined passenger and commercial traffic ferries, and one freight ferry. The four ferries operate year-round from North Sydney for Port aux Basques, departing and arriving two to three times daily, depending on the day of the week and time of year. Marine Atlantic provides service to Argentia once daily, three times per week, between late June and early October.

3. Port Hawkesbury & Mulgrave infrastructure

Within the Strait of Canso are two public harbours, those of Port Hawkesbury and Mulgrave. The harbours themselves are the property of Transport Canada. The Strait is a natural deepwater port with channel depths up to 200 feet; most years (although not always) it is ice-free.

The Strait Superport Corporation Ltd. acquired two facilities within the harbours from Transport Canada: the Port Hawkesbury pier and the Mulgrave Marine Terminal. The Superport Corporation received some $11 million in funding from Transport Canada, with a portion dedicated to operating expenses and the remainder for capital spending to refurbish the wharves.

The remaining cargo handling installations within the public harbours are owned and operated by private concerns. The major installations within the harbours are briefly described below.

- Statia Terminals—handles liquid cargos only. It acts as a liquid bulk transhipment facility, receiving liquid bulk cargos from around the world, capable of accommodating Ultra Large Crude Carriers, and shipping outbound liquid bulk in smaller lots generally to U.S. East Coast ports. [Berth: 1,918 feet; Depth: 92 feet]

- Stora Enso—receives inbound china clay, caustic soda and petroleum products. Outbound shipments from Stora Enso are no longer handled by the marine mode. [Berth: 650 feet; Depth: 28 feet]

- Canadian Gypsum—this site closed last year. Its wharf is in shallow water and was used very infrequently. [Berth: 540 feet; Depth 23 feet]

- Georgia Pacific—ships out raw gypsum mined on Cape Breton Island in bulk shipments to U.S. East Coast ports. [Berth: 1,100 feet; Depth: 31 feet]

- Port Hawkesbury pier—is a public facility, but with limited draft it is seldom used for cargo loading or unloading. [Berth: 435 feet; Depth: 18 feet]

- Martin Marietta—has a facility at Auld's Cove where crushed gravel in bulk is shipped out by barge to Prince Edward Island and by ship to U.S. East Coast ports and Bermuda. The same facility also receives coal bound for NSPI power generating plants in Point Tupper and Trenton. [Berth: 600 feet; Depth: 50 feet]

- Mulgrave Marine Terminal—is a public facility, with greater draft than the Port Hawkesbury pier. Major cargos include coarse rock salt transhipped from Pugwash or Îles-de-la-Madeleine; bleached sulphide pulp from New Glasgow; fish; and other general cargo. The Strait Superport Corporation and ECBC recently announced that $5 million will be invested in the terminal to better position it to attract oil and gas development. Work will include improvements to infrastructure, construction of a new 35,000 square foot building, and resurfacing of wharf lay-down areas. [Berth: 1,400 feet; Depth: 30 feet]

4. Port Hawkesbury & Mulgrave vessel traffic

We reviewed data provided by the Harbourmaster for 2001 and 2002 to determine the number of ship visits within the public harbours, including the number of vessels loading or discharging cargo. The results for these years are shown below. Previous years' data was not available.

Exhibit II-9
Port Hawkesbury & Mulgrave vessel traffic (number of ships)

Purpose	2001	2002
Loading cargo (only)	309	292
Discharging cargo (only)	137	122
Loading and discharging cargo (on the same trip)	11	13
Subtotal	457	427
Other ship visits	464	454
Total vessel traffic	921	881

Source: KPMG review of data provided by Port Hawkesbury Harbourmaster.

D. Airports

Two airports, at Sydney and Port Hawkesbury, serve Cape Breton Island.

1. Sydney Airport infrastructure

Sydney's airport is classified as a Level III airport, not forming part of Canada's National Airports System. The Sydney Airport Authority assumed responsibility for Sydney's airport from Transport Canada as part of the federal government's commercialization of airports. The Airport Authority is a not-for-profit entity governed by a 13-person Board of Directors. The Airport Authority is a self-funding organization that is not dependent on subsidies.

Facilities include a flight service station, a Canada Customs office, an Environment Canada station, and a business service centre. The airport has two runways, measuring 2,155 metres and 1,829 metres in length, corresponding to declared distances of 7,070 feet and 6,000 feet respectively. The airport's apron measures some 708 feet by 298 feet.

Since 1997, the Airport Authority has invested $11 million in the airport's infrastructure. Investments included upgrades to the runways, aprons, heavy equipment and the terminal. According to the Authority's Executive Director, no additional major investment in infrastructure will be required for the next two decades.

2. Sydney air cargo operations

Sydney Airport receives jet service generally from charter carriers on a seasonal basis. Consistent with the experience of many smaller centres across Canada, infrequent scheduled jet service has been replaced by service with turbo-prop aircraft (e.g., Dash-8's in the case of Sydney) provided several times per day. The impact of reduced aircraft sizes on the cargo needs of Sydney-area companies was not mentioned as an issue with respect to air transportation in our survey of Cape Breton shippers and receivers. Air cargo shipments too large to be accommodated by Dash-8's or other smaller aircraft likely are transported now by air to Halifax and expedited by truck to Cape Breton.

Three air carriers providing cargo services currently serve the Sydney Airport on a regular basis: Air Canada Jazz, Prince Edward Air, and Air St. Pierre. Air St. Pierre provides airfreight service to St. Pierre and Miquelon out of Sydney. Air Canada Jazz provides 5 return flights per day between Sydney and Halifax, and offers cargo services at Sydney through a stand-alone operation including a warehouse, scale, and designated cargo personnel.

Prince Edward Air operates a fleet of twelve aircraft, all turbo-prop or piston powered. Operations cover central and eastern Canada, from Hamilton east. Approximately 90% of the company's operations are geared to cargo services, and 10% to passenger services. Contracts with courier companies make up a large portion of the company's revenues.

Prince Edward Air carries settlement documents for chartered banks on a daily basis throughout the Maritimes, served from their Halifax hub. One of their daily routes involves an aircraft leaving Halifax in the morning to Charlottetown and on to Sydney, then returning to Halifax later in the day with bank data for storage. With this same service, Prince Edward Air loads and unloads a broad range of courier products.

Purolator Courier cancelled its feeder air services throughout Atlantic Canada in November 2000, eliminating early-morning courier service by air to a number of destinations. This move reportedly has resulted in decreased market share and customer satisfaction for Purolator. Industry observers estimate that up to 5,000 lbs. per day of courier material now arrives in Sydney by truck, which used to move by air.

3. Sydney aircraft movements

Aircraft movements at airports are segmented into two basic types, local and itinerant. Local movements do not involve inter-city travel and are not relevant to this study. Itinerant movements at Sydney Airport are shown below on an annual basis for 1996 to 2001, and for the first ten months of 2002.

Exhibit II-10
Itinerant aircraft movements at Sydney Flight Service Station, 1996 to October 2002

	Aircraft			Other Aircraft		
	Jet	Turboprop	Piston	Helicopters	Gliders	Total
2002 Jan - Oct	218	3,742	1,429	496	42	5,927
2001	351	4,571	1,713	839	182	7,656
2000	288	5,940	2,335	697	58	9,318
1999	352	8,714	2,696	841	21	12,624
1998	393	8,826	1,866	1,106	24	12,215
1997	650	8,671	2,222	1,021	30	12,594
1996	420	8,822	2,414	573	30	12,259

Source: Transport Canada, TP141.

Jet aircraft movements have generally declined by 50% or more since their peak in 1997. Rather than making up for this decline, turboprop-powered aircraft movements have also been in steady decline since 1998, and piston-powered aircraft movements in decline since 1999.

The annual number of aircraft movements for turboprop- and piston-powered aircraft corresponds to a daily average of 17 aircraft movements. With each flight leg characterized as a movement (e.g., landing and take-off), this would correspond to an average of approximately 9 return flights per day by non-jet aircraft.

4. Port Hawkesbury Airport infrastructure

The Port Hawkesbury Airport has a 5,000 foot runway capable of handling most corporate aircraft and commercial aircraft up to a Boeing 737. The capability of the runway for night and IFR operations is enhanced by the medium-intensity lighting and the runway identification lights. However, minimal cargo or passenger traffic is handled via the Port Hawkesbury airport, and it is not considered further as part of this study.

III Current Traffic Flows

This chapter identifies current flows of freight volumes to and from Cape Breton. For each mode of transportation, information is provided by commodity and by origin and destination.

A. Highways

Global information on freight tonnages moved by motor carriers is presented below, followed by more detailed information compiled from our survey of Cape Breton shippers and receivers. Truck transportation is the dominant mode of surface transportation to and from Cape Breton.

1. Goods volumes transported by highway mode

Accurate, historical information on the volume of goods transported on Cape Breton highways is not readily available. Nova Scotia participated in the roadside survey carried out under the auspices of the Canadian Council of Motor Transport Administrators in 1998. However, this large database has not been analyzed by DOTPW at the level of detail required to comment on Cape Breton goods traffic.

Statistics Canada regularly surveys large for-hire motor carriers domiciled in Canada. Data published by Statistics Canada is not at the regional level necessary for analyzing Cape Breton traffic. However, Statistics Canada did create special tabulations in support of the *Atlantic Provinces Surface Freight Transportation System Study* prepared for Transport Canada in 2000. This included data on freight movements by truck at the census division level (i.e., by county in Nova Scotia).

The results for Cape Breton counties are shown below. As the level of detail increases, the level of reliability tends to decrease. It is not known what level of confidence should be accorded to the Statistics Canada special tabulation data. In considering these numbers, it is critical to keep in mind the survey framework: that is, the following truck traffic is not included: traffic from small for-hire carriers; short-haul traffic (defined as under 80 km); traffic carried by private carriers; and traffic carried by U.S.-domiciled carriers.

Exhibit III-1
Freight volumes handled by for-hire trucking to/from Cape Breton, 1997

Census Division	000 tonnes	% of Nova Scotia	% of Cape Breton
Inverness County	593.9	5%	25%
Richmond County	125.7	1%	5%
Cape Breton County	1,656.1	14%	69%
Victoria County	21.3	–	1%
Cape Breton total	2,397.0	20%	100%
Nova Scotia total	12,191.7	100%	n/a

Source: Statistics Canada, special tabulation

Exhibit III-1 shows goods volumes moved over long distances by large Canadian for-hire motor carriers, that either originated or terminated (or both) in the four counties of Cape Breton Island. Of the freight volume moved by for-hire trucks generated or received within Nova Scotia, Cape Breton accounted for approximately 20%. Of the volumes originating or terminating in Cape Breton, Cape Breton County accounted for 69% of the volume, while Inverness County accounted for 25%.

The key limitation of Statistics Canada data is that it excludes freight carried by private trucking. No accurate assessment exists of the relative importance (in terms of tonnes carried) between for-hire and private trucking in Canada. However, industry observers tend to believe that private trucking accounts for at least as much volume as for-hire trucking.

Another approach to estimating freight volumes carried by truck on Cape Breton Island could be based on vehicle counts. For example, we may use the vehicle counts at the Canso Causeway as the basis for a partial proxy of truck freight traffic originating or terminating on Cape Breton Island. Referring to Exhibit II-2 in the preceding chapter, some 8,300 vehicles cross the Causeway each day, of which 13.0% or approximately 1,080 per day are trucks. This equals 394,000 trucks on an annual basis. This includes loaded trucks, and trucks that are returning from a delivery with no backhaul. Assuming for our analysis that one-fifth of the trucks managed to

find a backhaul movement, while the other four-fifths did not, then 60% of the trucks counted would be carrying freight.[1]

Not all of these are longer trucks, but the proportion represented by longer trucks is unknown. Of course, shorter trucks carry freight also. Recognizing the mix of different truck lengths, we might assume a conservative average cargo weight per truckload of, say, 20 tonnes. Combining these assumptions would suggest annual freight traffic carried by truck to or from Cape Breton Island of approximately 4,730 thousand tonnes. To the extent that this figure stands as an estimate of private and for-hire truck freight volumes to and from Cape Breton Island, it must be noted that it does not include intra-Island trucking. Thus it excludes long distance traffic that both originates and terminates on the Island (e.g., moving between the Strait Area and Industrial Cape Breton) and also excludes short-haul trucking on the Island.

2. Inbound highway volumes from the shipper survey

Data in this section are based on our survey of shippers. Our shipper survey identified some 105,000 tonnes of freight moved annually by truck to Cape Breton, and another 100,000 tonnes of annual outbound truck freight. It should be noted that a number of large users of highway transportation did not respond to the survey. This total of 205,000 tonnes captured through the shipper survey is approximately four percent of the total goods volume estimated to move by truck to and from Cape Breton.

Although the survey results are not representative of all Cape Breton highway traffic flows, they do provide some insight into goods volume flows in selected corridors and are presented here.

The main products inbound by truck identified in the shipper survey are:

- Food and agricultural products coming from the Maritimes (52,900 tonnes);
- Raw materials[2] coming from the Maritimes (16,182 tonnes);
- Food and agricultural products coming from central Canada (11,050 tonnes); and
- Raw materials from western Canada (8,730 tonnes).

[1] If none of the trucks found backhaul cargo, then 50% of the trucks counted would be carrying freight, and the other 50% would be those same trucks later moving empty in the opposite direction. Boosting the 50% carrying cargo by a fifth of that amount yields 50% plus 10% or 60%.

[2] "Raw materials" includes building materials, gypsum, salt, resin, fly ash, liquid asphalt, saw logs, metals, scrap metals, and cement.

These products are all destined for the Industrial Cape Breton area. They represent 78% of the total inbound truck shipments to Cape Breton according to the results of our survey. Detailed results are found in the table below by region of origin, region of destination, and commodity. No shippers that responded to our survey identified any truck volumes in to the Strait Area. Few shippers or receivers are located in the interior of Cape Breton Island.

Exhibit III-2
Inbound truck freight volumes based on the shipper survey (tonnes)

Origins	Metric Tonnes Inbound – By Truck Destinations	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	16,182	N/a
Petroleum Products	2,144	N/a
Food and Agricultural Products	52,900	N/a
Other	565	N/a
Central Canada		
Raw Materials	2,807	N/a
Petroleum Products	760	N/a
Food and Agricultural Products	11,050	N/a
Other	8,611	N/a
Western Canada		
Raw Materials	8,730	N/a
USA		
Raw Materials	1,166	N/a
Total	**104,915**	**N/a**

3. Outbound highway volumes from the shipper survey

Similar to inbound traffic, truck is the most popular surface mode for outbound traffic as well. The main products outbound by truck identified in the shipper survey are:

- Food and agricultural products going to the Maritimes (34,450 tonnes); and
- Raw materials going to the Maritimes (45,893 tonnes).

Both of these product groupings are coming from Industrial Cape Breton.

According to the survey results, these products represent 80% of the total outbound truck shipments from Cape Breton. A breakdown of the commodities by origin and destination is presented in Exhibit III-3.

Exhibit III-3
Outbound truck freight volumes based on the shipper survey

Origins	Metric Tonnes Outbound – By Truck Destinations	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	45,893	N/a
Food and Agricultural Products	34,450	N/a
Central Canada		
Raw Materials	4,572	N/a
Food and Agricultural Products	1,500	N/a
Manufactured Goods	11,137	N/a
Western Canada		
Manufactured Goods	2,100	N/a
Total	**99,652**	**N/a**

B. Rail

Rail freight volumes into and out of Cape Breton are a fraction of the volumes moved by truck. CBNS did not provide rail freight volumes for traffic moving to and from the Strait Area, so we cannot estimate the total rail volumes to and from Cape Breton. However, the rail freight volumes originating or terminating east of St. Peter's Junction amount to one percent of our estimate for all truck freight into and out of Cape Breton.

We sent surveys to twenty-two rail users. Twelve rail users responded. Rail-related volumes reported by survey respondents account for nearly 80% of rail volumes originated or terminated by currently active rail shippers east of St. Peter's Junction. This significant level of response contrasts with the small proportion of total truck volumes captured by our survey.

1. Inbound rail volumes from the shipper survey

Our shipper survey identified some 43,000 tonnes of goods transported into Cape Breton by rail. The main products inbound by rail identified in the shipper survey are:

- Building materials coming from western Canada (14,009 tonnes);
- Raw materials coming from the United States (13,075 tonnes); and
- Raw materials coming from central Canada. (7,716 tonnes).

These products are all destined for the Industrial Cape Breton area. They represent 78% of the total inbound rail shipments to Cape Breton according to the results of our survey. Further details on inbound rail shipments are noted in Exhibit III-4.

Exhibit III-4
Inbound rail freight volumes based on the shipper survey (tonnes)

Origins	Metric Tonnes Inbound – By Rail Destinations	
	Industrial and Central Cape Breton (Metric Tonnes)	Strait Area (Metric Tonnes)
Maritimes		
Raw Materials	185	N/a
Central Canada		
Raw Materials	7,716	N/a
Petroleum Products	800	N/a
Food and Agricultural Products	4,526	N/a
Western Canada		
Raw Materials	14,009	N/a
Food and Agricultural Products	2,790	N/a
USA		
Raw Materials	13,075	N/a
Total	**43,101**	**N/a**

2. Outbound rail volumes from the shipper survey

Rail freight volumes outbound from Cape Breton are considerably lower than truck volumes identified by shipper survey respondents. Respondents to our survey identified that raw materials were currently being transported out by rail. This is consistent with information reported by CBNS. Survey respondents identified some 12,272 tonnes moving out of Cape Breton by rail as shown in Exhibit III-5.

Exhibit III-5
Outbound rail freight volumes based on the shipper survey (tonnes)

Origins	Metric Tonnes Outbound – By Rail Destinations	
	Industrial and Central Cape Breton (Metric Tonnes)	Strait Area (Metric Tonnes)
Maritimes		
Raw Materials	8,410	N/a
Central Canada		
Raw Materials	3,862	N/a
Total	**12,272**	**N/a**

In summary, Exhibits III-2 through III-5 show that both surface transportation modes (truck and rail) are currently used in Cape Breton. In general, truck is used mainly for higher-value or perishable commodities such as dairy products, food, and finished products, whereas rail is used for bulk commodities such as resin, sawlogs, building materials, and steel scrap.

C. Ports

This section identifies current freight volumes handled by the marine mode in Cape Breton.

1. Inbound marine volumes to Sydney

Inbound freight unloaded at the Port of Sydney from 1996 to 2002 is shown in Exhibit III-6. Inbound gasoline and petroleum product volumes have been fairly consistent over the timeframe. All liquid bulk products are unloaded at Sydney Marine Terminal and delivered by pipeline to Imperial Oil's tank farm. NSPI has been importing coal since 1999 for its power generating stations at Lingan and Point Aconi. In 1997 and 1998, Sysco imported some scrap steel. Since that time, no general cargo has been unloaded at the Port of Sydney.

Exhibit III-6
Marine freight volumes unloaded at Sydney, 1996 to 2002 (tonnes)

Commodity	1996	1997	1998	1999	2000	2001	2002
Gasoline	128,000	120,000	120,000	117,000	116,000	109,000	116,000
Petroleum Products	165,000	169,000	180,000	205,000	162,000	170,000	180,000
Coal	0	0	0	723,000	1,409,000	1,751,000	1,754,000
General Cargo	0	56,000	75,000	0	0	0	0
Total	293,000	345,000	375,000	1,045,000	1,687,000	2,030,000	2,050,000

Source: Sydney Ports Corporation with conversions by KPMG.

Note: Some totals may not add due to rounding.

Note: Figures do not include cargo in trailers or containers handled by Marine Atlantic.

2. Outbound marine volumes from Sydney

Outbound freight loaded at the Port of Sydney from 1996 to 2002 is shown in Exhibit III-7. Outbound shipments of coal ceased in 1998. Outbound general cargo shipments from 1996 through 2000 consisted of finished steel. Outbound shipments in 2002 were of scrap steel, from the deposit of scrap steel at the Sysco site.

Exhibit III-7
Marine freight volumes loaded at Sydney, 1996 to 2002 (tonnes)

Commodity	1996	1997	1998	1999	2000	2001	2002
Coal	87,000	51,000	65,000	0	0	0	0
General Cargo	137,000	185,000	123,000	139,000	18,000	0	88,000
Total	224,000	236,000	188,000	139,000	18,000	0	88,000

Source: Sydney Ports Corporation.

Note: Some totals may not add due to rounding.

Note: Figures do not include cargo in trailers or containers handled by Marine Atlantic.

3. Marine freight volumes loaded and unloaded at Port Hawkesbury & Mulgrave

Marine freight tonnages loaded and unloaded at Port Hawkesbury and Mulgrave in 2002 are shown in Exhibit III-8. Appendix G contains freight volumes for 1999 and 2001 for Port Hawkesbury and Mulgrave combined, and freight volumes for 1995, 1997 and 1998 for Port Hawkesbury alone. Data for other years was incomplete or unavailable.

Exhibit III-8
Marine freight volumes loaded and unloaded at Port Hawkesbury and Mulgrave, 2002 (tonnes)

Commodity	Loaded	Unloaded	Total
Petroleum products	6,172,000	5,461,000	11,633,000
Aggregates	2,578,000		2,578,000
Gypsum	1,477,000		1,477,000
Coal		849,000	849,000
Other *	134,000	271,000	405,000
Total	10,362,000	6,581,000	16,943,000

Source: Harbourmaster, Strait of Canso, with analysis by KPMG
** "Other" may include clay, caustic soda, salt, pulp, fish, and general cargo*

Petroleum products handled by Statia Terminals account for the majority of tonnages both loaded and unloaded. These products arrive from petroleum producing areas around the world, including the North Sea, Nigeria, and Venezuela. They are generally transhipped to U.S. East Coast ports.

Aggregates and gypsum mined in Cape Breton are shipped out to U.S. East Coast ports, and in the case of aggregates also by barge to Prince Edward Island. Coal is landed at Auld's Cove for NSPI generating stations at Point Tupper and Trenton. Other cargos account for smaller volumes, and include clay and caustic soda for use by the Stora Enso calendar paper plant, as well as salt, pulp, fish and other general cargos.

5. Other marine cargo volumes

Commercial traffic handled by Marine Atlantic from 1998 to November 2002 is shown below for the North Sydney—Port aux Basques route. Appendix G provides commercial traffic for the same time period for the North Sydney—Argentia route and combined results: very little commercial traffic is handled on the Argentia route, typically just 0.5% of the combined traffic.

Exhibit III-9
Marine Atlantic commercial traffic (round-trip vehicle counts)
Port aux Basque service

Vehicle type	1998	1999	2000	2001	2002
Straight trucks	3,076	2,764	2,697	2,761	2,706
Tractor-trailers	35,629	37,690	37,812	38,239	39,790
Trailers only	32,008	35,615	35,928	37,464	36,291
Other	288	351	453	169	0
Total	71,001	76,420	76,890	78,633	78,787

Source: Marine Atlantic

Commercial traffic to Port aux Basques is dominated by goods moved in trailers. Traffic levels have been quite steady since 1999. Slightly more than half the trailers that cross are accompanied on the ferry with their tractors, while separate tractor units haul the trailers in Newfoundland for the remainder of trailers.

No other public harbours handle significant freight tonnages. Large volumes of gypsum are shipped from a private dock on the Bras d'Or Lakes by Little Narrows Gypsum to U.S. East Coast ports.

D. Airports

Volumes moved by air freight are a mere fraction of those moved by surface modes. Costs for air freight transportation are generally considered prohibitive except for very high-value cargo moving in small volumes, and in the case of rush deliveries of parts, etc.

The Sydney Airport Authority does not compile air cargo figures. Statistics Canada reported the totals in Exhibit III-10 for air cargo tonnage handled by major carriers at Sydney Airport for 2001 (data was not available for prior years). We note that Statistics Canada's figures indicate a greater amount of freight was loaded than unloaded at Sydney, which is counter to the experience (described below) of Air Canada Jazz and Prince Edward Air, and also seems counter-intuitive. We were unable to explain this apparent anomaly in the data.

Exhibit III-10
Air cargo handled at Sydney Airport by major carriers, 2001 (tonnes)

Unloaded air cargo (inbound freight)	57.3
Loaded air cargo (outbound freight)	73.3
Total handled	130.6

Source: Statistics Canada
Note: includes major scheduled and charter carriers only

Tonnage figures were not available from Air Canada Jazz. They report that they typically handle more inbound cargo than outbound. Air Canada Jazz estimates that their cargo volumes at Sydney have decreased by approximately 30-40% over the past few years. Airline officials believe that they are losing this freight traffic between Sydney and Halifax to the highway mode, consistent with their experience for passenger loadings.

Typical annual tonnages handled to and from Sydney by Prince Edward Air and Air St. Pierre are indicated in Exhibit III-11. The majority of air cargo is routed via Halifax.

Exhibit III-11
Air cargo handled at Sydney Airport, as reported by air carriers (approximate annual tonnes)

Direction	Prince Edward Air	Air St. Pierre	Air Canada Jazz
Unloaded air cargo (inbound freight)	102	0.4	n.a.
Loaded air cargo (outbound freight)	51	2.7	n.a.
Total handled	153	3.1	n.a.

Source: Prince Edward Air and Air St. Pierre
Note: Tonnage volumes were not available from Air Canada Jazz

IV Expected Changes in Traffic Flows

We considered expected changes in traffic flows across all transportation modes under four broad headings, based on available information and data as well as recommendations of the Steering Committee, Rail Users' Group and other key informants, particularly government officials. The categories were:

- Traffic flow changes among existing Cape Breton shippers and receivers;
- Potential traffic resulting from commercial concepts, defined as perceived future business opportunities with the potential to generate significant freight movement in future;
- Potential traffic resulting from other opportunities, generally defined as infrastructure and/or lands which may eventually be deployed by existing enterprises or used to attract new business and, thereby, result in eventual freight movement; and
- Traffic requirements of NSPI, defined as the assessment of the electric power utility's fuel demand, source of supply, logistics of fuel handling, transport options and transportation cost differential.

A. Expected changes in rail traffic flows

This section examines likely changes in rail traffic flows organized according to the four categories noted above.

1. Current users of Cape Breton rail

a) Freight shippers and receivers

We estimate that current users of Cape Breton rail (located east of St. Peter's Junction) are shipping 66,100 tonnes this year. (This figure exceeds the results from the shipper survey as reported in Chapters III and V: we applied a multiplier factor to the survey results to account for active rail users who did not respond to the survey, as explained in Appendix K.)

We estimate that rail tonnages for current users of rail east of St. Peter's Junction will increase to 112,700 tonnes in two years, and will then decline somewhat to 99,600 tonnes in five years. (Again, these results are higher than those reported in Chapter V with respect to future traffic flows; the origin-destination detail in Chapter V is based on completed surveys only.)

In percentage terms these expected increases are noteworthy, at 70% and 50% increases, respectively, compared to current rail volumes for active users. In terms of additional carloads, the grossed-up survey results indicate an increase from current users' levels of 708 cars in two years, declining somewhat to an increase of 565 cars in five years compared to current levels. Such increases would still be considerably short of the volumes seen in the recent past, as identified in Chapter II.

One shipper in particular, moving breakbulk cargo, is planning on a major expansion in volumes in the next two years, increasing shipments by some 2.3 times compared to current levels. Other shippers reported future movements ranging from no increase from today's level, to increases on the order of 66%. After removing the impact of the largest-increasing shipper, the reported increase for remaining active users would amount to a 40% increase in tonnes in two years' time.

The increases are reported to come from increased penetration of existing geographic markets with existing commodities. Current rail users do not expect to move different commodities, or serve different markets, in any appreciable way in the next two to five years compared to present.

b) VIA Rail – Bras d'Or

VIA Rail offers a weekly passenger excursion train called the Bras d'Or, from Halifax to Sydney and return during the prime tourist season. The train is a premium tourist service, and with the exception of Port Hawkesbury there are no stops or provisions made for connecting services. Last year the service completed the final year of a three-year pilot period. VIA Rail has not confirmed that it plans to continue the service in future, although this appears likely.

CBNS has indicated that additional coaches or indeed an additional train frequency would have no appreciable impact on the financial viability of the St. Peter's Junction-to-Sydney section of the rail line. Passenger service results in higher costs for CBNS in the areas of track maintenance, train crew wages, and liability insurance. The Bras d'Or train is understood to be revenue-neutral to CBNS.

2. Identified commercial concepts

We considered several future business opportunities with the perceived potential to generate future traffic. Our findings for these commercial concepts are summarized below. They are discussed in greater detail in Appendix H.

a) Little Narrows gypsum

USG considers the practicality of transhipping gypsum from Little Narrows to the Port of Sydney to be remote in the near to mid-term. Consequently, this concept is not expected to have a

material impact on traffic flows in the near-term. However, in the longer term the absence of rail could reasonably be expected to weigh heavily on consideration of this matter.

b) Donkin coal

A colliery at Donkin is expected to be a major capital undertaking. The economics of the project are anticipated to be largely based on significant annual volumes of coal production. While the practicality of this concept is in question given current circumstances and, therefore, its potential to impact traffic flows in the near-term is remote, access to rail can reasonably be assumed to be one of a series of consequential factors in whether the mine is eventually developed.

c) Surface coal

In all likelihood, surface coal in Cape Breton County will be consumed at Lingan generating plant. Expectations are that should this prove to be the case it will be transported by truck, thereby, increasing intra-Island truck volumes.

d) Offshore fabrication and supply

Ideally fabrication and supply facilities are served by a range of transportation infrastructure. Because of the nature of the business there are a range of factors that will influence the competitive position of local service providers. Other modal options including barge are available for moving large volumes or project cargo if these materialize in the longer term. However, this opportunity is not anticipated to have a noticeable impact on traffic volumes in the near term. Offshore fabrication contracts typically are of significant value. Incremental costs associated with other transportation modes, such as marine or truck, are not anticipated to depreciate the overall position of firms to the point of non-competitiveness.

e) Fly ash

Until such time as NSPI changes its fuel mix at Lingan and Point Aconi and eliminates petroleum coke, fly ash will not be a readily marketable commodity because of the offending chemical characteristics of carbon residues. If fly ash does become available again as a substitute for cement, it would seem reasonable to assume that given historical market volumes and distances, it conceivably could be transported by truck.

f) Aggregate and limestone

Because of margins, typically aggregate and limestone are sold in large volumes and, therefore, transported most economically by rail or barge. In the case of deposits recently discovered in

Victoria County, west of Sydney and south central Cape Breton there appears to be considerably more work that has to be done before commercial viability is confirmed. As regards deposits in areas immediately adjacent to the CBNS rail line, it would seem fair to suggest that without access to rail a business case for mining operations will be more difficult to develop. In any event, this perceived opportunity is seen as unlikely to impact on traffic flows in the foreseeable future.

Our findings for changes to traffic flows from commercial concepts are summarized below in Exhibit IV-1.

Exhibit IV-1
Summary of expected traffic flows from commercial concepts

Perceived Opportunity	Description	Conceptual Stage	Near Term Prospects	Likely Change in Traffic Flows next 2-5 yrs.
• Gypsum – Little Narrows	Bulk transport of gypsum to Port of Sydney from Little Narrows to top-up company vessel	Occasionally discussed but considered impractical at the present time	Not anticipated to emerge in next ten year planning cycle	No impact
• Donkin Coal	Develop Donkin Mine to extract coal from Harbour Seam in Sydney Coalfield	Province expecting to gain control of coal leases and call for expressions of interest before year end	Interest from two local groups. Coal contract fundamental to the project, concerns over coal quality, financing anticipated to be a major challenge to current proponents	Highly questionable
•Surface Coal	Open pit mining of surface coal within Cape Breton County	Deposits identified and quantified. Province to call for expressions of interest before year end. Product expected to be of interest to NSPI	Mining operations anticipated to begin within next 12-18 months subject to necessary approvals. Coal likely to remain on Cape Breton and be consumed at Lingan. Rail transport not considered an option	Potential increase in truck traffic
• Off Shore Fabrication and Supply	Fabrication yard to build and supply steel structures for off-shore exploration and development particularly in areas northeast of the Scotia Shelf off Cape Breton. Supply base to provide for off-shore industry needs in the case of areas northeast of the Scotian Shelf	Opportunity analysis completed, fabrication capacity being developed in Sydney area. Planning on-going for a supply base	Joint venture between local interests and experienced international firm for Tier 2 work at Sable Offshore project and Deep Panuke	Possible but not probable
• Fly Ash	Sale of fly ash at Lingan generating station to off-Island cement producers as a substitute for cement	NSPI continues interested in markets for fly ash	Recent decision to burn petroleum coke has rendered fly ash unsuitable for cement replacement.	Possible but not probable
• Aggregate	Sand deposit found in Victoria County and believed to be commercially viable	Additional information required to proceed	Deposit must be delineated and quantified, project proponent must be identified and commercial viability	Possible but not probable
• Limestone	Deposit identified in Boisdale Hills	Preliminary discussions opened with project proponent	Commercial viability must be assessed, markets confirmed and design engineering completed	Possible but not probable

3. Other developments not at a commercial concept stage

This section reviews other possible changes to traffic flows.

a) Sysco site

Until recently, the Sysco site in central Sydney housed an operating steel mill. Comprising more than 440 acres it is replete with infrastructure, including buildings, roads, wharf, water and sewage, and rail spur lines. The steel mill is in an advanced stage of decommissioning and efforts are underway to reposition the property for future use employing strategic infrastructure. A recent land use plan and re-development strategy suggests a number of potential uses for the Sysco wharf and backup land, including: bulk commodities terminal, offshore supply base, container and break-bulk cargo and project cargo. As a first step, agreement has been reached with Provincial Energy Ventures Inc. (PEV), an affiliate of American Metals and Coal International (AMCI) to develop a bulk commodities terminal. PEV proposes to receive coal by marine vessel in bulk at the Sysco site and break the cargo into smaller lots for transhipment by vessel to market. As well, Sysco has made efforts to have the site used in conjunction with coal shipments into Sydney by NSPI for distribution to its electrical power stations.

At present, coal appears to be the only major near term source of large cargo volumes with potential impact on rail. The opportunity is discussed later in this chapter and is analyzed in greater detail in Appendix I.

b) Provincial Energy Ventures (PEV)

As noted above, PEV is established in Nova Scotia to operate in Sydney at the site of the former Sysco docking facility. Core business operations include coal and salt cargos received by marine vessel, handled and redeployed out of Sydney by vessel and truck to destinations west. Initially PEV anticipates yearly volumes of coal in the 500,000 to 700,000 tonne range arriving on 50,000 tonne vessels and exclusively transhipped on smaller barges (14,000 tonnes loaded tonnage on average) and smaller ships (27,000 tonnes loaded tonnage on average) to coastal U.S. electrical generating stations. Volumes are forecast to increase to 1.5 to 2.0 million tonnes yearly in the longer term.

Additionally, PEV expects to import road salt by ship (initially 60,000 tonnes yearly) in 20,000 tonne lots for transport by truck (about 2,400 truckloads yearly) to Nova Scotia highway depots. The distributed nature of salt depots makes this cargo appropriate for movement by truck but not by rail.

c) Newfoundland Intermodal Traffic

We considered the prospect of diverting intermodal traffic destined for Newfoundland from Halifax to North Sydney. The opportunity appears to have been based on the assumption that CN operates and controls the service and may re-consider routing traffic via North Sydney. In connection with the opportunity, it is understood that yearly volumes through Halifax to Newfoundland approximate 2,000 truck trailers.

We are informed that Clarke Transport, the integrated logistics provider and national trucking company, controls this intermodal traffic to Newfoundland and is responsible for its routing via Halifax. Clarke has 40 offices across North American and offers a full range of services. The company consolidates freight from terminals in Montreal, Toronto and Kitchener and offers integrated services to Central, Western and Atlantic Canada. We understand that Clarke selected St. John's as the Newfoundland gateway because the capital city accounts for some 80% of all traffic originating and terminating in the province. Clarke made the business decision favouring less frequent, but direct marine service to St. John's via Halifax rather than the greater frequency of marine service via North Sydney to Port aux Basques.

d) Lumber from Newfoundland

From all accounts this is a relatively new development. It is understood that round and finished lumber is being transported from Newfoundland to mainland Canadian markets as a backhaul commodity by truckers, at extremely competitive transport rates. Additional information such as volumes, points of origin, destination, and intermodal transfers, are unclear. However, it likely would be extremely challenging for CBNS and CN to compete with rates charged by truckers for this backhaul movement, especially without also securing the inbound traffic.

4. Nova Scotia Power coal transportation

At the present time, imported coal is being transported by rail from Auld's Cove to NSPI's generating station at Point Tupper. Approximately 400,000 tonnes are transported annually to meet Point Tupper coal generation needs.

NSPI is currently evaluating the option of constructing a new uploading terminal at its Point Tupper location. This may occur during the period covered by this projection (i.e., within two to five years) and coal would then be shipped by rail to NSPI's Trenton generating station from Point Tupper. The Trenton generating station requires approximately 500,000 tonnes of imported coal per annum. This quantity of coal is likely to continue up to and including 2008. Subsequently to 2008, the quantity of imported coal required by Trenton should drop to as little as 100,000 tonnes per annum depending on NSPI's plans regarding replacement of Trenton's #5 power generation unit.

Approximately 1.34 million tonnes of imported coal are transported along a dedicated rail line from unloading facilities at the Port of Sydney to NSPI's Lingan generating station. It is possible over the next five years that the quantity of coal transported by this rail line may decrease to as little as 1.1 million tonnes depending on how rapid the development of additional strip mining coal deposits can be developed.

Transportation and handling cost differentials make it prohibitively expensive for NSPI to ship coal by rail from Sydney to Point Tupper or Trenton, or from Auld's Cove or Point Tupper to Point Aconi and Lingan. This finding is fully detailed in Appendix I.

NSPI has indicated that it would provide annual support to a Cape Breton rail line over a ten year period with a net present value of $1.0 to $2.0 million as part of its contingency plan to transport coal to its generating stations should one of its port unloading facilities suffer a catastrophic event. While the potential for such a catastrophic event may be nominal, this would be the only circumstances under which coal would likely be shipped by rail between Sydney and Auld's Cove or Point Tupper to meet NSPI's power generation needs.

5. Conclusions

Current rail users plan to increase their rail freight volumes over the next two to five years. Compared to existing volumes moved by these users, the increases are significant. Compared to volumes moved on the rail line east of St. Peter's Junction in recent years, the planned volume increases are less significant.

We found that some commercial concepts examined for purposes of identifying changes to current traffic flows are at a very early stage in development, while certain others must overcome particular and, in some instances, significant commercial challenges. The remainder, because of circumstance, are more likely to use modes other than rail if developed as currently planned. In short, the commercial concepts examined are unlikely to add any appreciable rail freight volumes in the next two to five years. Our analysis of NSPI's situation suggests that while NSPI may be interested in retaining rail as a strategic option for transportation, NSPI's needs are more economically met by other means than moving coal by rail across Cape Breton.

The net effect of expected changes to rail freight volumes in the next two to five years is unlikely to result in sufficient cargo movements for CBNS to restore the economies of rail service between St. Peter's Junction and Sydney.

B. Expected changes in highway traffic flows

This section considers expected changes to highway traffic flows as reported from the survey of shippers as well as other expected truck freight volume changes in Cape Breton.

1. Results of shippers surveyed

Truck freight volumes into and out of Cape Breton for surveyed shippers amount to some 205,000 tonnes per year currently. This figure is expected to rise somewhat in two years' time, to 215,000 tonnes (an increase of 5%). In five years' time the total truck freight volumes among surveyed shippers is expected to be 218,000 tonnes (an increase of 7% over current levels). In terms of reported truckloads, the expected changes from the current amount of 8,039 truckloads would amount to totals of 8,197 truckloads in two years and 8,303 truckloads in five years. The origin-destination corridors will not change appreciably from current flows. Future origin-destination flows are described in the next chapter.

Highway trucking volumes captured by the shipper survey are a small proportion of total highway trucking volumes in Cape Breton. We do not expect changes to total Cape Breton trucking volumes to differ materially in proportional terms to those reported from the survey of shippers.

2. Changes as a result of potential modal shifts

We noted earlier in this chapter that expected changes in rail freight volumes are likely to be insufficient to materially change the economics of the rail line east of St. Peter's Junction. This section discusses the results for current rail users in the event that rail service is discontinued. The results are based on our interviews and survey of shippers. In the event of rail service elimination, current rail users would incur one of two types of impacts:

- Continued operations with incremental cost increases; or
- Closure and/or relocation of business operations.

a) Continued operations with incremental cost increases

Some rail users reported that their freight currently moving by rail would shift modes, and in all cases would shift to the trucking mode. We determined the amount of freight tonnages currently moving by rail that would shift to the trucking mode if rail was no longer available, based on completed shippers' surveys. We then increased the reported amount to account for non-respondents to the survey. This methodology is detailed in Appendix K. We estimated the total

amount of rail freight expected to shift modes to truck (if required) by 2004 to be 44,700 tonnes. This corresponded to some 1,790 annual truckloads of incremental highway freight that is currently moved by rail. Including empty return trips, this increment amounts to approximately three percent of current traffic counts for large trucks on Cape Breton highways.

Cost increases associated with a modal shift to truck could take the form of:

- Higher rates for transport and handling;
- Other recurring costs such as additional labour; and
- Capital investment in plant infrastructure to accommodate the modal shift.

We estimate that the aggregate incremental increase in transport and handling rates associated with a modal shift to truck by current rail users would approximate $1.6 million annually. This compares with an aggregate rail freight bill of approximately $4.1 million annually at present. Other incremental annual recurring costs would be around $240,000 for operating expenses plus $130,000 in wages for an additional 3 employees. Required infrastructure investment on a one-time basis would be about $1.1 million. Appendix K expands on these results.

We note that there are off-setting positive economic impacts that would arise, such as increased economic activity generated by trucking companies, including local truckers. These positive impacts have not been quantified.

While loss of rail is anticipated to impact operating costs for current users, surveys and interviews provided no indication that changed cost structures would affect overall competitiveness in existing markets or significantly diminish the potential to enter new markets. Some current rail users cited the primary business impact of the loss of rail as a reduction in the potential for new investment in expanded facilities locally. However, this did not seem to be an issue in the near to mid-term.

b) Closure and/or relocation of business operations

Interviews and survey data indicate that loss of rail service would be directly and most significantly felt by Sydney-based business operations engaged in the transhipment of building supplies to Newfoundland; in the transhipment of feed and grain products to Newfoundland; and for the outbound movement of round wood. In 2002 the enterprises moved about 26,000 tonnes of product by rail comprising some 417 rail cars. For Sydney-based businesses involved in transhipments to Newfoundland, the local market is not by itself sufficient to sustain operations in Cape Breton.

The bulk of building supplies originate in British Columbia and Alberta. In general, the enterprises in question rely on Newfoundland for in excess of 75% of current business. Because of tight margins, modal shift to truck at a location west of St. Peter's Junction would not work to the advantage of the Sydney operations. These shippers report that transhipment would almost certainly be relocated to a major centre within the region with Newfoundland market access and appropriate reload facilities, or alternatively marine shipments from Ontario and the eastern U.S. would be routed direct to Port aux Basques.

As the Sydney-based transhipment operations are units of national and regional businesses, the overall impact of the closure of the railway is not anticipated to be particularly consequential on the companies as a whole. The main adjustment is expected to involve distribution networks. While costs of doing business are likely to rise incrementally the net impact on sales and overall profitability is not anticipated to be appreciable.

Abandonment of Sydney operations in the case of the transhipment ventures referred to above, or a diminishment of business operations in the case of a local exporter of round wood, would result in lost sales in Cape Breton approximating $3.7 million, the termination of 13.5 FTE's of employment and a payroll of about $290,000 as well as a decline of about $240,000 in sales among current local suppliers of materials. One of the transhipment companies identified capital expenditures for relocation of some $900,000 in storage facilities. Other respondents did not quantify one-time investment impacts. We estimate also that Marine Atlantic would see a reduction in tariffs of $470,000 from the loss of traffic. Appendix K expands on these results.

3. Changes from coal transportation

Currently 400,000 tonnes of imported coal per annum are trucked to NSPI's Point Aconi generating station from unloading facilities at the Port of Sydney. This movement of coal is anticipated to continue for the foreseeable future.

In addition to this imported coal, approximately 60,000 tonnes per annum of domestic coal are trucked from strip mining operations located in Cape Breton County to NSPI's Lingan generating station. Depending on how quickly additional strip mine coal deposits can be developed, domestic coal transported by truck from Cape Breton County may increase to a maximum of 300,000 tonnes per annum.

In the case of a catastrophic event occurring, which would temporarily close suitable terminals at one of the two ports NSPI uses to unload imported coal shipments, there would be potential for additional truck traffic between Sydney and Auld's Cove or Point Tupper. While the potential for such an event may be nominal, this would be the only circumstance under which coal would likely be shipped by truck between Sydney and Auld's Cove/Point Tupper to meet NSPI's power generation needs.

4. Changes from other bulk cargo movements

Georgia-Pacific's recently-opened gypsum quarry in Melford is expected to result in transportation from the quarry to port at Port Hawkesbury in the order of 1.4 million tonnes annually when operations reach a steady state. This tonnage will move by bulk truck, and will add some 42,100 truckloads annually via Highway 105 and through Port Hastings and Port Hawkesbury to the marine terminal. Georgia-Pacific will close later this year its gypsum quarry at Sugar Camp Lake (17 km from Point Tupper), which had moved the same annual volumes also by truck. Thus, the Melford operation has no net impact on intra-Island truck freight volumes. The Melford routing will add truck traffic to Highway 105 and through Port Hawkesbury.

It should be noted that the scope of this present Transportation Market Analysis was on traffic to and from Cape Breton Island, rather than intra-Island traffic. We have not examined other intra-Island truck traffic in detail, other than for our understanding of NSPI's coal sourcing needs.

5. Opportunities for surface transport efficiencies

This section discusses opportunities for Cape Breton shippers to improve loaded backhauls, consolidate shipments, and use intermodal services. Direct comments from shippers on these issues are reported in Appendix F.

a) Backhaul utilization

Truck traffic to and from Cape Breton Island includes a sizeable proportion of empty backhaul movements. The extent of this imbalance would be consistent with other regions in Canada, with the exception of the more densely populated Quebec City to Windsor corridor where a more even geographic distribution of manufacturers, suppliers, and retailers provides a greater opportunity to find backhauls.

Some Cape Breton shippers presently work with regional carriers to find backhauls in and out of Cape Breton, and continue to seek opportunities. Other shippers manage to arrange backhaul movements using private fleets or find backhaul moves between different operations of the same organization. However, shippers are highly aware that their interface with customers is often via the intermediary of their truckers, who "essentially represent us to customers." Shippers are chiefly concerned with the level of service directly to customers, and are not prepared to jeopardize relationships in the search for backhaul movements. Other shippers reported that while they do try to minimize empty backhauls, most times they could not match up to meet deadlines.

One specific suggestion related to the possibility of using backhauls to transport barite and fluorite to Ontario or the eastern US. In general, however, the overriding concern of shippers to

provide superior service and meet deadlines reduces opportunities to generate more backhaul cargos to or from Cape Breton.

b) Consolidation of facilities

Some shippers using private fleets report that they occasionally move competitors' products to the same destination, helping to defray transportation costs. Some others arrange consolidation among their own network of facilities. Some consolidation also does occur with shippers based in Halifax for long distance movements such as to the West Coast.

Among shippers surveyed, the preponderance of truck freight was for outbound shipments. The prevailing view is that most truck shipments are very time sensitive and shippers would have to partner with others who are not as time sensitive. Matching up loads for consolidation among shippers with different schedules, and varying or erratic shipping patterns remains a basic challenge. While shippers are interested in reducing their costs of transportation, service factors remain paramount: little concrete opportunity was found for greater consolidation of shipments through Maritime consolidation facilities. Also, most shipments to and from Cape Breton are in truckload lots and would not benefit from consolidation.

c) Intermodal transportation and truck/rail reload centres

Intermodal transportation (e.g., trailer-on-flatcar) is very lightly used by Cape Breton shippers surveyed. For example, Day & Ross, a major regional trucking company, provides intermodal service to just one Cape Breton-based shipper. We understand that a significant amount of inbound freight for large retailers with operations in Cape Breton such as Wal-Mart and Canadian Tire is handled intermodally via Halifax. Based on the relatively small volumes destined for Cape Breton it appears unlikely that this pattern would change in favour of re-directing intermodal shipments to Point Tupper, for example.

Among current rail users facing the prospect of reloading rail shipments onto trucks for delivery across Cape Breton, most of those shippers who expressed a preference preferred Point Tupper as the best-suited location for reloading from rail to truck. One favoured Moncton, another suggested Truro as a possibility, while another expected to replace rail movements with marine transportation via the Port of Halifax. In general, though, it appears that shippers have not extensively reviewed their options for reload centres, and these results must be considered preliminary.

In the event that rail service was discontinued, it appears that Point Tupper would be the likely site for reloading freight between rail and truck (which, of course, would require construction of a reload centre by CBNS). Other reload options would remain for shippers, in particular Halifax or Moncton. Our review of current rail traffic likely to shift modes, and current rail traffic likely to

disappear in the event of discontinued rail service across Cape Breton, indicates that CBNS might still move some 21,000 tonnes of freight annually over the remainder of its line (Point Tupper to Truro) for Cape Breton-based shippers east of Point Tupper/St. Peter's Junction. This is nearly one-third of the rail volumes currently shipped east of St. Peter's Junction for active shippers.

6. Conclusions

Expected changes to highway traffic volumes from surveyed shippers represent modest growth, on the order of 5% over two years, and 7% over five years. We would not expect total truck traffic to and from Cape Breton to exceed or differ materially from these growth rates. We found opportunities to improve the cost-effectiveness of truck transportation for Cape Breton shippers through improved backhaul utilization or consolidation of partial loads to be very limited.

In the event that freight currently transported by rail is required to shift modes, the incremental increase in truck freight would amount to some 44,700 tonnes per year by 2004, and add some 1,790 loaded trucks to existing truck traffic levels for Cape Breton highways. (This would increase large truck traffic in Cape Breton by three percent.) Where freight may be required to shift from rail to truck, the favoured point for reloading appears to be Point Tupper. CBNS may expect to retain one-third of the rail volumes currently moved east of St. Peter's Junction, for movement over the western portion of the rail line to Truro.

C. Expected changes in marine traffic flows

This section looks at expected changes in marine traffic flows from the perspective of changes to the existing traffic base, new developments for bulk cargo, the implications of NSPI's requirements for marine transportation, and commercial concepts for marine freight not yet realized.

1. Current Cape Breton marine traffic base

Cargos presently handled at the Port of Sydney consist of gasoline, other petroleum products, and coal. Freight volumes for these cargos are not expected to change materially in the next two to five years. With the reduction in Sysco's stockpile of scrap material, no general cargo was handled in 2002 and the remaining material may yield one or two shipments in total.

Cargos presently handled at the public harbours of Port Hawkesbury and Mulgrave include petroleum products, aggregates, gypsum, coal, and general cargo. Coal and gypsum tend to remain the steadiest in tonnage from year to year, based on steady, long-term demand for NSPI's power generation and for gypsum / wallboard manufacturers. For other commodities, volumes

are not expected to change over the next two to five years outside of the normal fluctuations seen in recent years.

2. Marine transhipment of bulk cargos

Coal transhipment via the Port of Sydney may be expected to add from 0.5 million up to 2.0 million tonnes annually to the port's throughput. PEV plans to handle this coal at the Sysco site for transhipment to US east coast ports.

3. Coal transportation

Currently, NSPI is importing approximately 1.75 million tonnes of coal per annum through the Port of Sydney. The port has two facilities suitable for coal unloading. NSPI has entered into a long term contract with one operator to unload and transfer coal to its Lingan and Point Aconi generating stations. It is possible that the quantity of coal being imported may be reduced to 1.5 million tonnes depending on the development of additional strip mining operations in Cape Breton County. Current shipments translate into approximately 39 to 43 vessel visits per annum based on Panamax size self unloading vessels. If the shelf at the entrance to the harbour can be dredged to allow for maximum draft, it may result in approximately 10% fewer vessel landings per annum.

While Auld's Cove is technically not on Cape Breton Island, its location across the Strait of Canso at the causeway makes it relevant to Cape Breton transportation. At present, approximately 900,000 tonnes of imported coal is delivered per annum to Auld's Cove. This represents approximately 16 to 18 vessels per annum based on Panamax size self unloading vessels currently used by NSPI to ship coal. NSPI is considering the construction of a marine unloading terminal at its Point Tupper generating station located on land adjacent to the Strait of Canso.

Utilizing one port or the other to import all NSPI coal generating needs was examined in Appendix I. Transportation and handling cost differentials make it prohibitively expensive for NSP to utilize a one port transportation model. It also increases the risk of disruption in supply should a catastrophic event occur at the receiving port. By utilizing a two port strategy, with potential alternative unloading options at each port location, the risk of major disruptions to supply is minimized.

4. Commercial concepts involving marine transportation

Other potential developments that have not yet been realized centre around attracting general cargo to the Port of Sydney. In the much longer term, container traffic through the Strait of Canso is a possibility.

a) Port of Sydney containerized and general cargo

The Port of Sydney has several advantages that could help it to secure some general cargo. The port's proximity to shipping lanes, lack of major delays caused by harbour ice, and in particular its lower tariffs and labour rates compared to larger regional ports such as Halifax or Saint John are all advantages. However, the port handles no general cargo at present, and faces several challenges. These challenges include container handling infrastructure, the financial ability or incentive to solicit traffic and competition from other ports.

The lack of a spreader for handling containers makes it difficult to efficiently load or unload containerized cargo. On the other hand, installation of appropriate equipment provides no assurance that traffic would materialize. Shippers still need to develop a business case for Sydney. The Sydney Ports Corporation, while profitable, lacks financial resources to aggressively market its facilities. This situation is not expected to materially improve for some time, as the Ports Corporation pays down its borrowed funds, and as long as it is reliant on tariffs generated only from ships calling at the Sydney Marine Terminal. Other operators within the harbour also either lack funds to aggressively pursue general cargo, or plan to focus on bulk cargos instead.

General cargo opportunities include targeting cargos coming from smaller ports overseas, which may be less likely to favour large, established Canadian container ports; coastal marine transhipment for smaller centres such as St. Pierre or parts of Newfoundland; and the diversion of partial loads otherwise headed for St. Lawrence River ports. The greater land transportation distances required from Sydney to points in New Brunswick or Central Canada might be at least partially offset by lower port costs, and attractive backhaul trucking rates may be available from carriers returning from Newfoundland. Such trucks could be carried intermodally or direct over the highway. Other competing smaller ports in the Maritimes may also benefit from similar positive factors, and may also have other advantages such as no ice breaking requirements.

b) Offshore fabrication and supply

Opportunities to generate marine traffic at the Port of Sydney for offshore fabrication or supply within the shorter term time frame of this study are considered limited.

c) Port Hawkesbury containerized cargo

The natural attributes of the Strait of Canso make it in some ways well-positioned to serve future-generation container ships looking for one or two strategic load ports per continent. However, it is widely recognized that for a variety of reasons, such a development for the Strait of Canso is likely to remain a number of years away, and beyond the timeframe of two to five years considered in this study.

5. Conclusions

In comparison to total volumes handled at the Port of Sydney, future developments involving the marine transhipment of bulk cargo could be significant. Future general cargo movements at Sydney are a possibility over the next five years, although several challenges need to be considered. Future volumes at Port Hawkesbury are not expected to vary beyond the typical year to year fluctuations common for that port.

D. Expected changes in air traffic flows

No significant changes to Cape Breton air traffic flows are anticipated. There is some indication that the frequency of flights to Sydney by scheduled carriers may diminish, but this is not expected to impact on the availability of sufficient cargo capacity to meet the needs of Cape Breton air cargo users.

V Future Traffic Flows

In this chapter we present our forecasts for future freight volumes to and from Cape Breton by mode of transport.

A. Highways

We estimated current truck freight volumes to and from Cape Breton to be 4.73 million tonnes annually. This volume may be expected to increase modestly over the short to medium term, in line with the rate of expected increase among respondents to our survey, yielding the following forecast.

Exhibit V-1
Forecasted truck freight volumes to and from Cape Breton, 2004 & 2007 (tonnes)

Year	2002	2004	2007
Total truck volume (est.)	4,730,000	4,850,000	5,025,000

The focus of this study is on freight moved to or from Cape Breton, rather than on intra-Island traffic. However, we would make the following comments regarding some significant issues.

- Truck traffic carrying 1.4 million tonnes of gypsum annually from the Melford quarry will not add to overall levels of freight on the Island, as this will replace an equivalent volume from another Cape Breton site being phased out.

- Surface-mined coal moved by truck to NSPI's Lingan generating station might be expected to be moved in greater quantities than at present, resulting in an increase of up to another 240,000 tonnes trucked in future above the present level of 60,000 tonnes.

- Untapped deposits of aggregates, limestone or dolomite in Cape Breton may at some stage reach commercial development, and may add to highway volumes. However, these deposits are far from a commercial reality at present, and there is insufficient evidence regarding their feasibility, markets, and modal options to quantify their effect on future transportation requirements.

The effect of a modal shift from rail to truck, which could add some 44,000 tonnes annually to Cape Breton highways, should be viewed in the context both of total truck volumes to and from Cape Breton, and also with regard to intra-Island truck volumes particularly for bulk products.

The remainder of this section addresses the portion of Cape Breton highway volumes identified in our shipper survey.

1. Inbound highway volumes from the shipper survey

The inbound highway volumes illustrated in the table below were obtained from the shippers' survey results. Although the survey results are not representative of all Cape Breton highway traffic flows, they do provide some insight into volumes by corridor for selected commodities. For a detailed breakdown of these truck freight flows please refer to Appendix J.

Truck inbound flows to Cape Breton are expected to remain very consistent in 2004 and 2007 with continued rail service. The main products inbound by truck in 2004 and 2007 are the same as the current mix: dairy products, food, salt, and building supplies. The majority of these products (more than 90%) are destined for the Industrial Cape Breton market.

Truck inbound flows to Cape Breton without rail service are expected to increase because of the effect of a modal shift from rail to truck transportation. Freight volumes in 2004 and 2007 are expected to be some 17,000 tonnes greater under the scenario "without rail" than with continued rail service. The mix of goods transported is expected to remain similar with rail as without.

Exhibit V-2
Inbound by truck to Cape Breton (tonnes)

Origins	2004 With Rail	2007 With Rail	2004 Without Rail	2007 Without Rail
Maritimes	71,762	72,285	73,119	73,613
Central Canada	22,652	23,018	31,073	30,478
Western Canada	8,700	8,700	2,902	3,600
USA	1,117	1,117	13,662	14,620
Total	104,231	105,120	120,756	122,311

2. Outbound highway volumes from the shipper survey

Outbound freight by truck is expected to remain quite consistent between 2004 and 2007 under both scenarios. Total outbound volumes for shippers surveyed under the scenario "without rail" are actually projected to decrease slightly, compared to continued rail service. The proposed decision of some shippers to scale back their rate of expansion in the absence of rail, along with the proposed closure of Cape Breton operations by some other shippers under this scenario, explains the result.

Exhibit V-3
Outbound by truck from Cape Breton (tonnes)

Destinations	2004 With Rail	2007 With Rail	2004 Without Rail	2007 Without Rail
Maritimes	83,804	84,311	82,317	82,823
Central Canada	18,333	19,333	18,033	18,033
Western Canada	2,223	2,223	2,722	2,722
USA	n/a	n/a	n/a	n/a
Total	104,360	105,867	103,072	103,578

B. Rail

Our estimated freight volumes by rail for shippers located east of St. Peter's Junction were described under expected changes in rail traffic in Chapter IV, and are reproduced below. The forecast reflects the market demand by currently active rail users. As documented in Chapter IV and in Appendices H and I, we did not find sufficiently robust evidence of other possible rail traffic to warrant its inclusion in short or medium-term forecasts.

Exhibit V-4
Forecasted rail freight volumes east of St. Peter's Junction, 2004 & 2007 (tonnes)

Year	2002	2004	2007
Total rail volume (est.)	66,100	112,700	99,600

The figures in Exhibit V-4 exceed the results from the shipper survey as reported in Chapter III and as described immediately below. We derived the numbers in Exhibit V-4 by applying a multiplier to results from survey respondents, to cover non-respondents as well. The reader is directed to Chapter IV for an explanation of the variation in projected volumes.

The majority of CBNS rail freight on Cape Breton originates or terminates west of St. Peter's Junction. Freight volumes for that portion of Cape Breton rail traffic are considered proprietary by CBNS and were not provided for the purposes of this study.

Rail volumes handled by the Sydney Coal Railway are localized between the Sydney harbour and the Lingan generating station. These volumes may be expected to decline by an amount offset by increased movement by truck of surface-mined coal as described above.

The remainder of this section addresses the portion of Cape Breton rail volumes identified in our shipper survey.

1. Inbound rail volumes from the shipper survey

The two tables below reflect the shipper survey responses. For a detailed breakdown of these traffic flows, please refer to Appendix J. Survey respondents currently transport 43,100 tonnes inbound by rail. Therefore, 2004 volumes are predicted to increase by 28%, and 2007 volumes are predicted to increase by another 5% from 2004. The major products predicted to be transported to Cape Breton by rail are building materials and resin.

Exhibit V-5
Inbound by rail to Cape Breton (tonnes)

Origins	2004 With Rail	2007 With Rail
Maritimes	204	224
Central Canada	20,348	21,708
Western Canada	25,431	25,442
USA	13,842	15,677
Total	59,825	63,051

2. Outbound rail volumes from the shipper survey

Outbound volumes by rail according to the survey results are predicted to increase substantially in 2004 compared to the current level of 12,300 tonnes. The greatest commodity increase is forecast for round wood. Results for 2007 are expected to decline to levels more comparable to current volumes, again driven largely by changes in the forecasted market for round wood.

Exhibit V-6
Outbound by rail from Cape Breton (tonnes)

Destinations	2004 With Rail	2007 With Rail
Maritimes	28,000	14,000
Central Canada	700	700
Western Canada	499	907
USA	n/a	n/a
Total	29,199	15,607

C. Ports

Our forecasted marine volumes to and from Cape Breton appear in this section.

1. Port of Sydney marine volumes

Our forecasted freight volumes for the Port of Sydney are shown in Exhibit V-7. No significant changes are expected to gasoline and petroleum product volumes, which are quite steady from year to year. These products are driven by population consumption, which can vary according to size of population and weather in the case of heating oil. We have set these at the average level for the past seven years for the short to medium term forecasts. We have allowed for a decline in imported coal for NSPI, offset by increased local surface-mined coal. We have assumed that by 2007, Lingan would receive its maximum capacity for local surface coal of 300,000 tonnes, which exceeds its current intake of 60,000 tonnes. We subtracted this difference of 240,000 tonnes from otherwise expected levels of imported coal for 2007. For 2004, we assumed that some new surface-mined coal would displace imported coal, but local production would not be fully on-stream within two years.

Exhibit V-7
Forecasted freight for Port of Sydney, 2004 & 2007 (tonnes)

Commodity	2002	2004	2007
Gasoline	116,000	118,000	118,000
Petroleum products	180,000	176,000	176,000
NSPI coal	1,754,000	1,674,000	1,514,000
General cargo	88,000	50,000	150,000
Transhipped coal	0	500,000	1,750,000
Salt	0	60,000	60,000
Total	2,138,000	2,578,000	3,768,000

General cargo is difficult to forecast for Sydney, since the port is essentially starting from a base of zero (not counting Sysco scrap which should be eliminated by 2004). Chapter IV identified some of the port's advantages and challenges to attracting general cargo. Potential volumes could vary widely, depending on factors such as the types of cargo (e.g., breakbulk or containerized) and the regularity and frequency of shipments (e.g., liner service or irregular port calls). In the absence of a regular liner service, and in the absence of a rail connection, the proposed volumes may be difficult to achieve. For example, a twenty-foot equivalent unit (TEU) marine container typically holds about 12 tonnes of cargo. Assuming for the sake of illustration that all the general cargo was containerized (which is not likely to be the case), then to achieve a general cargo volume of 150,000 tonnes would equate to handling 12,500 TEU's in a year. This does not require capturing a large market share compared to ports handling half a million or a million TEU's, but is a substantial step up from today's situation.

Finally, our forecast assumes that PEV will come close to achieving its objectives for coal transhipments and for inbound road salt to be consumed locally. Other opportunities, notably for offshore energy fabrication or supply, are highly unlikely to produce marine freight volumes for Sydney by 2004. There is some possibility for the longer term, but at present too many questions surround the opportunity for reliable forecasting.

2. Port Hawkesbury & Mulgrave marine volumes

Our forecast for marine freight at the Strait of Canso is provided below.

Exhibit V-8
Forecasted freight for Port Hawkesbury & Mulgrave, 2004 & 2007 (tonnes)

Commodity	2002	2004	2007
Petroleum products	11,633,000	13,966,000	14,245,000
Aggregates	2,578,000	2,494,000	2,500,000
Gypsum	1,477,000	1,450,000	1,450,000
Coal	849,000	862,000	880,000
Other	405,000	411,000	420,000
Total	16,942,000	19,183,000	19,495,000

Petroleum products transhipped through Point Tupper can vary substantially from year to year, based on worldwide supply, demand, and pricing factors. Our estimate for 2004 is based on an average for recent years, and we allowed a modest increase of 2% from 2004 to 2007. In contrast to petroleum products, annual volumes of aggregates and gypsum are much more stable. Again, our aggregate forecast is based on recent average results. Our gypsum forecast is based on planned production at Georgia-Pacific's Melford operation, which is not expected to vary much from year to year. (These volumes replace the gypsum traffic from the soon-to-be-decommissioned quarry at Sugar Camp Lake. The closure in 2002 of Canadian Gypsum's operation at Port Hawkesbury will not affect forecasted tonnages, as Canadian Gypsum was moving their product out by rail.)

Our coal forecast is based on recent volumes unloaded at Auld's Cove. This forecast assumes that NSPI's operations will remain similar to current practices at least through 2007. Volumes may change after that time depending on NSPI's plans for its Trenton plant. The final category represents a variety of general cargos, which may be expected to resemble recent experience.

3. Other significant marine volumes

Little Narrows Gypsum ships significant volumes out of the Bras d'Or Lakes, and is not part of the traffic base for the Port of Sydney or the Strait Area ports. Future volumes for Little Narrows Gypsum are not expected to vary materially from current volumes.

D. Airports

Several factors make it difficult to forecast air cargo volumes. Chief among these factors is that we do not know what current air cargo volumes are. The Sydney Airport Authority does not track this data, the largest scheduled carrier did not provide their Sydney tonnage to the

consultants during the course of this study, and Sydney data from Statistics Canada exists for one year only and appears suspect.

We can report that:

- the largest scheduled carrier reports that air cargo to and from Sydney has been declining in recent years, likely due to a modal shift to truck;
- this scheduled carrier has reduced flight frequencies in the recent past, although this may not necessarily influence the volume of air cargo handled; and
- another cargo charter operator reports that air cargo volumes for their operation have stabilized, following a reduction due to the withdrawal of air service by Purolator.

Based on these factors, it is reasonable to assume that future air cargo volumes will remain flat or further decline slightly, particularly in the absence of a return to air service by Purolator.

VI Conclusions

This chapter presents our conclusions based on the most salient findings, and recommendations where warranted regarding Cape Breton's goods transportation services and infrastructure.

A. Truck transportation

Cape Breton highways are able to accommodate current levels of overall vehicle traffic including truck traffic. Commercial traffic to or from Cape Breton is able to move without delay, and shippers report that they are able to effectively and reliably serve customers by truck in markets located at considerable distance from Cape Breton.

Potential modal shifts to truck transportation within Cape Breton would be accommodated easily by the existing highway network, without any undue impact on commercial transportation service levels and reliability, or on the traveling general public.

Road conditions on Cape Breton's major highways are generally acceptable or better, with the exception of Trunk 4. Statistics indicate that the large majority of commercial traffic travels via Highway 105 at any rate. Shippers located in central Cape Breton are at a disadvantage, as the secondary road network is of considerably lower quality, affecting some shippers' transportation efficiency.

Georgia-Pacific's switch to Melford for its source of supply for gypsum will not result in any net increase in truck traffic on Cape Breton roads, but the new routing will impact on truck traffic through built-up areas of Port Hastings and Port Hawkesbury. Development of a by-pass route, as contemplated by DOTPW, would alleviate these impacts.

While other road infrastructure improvements would benefit tourists and residents, there is no compelling argument from a commercial transportation perspective to justify other major upgrades to Cape Breton's highway infrastructure within the time horizon of this study.

B. Rail freight transportation

Current levels of rail service are adequate for the needs of existing rail users. Current rail shippers expect to increase their use of rail transportation over the next two to five years. However, such increases are from a very limited traffic base and would still result in a substantial shortfall from traffic levels of a few years ago.

Based on our review of market demand from current users, and the prognosis of near-term traffic from other proposed developments, a market-driven solution for sustainable, economically-efficient rail service across Cape Breton is not apparent. For the sake of all interested parties it is important to base the future of rail transportation in Cape Breton on solid, long-term prospects.

In light of the struggle to achieve an economically adequate traffic base, it would not be appropriate to consider upgrading the rail infrastructure to handle heavier carloadings until a business case for continued rail operation can be established.

C. Marine freight transportation

Significant unused capacity exists within the port of Sydney to handle both dry bulk cargo and general cargo. The local area's transportation needs appear to be adequately served by existing infrastructure and services. Future needs with respect to new industries, in particular offshore development, would also be well served once planned efforts to upgrade certain wharves and back-up lands are complete. In the absence of any expressed need by local shippers or receivers, efforts to attract general cargo are aimed at capturing traffic destined to other centres, which could be handled via Sydney. Infrastructure improvements such as a gantry crane suitable for containers may improve the port's prospects to attract cargo, although any infrastructure improvements would need to be accompanied by sustained marketing efforts and a business case favoring Sydney over competing ports. Access to rail service is an important factor for the port to reach its potential.

The natural attributes of the Strait of Canso make it attractive for certain shippers of bulk cargo in large lots. The lack of a public facility suitable for handling dry bulk cargo may be sub-optimal for encouraging certain potential cargos, although presumably prospective shippers could reach agreement with existing owners of private terminals. The needs of local shippers of general cargo appear to be adequately handled at Mulgrave, and the lack of rail access to Mulgrave does not seem to materially affect its ability to serve a local hinterland.

D. Air freight transportation

Sydney's airport infrastructure is more than adequate to accommodate carriers currently providing air service to Cape Breton. Although the frequency of air service has been reduced from recent levels, shippers gave no indication that such reductions would materially impact their normal operations or negatively affect the occasional need for rush cargos.

Appendix A

Shipper's Survey

February 13, 2003

Appendix B

Shippers' Survey Distribution List

February 13, 2003

Company

Breton Distributors Limited
Breton Provincial
Canada Packers, Shur-Gain Division
Canadian Liquid Air Ltd.
Canadian Tire
Canwell Distribution Center
Cape Breton Beverages Ltd
Central Building Supplies
Co-op Atlantic
Co-op Fuels
Copol International Limited
East Coast Lumber
East Coast Rope Limited
Elks Fabricators Ltd.
Emera Utility Services
Georgia Pacific
Gillis Timber Mart
Hilly Acres Farms Ltd.
Imperial Oil Ltd.
Irving Oil Limited
J.D. Irving Limited
John Ross and Sons
Mercer Fuels
Moosehead Breweries Ltd
Municipal Ready-Mix Limited
Newfoundland Hardwoods
Nova Scotia Liquor Commission
Nova Scotia Power
Ocean Fuels Ltd
Polysteel Atlantic Limited
Poscor Mills
Red Point Exporters
Rogers Transport
Scotsburn Dairy Group
Seaboard Industrial Supply Co. Ltd
Shell Canada
Sobeys
Sparkling Springs Water Ltd.
St. Lawrence Cement (Concrete Services)
Stevens Building Supplies
Stora Enso
Superior Propane
SuperValu
Sydco Fuels
Sydney Steel Corp
TESMA Precision Finished Components
The Bay
Trans Atlantic Preforms Ltd.
Triple M Metals
U.S. Gypsum
Walmart
Wentworth Environmental Services
Zellers

Appendix C

List of Contacts

Appendix C – List of Contacts

Organization	Name
Air Canada Jazz	Donnie Hawco
Air Saint-Pierre	Therese Goora
Alva Construction Limited	Brock Chisholm
Breton Distributors	Brian Mitchell
Canadian National Railway	Scott Roberts
Canwell Distribution	Wayne Kolziel
Cape Breton & Central Nova Scotia Railway	Peter Touesnard
Cape Breton Miners' Cooperative	Donnie Lawrence
Cape Breton Miners' Cooperative	Kevin Murphy
Cape Breton Regional Municipality	John Whalley
Copol International Ltd.	David Sawler
Department of Natural Resources	Mike Cherry
Department of Natural Resources	Phil Zink
Department of Tourism	Jim Barnes
Department of Tourism	Kim Jardine
Department of Transportation and Public Works	Phil Corkum
Department of Transportation and Public Works	Tom Gouthro
Department of Transportation and Public Works	Steve Newsom
Department of Transportation and Public Works	Romeo Poirier
Department of Transportation and Public Works	Kent Speiran
Department of Transportation and Public Works	Don Stonehouse
Department of Transportation and Public Works	Bernie Swan
Donkin Resources Limited	Stephen Farrell
Donkin Resources Limited	Aubrey Rogers
East Coast Lumber	Leo MacDougall
Enterprise Cape Breton Corporation	Al England

Organization	Name
Geosciences Engineering Services	John Lizak
Gillis Timbr-Mart	David Gillis
Hilly Acres Farms	Chris Eyking
Imperial Oil Limited	Archie Gillis
Laurentian Group Limited	Stephen Farrell
Little Narrows Gypsum Company	Michael Bishop
Lethbridge & Associates	Gerry Lethbridge
Marine Atlantic	John Royal
Midland Transport	Ann Marie Coish
Nova Scotia Business Inc.	Pam Rudolph
Nova Scotia Economic Development	Albert LeBlanc
Nova Scotia Power Inc.	Phillip Caulier
Nova Scotia Power Inc.	William Hattie
Nova Scotia Power Inc.	James Taylor
Pole Star Transport	Mark Pushie
Polysteel Atlantic Ltd. / East Coast Rope Ltd.	Sean Burke
Prince Edward Air	Robert Bateman
Provincial Energy Ventures	Ernie Thrasher
Public Harbours of Port Hawkesbury & Mulgrave	John Langley
Red Point Exporters	Michael Dan MacNeil
S & M Trucking	Don Sives
Statistics Canada	Paul Bourgeois
Statistics Canada	Ronald Chrétien
Statistics Canada	Jean LaRoque
Statistics Canada	Robert Masse
Strait Area Chamber of Commerce	Perry Chandler
Strait-Highlands Regional Development Agency	Blaine Gillis
Sydney Airport Authority	Lawrence MacPherson

Organization	Name
Sydney Ports Corporation Inc.	Don Rowe
Sydney Steel Corporation	John Traves
Trans-Atlantic Preforms Limited	John MacLean
VIA Rail	Marc Deschênes

Appendix D

Cape Breton Highway Pavement Condition

February 13, 2003

Highway Section	Length (km)	
Representative Segments of Trunk 4		
St. Peters (Rte. 247) to Soldier's Cove Rd	10.45	This section was mostly entirely repaved in 2002. Section is in good condition and comfortable to drive.
Soldier's Cove Rd. to Richmond/Cape Breton County Line	21.18	This section has a narrow pavement with lots of patching, cracks and serious ruts which could allow water to collect. The section is very rough and bumpy.
Richmond/Cape Berton County Line to Ben Eoin-St. Andrews Channel Line	20.09	The section from Richmond/Cape Breton County Line to Big Pond (approx. 9 kms) is a very poor driving section with lots of cracks, patching and distortion with serious ruts that could allow water to collect. The next 9 kms through Big Pond was upgraded in the last 4 years so it is a wider pavement with a nice smooth, pleasant drive.
Ben Eoin-St. Andrews Channel Line to East Bay (Eskasoni Rd.)	15.27	This section has a narrow pavement with some cracks, distortion, patching and ruts which could allow water to collect. It is quite rough and bumpy in some locations.
East Bay (Eskasoni Rd.) to Sydney Forks (Meadows Rd.)	5.28	This section was upgraded in the late 80's and has a wider pavement which now has some cracking, distortion and serious ruts which could allow water to collect. This section is in fair driving condition.
Representative Segments of Highway 104		
Exit 43 (Pt. Tupper Inter/C) to Exit 44 (Lr. River Inhabitants)	9.69	This section has been mostly resurfaced in recent years and offers a safe, comfortable drive but has short rough areas with potholes & cracks
Exit 44 (Lr. River Inhabitants) to Exit 45 (Evanston Rd. Inter/S)	1.81	This is a smooth and pleasant driving section in excellent condition after being repaved in 2000
Exit 45 (Evanston Rd. Inter/S) to Exit 46 (Louisdale Inter/C)	11.03	This is a smooth and pleasant driving section in excellent condition after being mostly resurfaced in recent years.
Exit 46 (Louisdale Inter/C) to Exit 47 (Sporting Mtn Inter/C)	10.41	This is a smooth and pleasant driving section mostly in good condition but has some areas of cracking and rutting which may collect water.
Exit 47 (Sporting Mtn. Inter/C) to TK 4 (River Tillard)	4.19	This section has some cracks and is in good condition offering a comfortable drive.

Source: Nova Scotia Department of Transportation and Public Works

Highway Section	Length (km)	
Representative Segments of Highway 105		
Exit 4 (Orangedale Rd Inter/S) to Exit 5 (Rte 252 - Whycocomagh)	4.99	This section has some cracks, a few potholes and some patching. It is a good section with a comfortable drive.
Exit 5 (Rte 252-Whycocomagh) to Exit 6 (Rte 223)	11.11	The first half of this section was repaved in the last few years and is an excellent section offering a smooth and pleasant drive. The second half is in fair condition with lots of cracks, patching, distortion and serious ruts that could allow water to collect. This part offers a sometimes uncomfortable drive.
Exit 6 (Rte 223) to Exit 7 (Cabot Trail - Nyanza)	17.12	This section is in good condition with some rough areas but offers a comfortable drive. It has cracks, a few potholes and some patching and some moderate ruts which may allow water to collect.
Exit 7 (Cabot Trail-Nyanza) to Exit 8 (Rte 205 West of Baddeck)	8.06	This section is in fair to good condition with some rough areas but offers a reasonably comfortable drive. It has cracks, a few potholes and some patching and some moderate ruts which may allow water to collect.
Exit 8 (Rate 205 West of Baddeck) to Exit 9 (Baddeck Cen Inter/C)	1.87	This section is in fair condition with some rough areas and offers an uncomfortable drive. It has cracks, a few potholes and some moderate ruts which may allow water to collect.
Exit 9 (Baddeck Cen Inter/C) to Exit 10 (Rate 205 East of Baddeck)	9.04	This section is in good condition with some rough patched areas but offers a comfortable drive.
Exit 10 (East of Baddeck) Rte 205 to Exit 11 (Cabot Trail)	8.85	This section is in fair condition with some rough areas and offers an uncomfortable drive. It has cracks, a few potholes, patching and some serious ruts which may allow water to collect.
Exit 11 (Cabot Trail) to Exit 12 (Englishtown) Rate 312	4.07	This section is in fair condition and offers an uncomfortable drive. It has cracks and patching and some serious ruts which may allow water to collect.
Exit 12 (Englishtown) Rte 312 to Exit 13 (Ross Ferry Rd Inter/S)	12.70	This section is in good condition and offers a comfortable drive.
Exit 13 (Ross Ferry Rd Inter/S) to Victoria/Cape Breton Co Line	4.68	This section is in good condition and offers a comfortable drive.

Source: Nova Scotia Department of Transportation and Public Works

Highway Section	Length (km)	
Representative Segments of Highway 125		
Exit 1 (Hwy 105 Inter/C) to Exit 2 (Peppett St Inter/C)	2.46	Divided Highway: Eastbound is in fair condition with some cracking, potholes and patching offering an uncomfortable drive and the possibility of water collecting due to rutting. Westbound is in excellent condition offering a smooth, pleasant drive
Exit 2 (Peppett St Inter/C) to Exit 3 (Rte 223-Leitches Creek)	6.37	Divided Highway: Eastbound is in fair condition with some cracking and patching offering a comfortable drive and the possibility of water collecting due to rutting. Westbound is mostly in excellent condition offering a smooth, pleasant drive
Exit 3 (Rte 223-Leitches Creek) to Exit 4 (Rte 239)	2.72	Divided Highway: Eastbound and Westbound are both in fair condition with cracking, potholes and patched areas offering a somewhat uncomfortable drive and the possibility of water collecting due to rutting.
Exit 6 (Trunk 4 Sydney River) to Exit 9 (Trunk 4 Grand Lake)	9.20	Exit 6 to Exit 9 was entirely repaved in 2002. This section is in very good condition, offering a very smooth and pleasant drive

Source: Nova Scotia Department of Transportation and Public Works

Appendix E

Cape Breton Highway Data by Segment

February 13, 2003

Highway Section	Length (km)	AADT*	Collision Rates (per HMVK***) PDO**	Injury	Fatal	Total
Trunk 4						
Port Hastings Rotary to Granville St (Port Hawkesbury)	4.15	5,470	39.2	11.5	0.0	50.7
Granville St. (Port Hawkesbury) to Hwy. 104 (Port Hawkesbury)	3.81	3,640	178.6	80.5	0.0	259.1
Hwy 104 (Port Hawkesbury) to Cleveland (West Bay Rd)	9.95	2,970	39.6	10.9	0.0	50.5
Cleveland (West Bay Rd.) to Grande Anse (Rte 320)	15.15	660	70.0	64.1	6.6	140.7
Grand Anse (Rte 320) to St. Peters (West Bay Rd)	18.06	400	154.5	59.5	8.4	222.4
St. Peters (West Bay Rd.) to St. Peters (Rte 247)	1.63	4,700	228.2	61.4	7.7	297.3
St. Peters (Rte. 247) to Soldier's Cove Rd	10.45	2,550	31.7	18.5	2.2	52.4
Soldier's Cove Rd. to Richmond/Cape Breton County Line	21.18	1,710	44.6	26.6	0.0	71.2
Richmond/Cape Breton County Line to Ben Eoin-St. Andrews Channel Line	20.09	2,400	53.9	38.7	1.1	93.7
Ben Eoin-St. Andrews Channel Line to East Bay (Eskasoni Rd.)	15.27	2,650	22.2	17.8	0.0	40.0
East Bay (Eskasoni Rd.) to Sydney Forks (Meadows Rd.)	5.28	3,360	26.2	25.8	0.0	52.0
Sydney Forks (Meadows Rd.) to Sydney River (Hwy 125)	7.99	12,200	20.8	18.6	0.5	39.9
Sydney River (Hwy 125) to Sydney River-Sydney Line	1.55	8,860	204.0	105.1	0.0	309.1
Sydney River-Sydney Line to Sydney-Grand Lake Line	5.45	21,400	183.7	192.1	0.0	375.8
Sydney-Grand Lake Line to Hwy 125 East of Sydney	1.10	13,300	42.1	29.9	0.0	72.0
Hwy 125 East of Sydney to Reserve Mines (Wilson Rd)	10.94	10,600	59.7	48.7	0.8	109.2
Reserve Mines (Wilson Rd.) to Glace Bay-Reserve Mines Line	2.88	11,500	14.3	6.9	0.0	21.2
Glace Bay-Reserve Mines Line to TK 28 (Glace Bay)	2.10		226.2	184.0	0.0	410.2
Subtotal	157.03					
Highway 104						
Canso Causeway Toll Booth to Exit 41 (Port Hastings Rotary)	2.81	8,290	69.7	14.5	0.0	84.2
Exit 43 (Pt. Tupper Inter/C) to Exit 44 (Lr. River Inhabitants)	9.69	3,550	36.6	10.9	1.4	48.9
Exit 44 (Lr. River Inhabitants) to Exit 45 (Evanston Rd. Inter/S)	1.81	4,290	43.6	29.6	0.0	73.2
Exit 45 (Evanston Rd. Inter/S) to Exit 46 (Louisdale Inter/C)	11.03	3,740	5.2	4.0	0.0	9.2
Exit 46 (Louisdale Inter/C) to Exit 47 (Sporting Mtn Inter/C)	10.41	2,940	16.7	2.3	0.0	19.0
Exit 47 (Sporting Mtn. Inter/C) to TK 4 (River Tillard)	4.19	2,920	42.3	29.0	0.0	71.3
Subtotal	39.94					
Highway 105						
Port Hastings Rotary to Exit 2 (River Inhabitants Rd. Inter/S)	18.01	3,740	38.4	27.9	3.7	70.0
Exit 2 (River Inhabitants Rd.) to Exit 3 (River Denys Rd-Melford)	12.77	3,670	21.4	15.7	3.4	40.5
Exit 3 (River Denys Rd-Melford) to Exit 4 (Orangedale Rd Inter/S)	11.90	3,370	25.6	18.9	0.0	44.5
Exit 4 (Orangedale Rd Inter/S) to Exit 5 (Rte 252 - Whycocomagh)	4.99	5,390	28.6	8.0	6.0	42.6
Exit 5 (Rte 252-Whycocomagh) to Exit 6 (Rte 223)	11.11	3,610	33.9	11.1	0.0	45.0
Exit 6 (Rte 223) to Exit 7 (Cabot Trail - Nyanza)	17.12	4,130	19.5	24.9	0.8	45.2
Exit 7 (Cabot Trail-Nyanza) to Exit 8 (Rte 205 West of Baddeck)	8.06	5,620	33.7	10.4	2.8	46.9
Exit 8 (Rate 205 West of Baddeck) to Exit 9 (Baddeck Cen Inter/C)	1.87	1,910	49.1	27.8	0.0	76.9
Exit 9 (Baddeck Cen Inter/C) to Exit 10 (Rate 205 East of Baddeck)	9.04	3,660	7.0	6.5	0.0	13.5
Exit 10 (East of Baddeck) Rte 205 to Exit 11 (Cabot Trail)	8.85	3,950	25.2	11.2	1.7	38.1
Exit 11 (Cabot Trail) to Exit 12 (Englishtown) Rate 312	4.07	3,960	12.4	5.9	0.0	18.3
Exit 12 (Englishtown) Rte 312 to Exit 13 (Ross Ferry Rd Inter/S)	12.70	2,400	30.7	23.3	0.0	54.0
Exit 13 (Ross Ferry Rd Inter/S) to Victoria/Cape Breton Co Line	4.68	5,490	13.4	11.4	2.1	26.9
Victoria /Cape Breton Co Line to Exit 19 (Grand Narrows Rd Inter/S)	11.74	7,950	19.2	19.8	0.4	39.4
Exit 19 (Grand Narrows Rd Inter/S) to Exit 20 (Hwy 125 Inter/C)	2.63	13,300	17.4	17.2	0.0	34.6
Exit 20 (Hwy 125 Inter/C) to Newfoundland Ferry	3.14	6,130	27.6	16.6	0.0	44.2
Subtotal	142.68					
Highway 125						
Exit 1 (Hwy 105 Inter/C) to Exit 2 (Peppett St Inter/C)	2.46	6,140	32.1	21.4	0.0	53.5
Exit 2 (Peppett St Inter/C) to Exit 3 (Rte 223-Leitches Creek)	6.37	5,090	17.5	15.0	0.8	33.3
Exit 3 (Rte 223-Leitches Creek) to Exit 4 (Rte 239)	2.72	6,510	25.7	16.8	0.0	42.5
Exit 4 (Rte 239) to Exit 5 (Sydport Inter/C)	4.34	12,600	13.1	11.2	0.0	24.3
Exit 5 (Sydport Inter/C) to Exit 6 (Tk 4 Inter/C-Sydney River)	3.28	5,380	52.0	41.3	3.6	96.9
Exit 6 (TK 4 Inter/C- Sydney River) to Exit 7 (Rte 327 Inter/C)	2.11	15,600	31.4	18.4	1.6	51.4
Exit 7 (Rte 327 Inter/C) to Exit 8 (TK 22 Inter/C)	2.97	20,100	23.3	15.7	1.9	40.9
Exit 8 (TK 22 Inter/C) to Exit 9 (TK 4 -Grand Lake)	4.12	14,800	12.3	13.1	0.8	26.2
Subotal	28.37					
TOTAL	**368.02**					

*** AADT = Annual Average Daily Traffic**
**** PDO = Property Damage Only**
***** Collision rates are expressed per Hundred Million Vehicle Kilometers**

Appendix F

Survey Analysis Methodology and Summary of Survey Comments

February 13, 2003

Shippers' Survey Analysis

Current traffic flow data inbound and outbound from Cape Breton was obtained from the shipper's surveys. Respondents detailed the following in their responses:

a) Type of commodities being shipped;

b) The origin and destination;

c) Transfer points;

d) Mode of transportation,

e) Volumes of commodities in metric tonnes;

f) Number of railcar loads, truckloads, and containers;

g) Transportation cost per tonne; and

h) Transportation cost per railcar load, truckload, and container.

Although these questions were asked on the survey, in some instances the respondent only provided certain information and left other fields blank. In cases where the respondent was interviewed as well as surveyed, the interview notes were cross-referenced with the survey results to ensure consistency.

In instances where current tonnage volumes were provided but truckloads and rail carloads were not, an estimate was made. For instance, in the case of truckloads within Canada the standard weight of 25 metric tonnes per truckload was used. Therefore, the current volume in metric tonnes was divided by 25 metric tonnes to derive the number of truckloads. And the calculation was also performed in the other direction, to determine the volume, in cases where the number of truckloads was provided but the volume was not.

All current traffic flow data was then entered into an excel spreadsheet for analytical purposes. The destinations for the inbound traffic (origins for the outbound traffic) were classified as either one of three groups: industrial Cape Breton, interior Cape Breton, and the Strait region. The origins for inbound traffic (destinations for outbound traffic) were classified as either: the Maritimes, Central Canada, Western Canada, or USA. In instances where the respondent stated various locations for destinations and origins (such as USA/Ontario) one or the other was chosen. In some cases it was impossible to predict how much of the volume related to one location and how much to another. Therefore, in some

instances the amounts according to destination for inbound and for origin for outbound may be under or overstated.

Survey data for current traffic flows by rail and truck, inbound and outbound, were then sorted by commodity, by destination, by origin and destination to compile the results presented in Chapters III and V.

Comments on Other Transportation Services and Infrastructure

Comments provided regarding present or future transportation services and infrastructure on Cape Breton Island, related to your business operations.

Truck Transportation/Road Infrastructure

- Highway upgrading to permit 12 months of trucking from Lake Ainsle - current road is seasonal for trucks.
- No Impact.
- Maintenance and upgrading of existing infrastructure is key to our service.
- Concerned about Highway maintenance costs due to increased traffic and safety and environmental issues.
- Highways to Sydney do not have adequate infrastructure to handle more traffic
- The loss of the railway would impact the trucking. There is room for both to co-exist. Lack of a railway will impede development. Most modern industrial countries are developing railway systems. We are letting ours die. This must not happen.
- Its volume of business is directly proportional to construction trends in Sydney.
- Trucking material only allows us to move product within Canada whereas rail enables us to move into the United States. Therefore this limits our options as a company.
- Company would close without Rail.
- We hope the rail will continue to serve us. Presently constructing storage project to handle our community.
- Truck transportation has been exceptional no negative impact on ability to service customers.
- With the increased volume of truck traffic, a 4-lane highway from New Glasgow to Marine Atlantic in North Sydney should be a top priority.

Marine Freight Transportation/Port Infrastructure

- A better tie-in between marine and rail particularly to Nfld should be explored. Rail to Halifax and then ship to Nfld is the current service. Perhaps there is an argument for rail to Sydney and then ship to Nfld.
- Barge wood to PEI.
- Plans to continue with marine as primary mode of transport for fuels.

- To firmly believe we can develop a major marine terminal in Sydney, we need the railroad to accomplish this. If we don't maintain the railway we may as well turn the lights off at the Causeway. With the terminal we could service Nfld. more.
- If the ferry shuts down our feed mill will shut down.
- Prioritize Marine Atlantic. Give truckers more priority.
- Not applicable as yet. Possible interest in delivery of resin by containers.
- Marine freight from North Sydney would decrease, the freight would be shipped from Halifax direct to Nfld.

Air Freight Transportation/Airport Infrastructure

- Air freight into Sydney is very unreliable.
- This does not impact our business however the loss of the rail line will have an impact on the Sydney airport in terms of lost revenues and opportunities.
- Not impacted significantly by air transportation other than business travel.
- Lack of rail service would affect development of airfreight transportation.

Opportunities to Collaborate to Fill Empty Backhauls into or out of Cape Breton

- Possibility of using backhauls to transport barite and fluorite to Ontario/Eastern USA.
- Presently working with regional carriers re:backhauls in and out of Cape Breton, always seeking opportunities.
- When NSP returns to burning non pet coal at Lingan Power, we will be able to fill the empty rail cars with Fly ash and ship them to the W.S. as the company has done in the past.
- Already arranged with its own network.
- If rail were more efficient, rail freight even from Halifax would be a benefit if the time from Halifax was guaranteed to be a 2 day trip.
- We could start by having coal back to the power station on the mainland from the Sydney Harbour terminal. We must develop the former Sysco site into Industrial Park and Marine Terminal and then attract new business to the area. We must have the infrastructure to attract new business.
- This is of some interest to U.S. Major concern is the level of service directly to customers. Our two primary trucking companies essentially represent U.S. to customers.
- We ship to western Newfoundland and backhaul gyproc from Corner Brook. We also haul our own blowing insulation, sand, and safety salt from the Truro area.
- We tried but most times we could not match up to meet deadlines

Opportunities to Collaborate to Consolidate Shipments into or out of Cape Breton

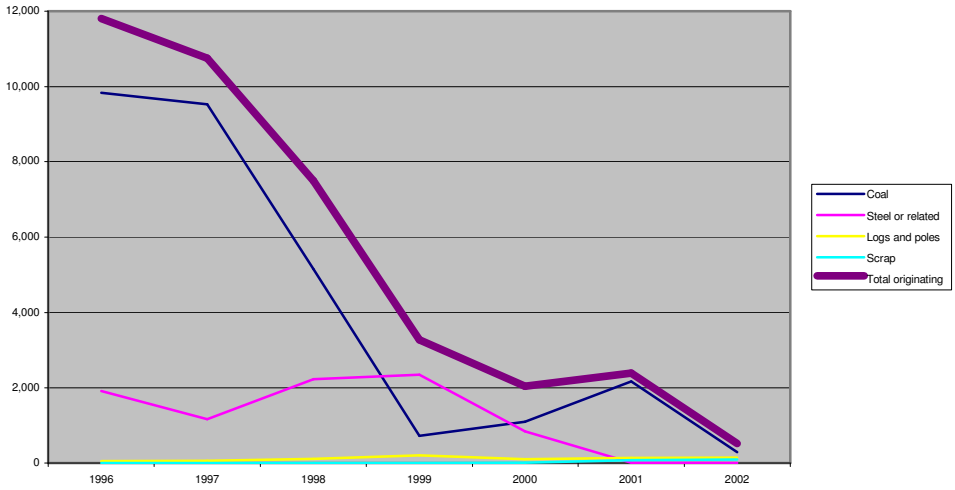
- We do some of this with Halifax companies currently to the west coast, however most of our shipments are very time sensitive and we would have to partner with someone who is not as time sensitive. Basically they would have to fit our schedule, which can be very erratic.
- Already arranged with its own network
- We should be developing the Donkin Mine and extending the rail line to the future mine site. The rail bed already exists as a result of the closure of the old S and L line.
- We operate our own trucks and ship competitors' products to the same destination. This helps defray our operating costs.
- Of some interest.
- Only by water but not always a port on receiving end.

Appendix G

Rail and Marine Volumes

February 13, 2003

Annual rail traffic originating on the Sydney Subdivision east of St. Peter's Junction, 1996 to 2002 (carloads)



Public Harbours of Port Hawkesbury & Mulgrave 2001 Traffic (tonnes)

Commodity	Loaded	Unloaded	Total
Petroleum products	8,128,000	8,170,000	16,298,000
Aggregates	2,410,000	0	2,410,000
Gypsum	1,405,000	0	1,405,000
Coal	0	875,000	875,000
Other *	104,000	229,000	333,000
Total	12,047,000	9,274,000	21,321,000

Source: Harbourmaster, Strait of Canso, with analysis by KPMG
** "Other" may include clay, caustic soda, salt, pulp, fish, and general cargo*
Note: Figures may not add due to rounding

Public Harbours of Port Hawkesbury & Mulgrave: 1999 Traffic (tonnes)

Commodity	Loaded	Unloaded	Total
Petroleum products	4,774,127	4,494,398	9,268,525
Aggregates	1,070,014	0	1,070,014
Gypsum	1,558,134	0	1,558,134
Coal	0	880,809	880,809
Other	854,078	317,728	1,171,806
Total	**8,256,353**	**5,692,935**	**13,949,288**

Public Harbour of Port Hawkesbury: 1998 Traffic (tonnes)

Commodity	Loaded	Unloaded	Total
Petroleum products	5,352,246	5,996,581	11,348,827
Aggregates	761,445	0	761,445
Gypsum	1,183,313	0	1,183,313
Coal	0	567,986	567,986
Other	509,074	106,555	615,629
Total	**7,806,078**	**6,671,122**	**14,477,200**

Public Harbour of Port Hawkesbury: 1997 Traffic (tonnes)

Commodity	Loaded	Unloaded	Total
Petroleum products	7,065,717	6,493,077	13,558,794
Aggregates	721,226	0	721,226
Gypsum	873,237	0	873,237
Coal	0	160,215	160,215
Other	578,700	50,860	629,560
Total	**9,238,880**	**6,704,152**	**15,943,032**

Public Harbour of Port Hawkesbury: 1995 Traffic (tonnes)

Commodity	Loaded	Unloaded	Total
Petroleum products	4,992,010	4,808,632	9,800,642
Aggregates	439,470	0	439,470
Gypsum	744,598	0	744,598
Coal	0	0	0
Other	858,758	47,154	905,912
Total	**7,034,836**	**4,855,786**	**11,890,622**

Source: Statistics Canada
2000 data not available
Note: 1995-98 data exclude Mulgrave
Note: No data produced for Port Hawkesbury for 1996

Marine Atlantic commercial traffic (round-trip vehicle counts) Argentia service

Vehicle type	1998	1999	2000	2001	2002
Straight trucks	75	132	135	141	110
Tractor-trailers	62	100	72	32	36
Trailers only	124	194	131	120	159
Other	19	29	38	0	0
Total	280	455	376	293	305

Source: Marine Atlantic

Marine Atlantic commercial traffic (round-trip vehicle counts) Port aux Basques & Argentia combined results

Vehicle type	1998	1999	2000	2001	2002
Straight trucks	3,151	2,896	2,832	2,902	2,816
Tractor-trailers	35,691	37,790	37,884	38,271	39,826
Trailers only	32,132	35,809	36,059	37,584	36,450
Other	307	380	491	169	0
Total	71,281	76,875	77,266	78,926	79,092

Source: Marine Atlantic

Appendix H

Evaluation of Expected Changes in Traffic Flows from Commercial Concepts

February 13, 2003

A. Gypsum – Little Narrows

United States Gypsum (USG) is a leading producer of gypsum wallboard, joint compound and a vast array of related construction products. Centered in the United States, the company employs 14,000 worldwide in 30 countries. For more than thirty years, USG has operated a gypsum quarry at Little Narrows, Victoria County. From docking facilities on the Bras d'Or Lakes adjacent to the Cape Breton quarry, Little Narrows Gypsum ships upwards of one million tonnes of quarried gypsum yearly by company-owned vessel in 40,000 tonne lots to several destinations in the United States, including USG plants in Baltimore, Maryland and Jacksonville, Florida. Water depths in the Bras d'Or Lakes limit outgoing tonnage to 40,000 despite a vessel capacity of 60,000 tonnes.

As part of routine planning, the company has occasionally considered options to optimize its logistics. Consideration has been given to shipping product by rail to the port of Sydney where the vessel conceivably could be topped up. Analysis by the company has indicated that the added cost of materials handling, coupled with necessary capital expenditures on infrastructure at destination ports, renders the option prohibitive at this time and in the foreseeable future.

B. Coal – Donkin Colliery

Since the closure of submarine coal mines in Cape Breton, there has been periodic discussion at the community level about opening the Donkin Mine. In the late 1970s, CBDC, the federal Crown corporation then charged with operating submarine coal mines in Cape Breton, constructed twin tunnels at Donkin, Cape Breton, under the ocean to gain access to the coal reserves (estimated at in excess of 500 million tonnes recoverable) in the Harbour Seam within the Sydney Coalfield. For an array of reasons, the mine was not brought into service and the decision was taken in the 1980s to mothball the tunnels.

In its recent energy strategy the Government of Nova Scotia considered the potential of coal in addressing future energy needs and referenced the prospect of an operating mine at Donkin. Two local enterprises have shown interest in the project. Neither proponent has in the past, or is now, operating underground coal mines. Run-of-mine coal at Donkin is believed to have an acceptable calorific value for use in electrical generation but less than desirable ash and sulphur content, particularly in the context of a ratified Kyoto Protocol. Expectations are that an operating Donkin Colliery could produce upwards of 2 million tonnes of coal yearly under normal conditions.

Several fundamental and significant challenges must be overcome before Donkin Colliery is a realistic opportunity for future cargo in the near term. These challenges include the following:

- CBDC will have to transfer to the Government of Nova Scotia leases to the Sydney Coalfield;

- Nova Scotia must successfully execute a competitive bid process to assign leases to Donkin coal to an acceptable proponent;

- Prospective project proponents must demonstrate the financial, technical, and managerial experience appropriate to the operation of a project expected to cost more than $100 million;

- Long term markets must be confirmed; and

- Financing must be arranged.

Perhaps the most crucial of the challenges noted above is the issue of market. Without an extended contract from Nova Scotia's electrical utility, and there is no obvious indication that such an agreement will be forthcoming in the near term, it is unlikely that a submarine coal mine the size of Donkin will attract sufficient financing to commence operations. Moreover, the proposed mine site is some distance removed from an active rail line. The practicality of moving large volumes of coal from the mine by means other than rail to Nova Scotia electrical generating facilities or current port installations for marine transport seems unlikely.

C. Surface coal

Coal outcrops near the surface at several locations across Nova Scotia. Estimates produced as part of the Nova Scotia Energy Strategy suggest that more than 18 million tonnes of surface coal are recoverable through open pit mining. Of that total, the preponderance (11 million tonnes) is understood to be located at several sites within Cape Breton County as part of the Sydney Coal Field.

The Government of Nova Scotia anticipates calling for expressions of interest later this year respecting the viable extraction of surface coal in Cape Breton County. According to the Department of Natural Resources (DNR), ideally the coal will be mined at the rate of 500,000 tonnes yearly.

Surface coal has potential implications for rail should NSPI require it at generating facilities outside the Sydney area, in particular Point Tupper or Trenton. In this case, rail would be a practical transportation alternative. However, NSPI has indicated that the availability of good quality, competitively-priced local coal would be used to reduce imported fuel at power generating stations closest to the resource. In the case of Cape Breton County, this is understood to mean Lingan generating station in particular. Consequently, surface coal will almost certainly

be moved by truck. However, NSPI indicates that logistics will prevent it from accommodating volumes in the 500,000 tonne range by truck at Lingan.

D. Offshore fabrication and supply

The Geological Survey of Canada estimates that there may be an additional 12 trillion cubic feet (tcf) of natural gas in the offshore Scotian Shelf area which in combination with current discoveries of 6 tcf represents a total and discovered potential of 18 tcf and just over 1 billion barrels of oil and condensate. However, this does not include the gas potential in George's Bank, the Laurentian Channel, or the deepwater areas on the edge of the continental shelf. The Laurentian Channel alone is estimated to contain 8-9 tcf of gas reserves and 600-700 million barrels of oil.

The past 35 years in the Nova Scotia offshore have resulted in approximately 140 exploration/delineation wells resulting in just over 20 significant discoveries. Until recently, offshore exploration had focused on the Scotian Shelf. Exploration appears to be entering a new phase with the search moving into deeper water at the edge of the shelf and into the Laurentian Sub-basin to the east of Cape Breton as well as Sydney Bight.

The extent to which companies within the Sydney area are able to significantly participate in the offshore oil and gas industry and, thereby, generate noteworthy demand for inbound cargo as well as shipments of outbound product will depend on the type, size and geographic location of offshore needs. A recent Strait of Canso and Sydney Harbour Offshore Positioning Strategy prepared for the Cape Breton Growth Fund cites key assumptions potentially affecting the development of offshore fabrication and supply base capacity in the study areas. Among the more significant hypothesis were that:

- There would be no moratorium on seismic work and exploration drilling around Cape Breton;
- 2005 is the earliest that exploration drilling would take place in Sydney Bight or off the west coast of Cape Breton given additional information requirements and logistics;
- Under any case, 2004 is likely the earliest that exploration drilling would take place in the Laurentian Sub-basin;
- Six years is the anticipated length of time required from discovery to production in the case of deep-water fields; and
- Fabrication requirements will depend on the number of fields tied into each project and that fields vary in number from one to three.

Basic site infrastructure and service requirements for a supply base and fabrication yard are industry-specific and generally well known. In the case of a supply base, depth of water, docking infrastructure and transportation access are among principle criteria. A fabrication yard also requires minimum water depth and dock facilities, but in addition lay-down area at dockside appropriate to the assembly and load-out of structures is essential. Criteria vary with the nature of specific offshore projects.

Sydney Harbour is understood to offer locations meeting the basic site criteria for an offshore supply base. Sydport Industrial Park and Sydney Marine Terminal are both considered suitable locations. Sydport and the former Sysco site are both judged to be appropriate for offshore fabrication.

Capitalizing on opportunities in the offshore requires that an area have the capacity to respond to needs in a timely and competitive fashion. Local interests are proceeding to develop fabrication capacity at Sydport and propose to joint venture with Peter Kiewit Sons Inc., a diversified transnational company specializing in large scale construction and mining and actively involved in offshore energy. The partnership is understood to be bidding on structures required in connection with Tier 2 Sable Offshore Energy Project and the Deep Panuke Development.

The challenge facing prospective offshore industry suppliers, including fabricators, is to predict offshore needs. This notwithstanding, indications are that offshore activity off the coast of Cape Breton will take the better part of the current decade to gather significant momentum. The probability of an offshore fabrication yard or supply base in the greater Sydney area generating significant freight volumes in the next five years or so seems unlikely.

E. Fly ash

North American coal-fired power plants are understood to produce yearly on average upwards of 100 million tonnes of combustion by-products including some 70 million tonnes of fly ash. Ordinarily the coal-fired 600 MW Lingan Power Plant produces about 100,000 tonnes of fly ash yearly. Depending on quality, fly ash is suitable as a substitute for cement, lime and crushed stone. Until recently, fly ash has been sold from Lingan throughout eastern Canada. For example in 1999, 5,400 tonnes (60 carloads) were shipped from Lingan to St. Lawrence Cement. As well, 1,800 tonnes were shipped locally by truck, again for use in concrete production. In addition, bottom ash (a heavier and coarser coal combustion by-product) was transported by rail from Lingan but mostly from the decommissioned Seaboard Power Plant at Glace Bay to the International Coal Piers for shipment in 45,000-tonne lots by ship to North American customers. In 2000, sale was found for only 100 tonnes of fly ash from Lingan while there were no reported sales of bottom ash.

In recent months, NSPI has begun to blend petroleum coke with coal at Lingan. This action was influenced by pricing and environmental considerations. Unfortunately, coke leaves a pronounced carbon residue in fly ash that renders it unsuitable as a cement replacement. Consequently, there have been no reported sales of fly ash from Lingan in the past several months. In effect, NSPI has disengaged from the fly ash market at present. This situation is expected to continue for the foreseeable future.

As regards bottom ash, NSPI has virtually depleted its supplies of more marketable product from the former Seaboard Power Plant. The chemical characteristics of current bottom ash at Lingan make it difficult to market on a consistent basis.

The potential of fly ash to generate new traffic opportunities in the near term is unlikely.

F. Aggregate – south central Cape Breton

Sand is classified as granular aggregate as is gravel and both are the foundation of the province's aggregate industry which produces about 11 million tonnes yearly valued at greater than $50 million. Granular aggregate occurs in unconsolidated surficial deposits across the province. Most of the aggregate produced in Nova Scotia is consumed locally, particularly in the Halifax Regional Municipality which requires in excess of 3 million tonnes annually, of which sand comprises 200,000 tonnes.

DNR reports that a three-year survey project in south central Cape Breton has turned up what is believed to be a significant deposit of granular aggregate comprising considerable sand. As well, the department indicates that a New Jersey company interested in the deposit has made inquiries.

Current survey information on a south central Cape Breton deposit which is reported to be in close proximity to the CBNS main line is preliminary, and considerably more effort is required to delineate the geographic distribution, quantity and characteristics of the find. Under ordinary circumstances, upwards of twelve months would be necessary to complete a more detailed assessment. Thereafter, a project proponent would have to complete a necessary feasibility assessment examining market, engineering, transportation and financial data.

G. Limestone

DNR literature indicates that limestone along with dolomite is represented to some extent in many of Nova Scotia's geological systems. They are particularly evident in the metasedimentary rocks of large sections of Cape Breton Island, mainly in the counties of Cape Breton, Victoria and Inverness.

Nova Scotia deposits have fulfilled traditional uses of limestone in the Province for many years. DNR suggests the best deposits for development are the large tonnage carbonates found on Cape Breton Island. In this regard, it is understood that significant limestone deposits have been identified west of Sydney in areas paralleling the rail line and throughout sections of Victoria County. The deposits have captured the attention of some private sector interests in the province. However, there are two points of significance with respect to the commercial potential of limestone deposits in question: (i) that some deposits are a distance removed from the rail line and will almost certainly rely on truck transport if advanced to the commercial mining stage; and (ii) other deposits have yet to be fully delineated and will not move to the pre-feasibility stage until such information is available.

H. Tesma Precision Finished Components

Tesma Precision Finished Components Inc. (PFC) was established in Cape Breton in 1987. PFC produces automobile transmission components at two plants in North Sydney and employs more than 300 people. Inbound and outbound cargo is currently moved by truck. In recent months, the company assessed the cost of transporting inbound steel materials by rail from suppliers in southern Ontario, but indicated that it encountered a significant cost differential compared to truck. PFC anticipates the production of increasing quantities of aluminium product with inbound material requirements from Kentucky reaching about 1 million pounds in 2003 and growing to approximately 5 million pounds (equivalent of approximately 55 rail cars) in 2005. The company will consider a rail transportation proposal from Canadian National (CN) and CBNS. However, the relatively high-value, light-density inbound material is not ideally suited to the service and economic characteristics of rail transportation.

Appendix I

Nova Scotia Power Transportation Analysis

February 13, 2003

A. Background

Nova Scotia Power Inc. (NSP) is a vertically integrated, publicly regulated utility providing electrical service throughout the Province of Nova Scotia. NSP is a wholly owned subsidiary of Emera Incorporated an investor-owned publicly traded company. In 2001, NSP supplied 97% of the generation, 99% of the transmission and 95% of the distribution of electrical power in the Province of Nova Scotia. NSP serves approximately 445,000 customers including six municipal electric utilities.

Approximately 90% of NSP's generated energy is produced from fuel-burning thermal plants. NSP's ability to generate electricity is heavily dependent on solid fuel i.e. coal and petroleum coke (pet coke). Approximately 80% of its generation is coal-fired (including pet coke).

The closure of the Cape Breton coalmines in early 2001 by the Cape Breton Development Corporation (CBDC) resulted in NSP purchasing coal in the international markets. NSP's coal procurement strategy has been to stay short in the market by buying twice a year in the spring and fall for the following budget year. Actual contracts are for delivery eight (8) to eighteen (18) months after the contract date. Long term (or even medium term) fixed price contracts are not readily available in the international seaborne market. By entering into short-term market contracts NSP believes it minimizes fuel cost and the risk that coal would ever be significantly above market price in the long run. NSP generally contracts separately for the transportation of its coal purchases although in certain circumstances it will contract transportation as part of the price.

NSP has four coal-fired generation plants currently serviced from ports on Cape Breton Island (Sydney) or adjacent to the Island (Auld's Cove). Lingan and Point Aconi generating stations are serviced from the Port of Sydney. Auld's Cove (operated from the Martin Marietta quarry terminal at the Strait of Canso) services the Point Tupper generating station on Cape Breton Island and a portion of the Trenton generating station on the mainland.

An overriding consideration with respect to fossil fuel generation is the impact on environmental regulations and the future environmental reductions arising from the Kyoto agreement recently adopted by the federal government. In an address to the Strait Area Chamber of Commerce on November 29, 2002, Mr. David Mann, President and CEO of Emera Inc., recognized the "*need to be more sensitive to our environment. The burning of fossil fuels to generate electricity is, like transportation, a big emitter of atmospheric emissions. We are responding in several ways. First, consistent with the provincial Energy Strategy and consistent with common sense, we are taking steps to reduce their emissions. In the case of sulphur dioxide we are working to reduce their emissions by 25% by the year 2005 and by 50% by the year 2010 and we will work to reduce nitrogen emissions by 20% below 2000 levels by 2009".*

NSP is looking at alternative sources of energy generation ranging from natural gas to wind turbines. These efforts will likely have a dampening effect on increasing future coal and pet coke purchases to meet projected increased demand (projected at 2.5%) over the next several years.

B. Coal demand

The following exhibit outlines the size of the four generating stations noted above and annual coal requirements for their operation.

Exhibit I-1
Nova Scotia Power Inc. Coal/Petroleum Coke Requirements

Closest Port	Location	Production Units	Coal or Pet Coke Requirement (MT)
Sydney	Lingan	Four	1,600,000
	Point Aconi	One	400,000
Auld's Cove	Point Tupper	One	400,000
	Trenton	Two	800,000
Total Demand			3,200,000

The total demand created by the four generating stations approximates 3.2 million metric tonnes of coal and pet coke per annum. Pet coke is mixed with coal in varying ratios depending upon the generating station. Pet coke is substantially cheaper than coal however its use is limited by the boiler design, which limits ability to burn the product above certain percentages. There is a balance between cost and operational efficiencies that provides for optimum operation and value to NSP's ratepayer. As noted above the environmental emissions targets set by NSP and its sourcing of energy from natural gas to wind turbines will limit the growth in coal and pet coke purchases over the next three to seven years.

Operational characteristics of each generating station dictate the type of fossil fuel used in their electricity production as follows:

1. Lingan

Lingan, the largest of the four generating stations, was commissioned from 1980 to 1984 and was designed to utilize Cape Breton coal. Coal is transported to the site by rail car and is offloaded and stored on site. The site has storage capacity of approximately 220,000 metric tonnes.

With the appropriate imported coal to blend with local strip mine coal, Lingan could burn between 200,000 to 300,000 metric tonnes of strip mine coal.

The current design of its unloading facilities limits its ability to accept and store trucked in coal to approximately 250,000 metric tonnes per year at the site. Another limitation may be the acceptability of road access to residential homeowners along the road. There are two access options to Lingan. One option would require the trucks to travel on city streets through a conventional residential development area. This would be unattractive for a variety of reasons. The second option would be access Lingan through a highway network that would add distance over a high volume highway network (Highway 105 connecting to Glace Bay by highway then connecting to Route 28 leading to Lingan and New Waterford). Based on 250,000 metric tonnes of coal per annum trucks would be travelling this route every seven (7) to eight (8) minutes per eight hour day five days a week, fifty weeks a year.

Lingan has the capability to burn a blend of approximately 15% to 20% pet coke and 85% to 80% coal as fuel. Local strip mine coal is utilized in the mix of coal blended with the pet coke.

2. Point Aconi

The Point Aconi generating station was commissioned in 1994. NSP built a fluidized-bed combustor at Point Aconi to burn the high-sulphur Cape Breton coal with minimal emissions. Unfortunately, between the time of design and commissioning of the Point Aconi generator, the quality of coal from the Prince Mine deteriorated (in that its level of chlorine content increased) to the point it could not be consumed in the Point Aconi boiler[1]. Coal is transported by truck to the site where it is offloaded and stored on site. The site has storage capacity of approximately 60,000 metric tonnes.

Port Aconi has the capability to burn a blend of approximately 70% pet coke and 30% imported low sulphur coal as fuel. While no testing has been undertaken to burn strip mine coal as Lingan currently burns all that can be produced, there is concern around the chlorine levels in the coal, which would adversely effect the Point Aconi boiler.

3. Point Tupper

The Point Tupper generating station was commissioned for coal in 1987. It is located on property on the shore of the Strait of Canso. Coal is landed at the Martin Marietta terminal on the Strait of Canso at Auld's Cove and is transported to the site by rail car, offloaded and stored on site. The site has storage capacity of approximately 80,000 metric tonnes.

[1] Per Nova Scotia Utility and Review Board Decision regarding NSP's application for approval of certain Revisions to its Rates, Charges and Regulations.

A blend of approximately 15% pet coke and 85% coal is utilized as fuel.

4. Trenton

The Trenton generating station has two generating units. Unit # 5 was commissioned in 1968 and Unit #6 was commissioned in 1991. It is located in Trenton and coal is transported to the site by rail car where it is offloaded and stored on site. The site has storage capacity of approximately 100,000 metric tonnes.

Trenton has the capability to burn a blend of approximately 10% to 20% pet coke and 90% to 80% coal as fuel.

Due to its age, size, older design, cost of operation and capital cost improvements to meet future emission requirements utilization of Unit # 5 will likely be significantly curtailed by 2009 resulting in a significant reduction in coal requirements.

C. Coal supply

NSP purchases coal from domestic sources as well as importing coal primarily from the northeastern United States and South American sources in Venezuela and Columbia.

1. Domestic coal

a) Current supply

NSP is currently purchasing approximately 60,000 MT of coal per annum from strip mining operations located in Cape Breton County, Nova Scotia.

NSP is currently purchasing approximately 300,000 MT of coal per annum from strip mining operations located in Stellarton, Nova Scotia.

b) Potential future supply

Surface Coal

The Province of Nova Scotia Department of Natural Resources estimates there is 5 to 6 million metric tonnes of surface coal in Cape Breton County and anticipates plans calling for the extraction of 500,000 to 600,000 tonnes over the next five to six years. While provincial leases have not been tendered and feasibility studies have not been undertaken to determine if the coal can be strip mined and sold at a profit, given the presence of existing privately owned strip

mining operations, it is reasonable to expect that a commercially viable strip mining operation can be established.

Submarine Coal

Annual coal supply from the Donkin Mine would approximate 2 million metric tonnes per annum. The probability of this source of supply is much more speculative (given the development issues covered earlier in this report) as to its availability within the two to five year time frame covered by our report.

2. Imported coal

Based on domestic current purchases the Lingan and Point Aconi generating stations combined will require approximately 1.9 million metric tonnes of pet coke and coal. The large quantity of pet coke burned at the Point Aconi generating station and the requirement to burn a low sulphur coal in combination does not provide an opportunity to use Cape Breton strip mine coal in the Point Aconi boiler. The Lingan generating station utilizes approximately 1.28 to 1.36 million metric tonnes of coal in addition to 320,000 to 240,000 tonnes of pet coke per annum respectively.

In the event additional strip mining leases are issued it may be possible to reduce the imported coal supplied to Lingan to approximately 1.03 to 1.11 million metric tonnes. NSP has indicated that it would direct domestic coal to the closest generating station to minimize transportation costs included in its rate base.

The Province's projected extraction exceeds the ability of NSP's Cape Breton County based generating station requirements to handle domestic coal delivered by truck from strip mines by 250,000 to 350,000 metric tonnes. This additional coal would have to be sold on the market for shipment from Sydney.

The only other opportunity to ship domestic coal from Cape Breton County would occur if the Donkin Mine were operating. Based on estimated production this would add another 2.0 million metric tonnes to be sold on the market for shipment from Sydney. As noted above commercial production of coal from this opportunity has been evaluated as highly unlikely within the two to five year time frame of this report.

Based on current domestic purchases the Trenton generating station requires approximately 500,000 metric tonnes of imported pet coke and coal. The Point Tupper generating plant requirement is approximately 400,000 metric tonnes of imported pet coke and coal. The total pet coke and coal currently being imported through Auld's Cove approximates 900,000 metric tonnes

per annum. There is a reasonable probability that the amount of imported pet coke and coal may decline by up to 50% after 2008.

D. Coal receiving facilities

At present imported coal for the four generating stations is being delivered by belted bulk carriers to the Port of Sydney and to Auld's Cove. Currently ocean freight rates for belted vessels and gearless vessels are approximately the same as a result of a large supply of belted vessels available for hire.

1. Port of Sydney

Sydney is the closest port to both Lingan and Point Aconi and thus is the most direct access point at which to receive imported coal and pet coke. Based on NSP's scheduled deliveries of imported coal belted self-unloading vessels are being utilized as the most cost effective and efficient means of transporting imported coal.

Sydney harbour is limited in terms of the size of ship that it can accommodate as a result of a rock shelf at the harbour entrance. The majority of Panamax size belted self-unloading vessels are limited to carrying approximately 90% of their maximum capacity (i.e. approximately 49,500 metric tonnes) when landing in Sydney.

NSP has a long-term (ten year) Service Agreement (until 2012) with service providers to unload and deliver coal to Lingan and to load on trucks for Point Aconi. The existing Service Agreement covers the costs associated with unloading, surge storage, loading onto truck and rail cars at the former CBDC international pier. The international pier will be upgraded to handle surge capacity related to vessel unloading of up to 200,000 metric tonnes. The agreement also includes rail transportation to the Lingan generating station.

The existing Service Agreement allows for NSP to purchase up to 250,000 metric tonnes of Cape Breton strip-mined coal. In addition, if additional quantities of pet coke and coal were shipped into Sydney, NSP would be responsible for added costs such as demurrage and any premium rates associated with moving the additional volume.

The CBDC international pier was designed for shipping coal out and not receiving coal. While some capital improvements have been made, efficient unloading requires a belted self-unloading vessel be used. Significant capital expenditures for unloading equipment would be required if gearless vessels were used to transport the imported coal. The existing Service Agreement does not cover gearless vessel unloading and any additional costs of providing facilities would be for the account of NSP. NSP would make this expenditure once the business case demonstrates a reasonable return on the investment could be achieved.

Another factor affecting the transportation of coal to Sydney when compared to Auld's Cove is the additional distance from the Strait of Canso to Sydney. This additional traveling time adds to the ocean freight rate charged by the carrier for the Sydney destination.

2. Auld's Cove

At present, NSP has contracted with Martin Marietta (operator of a rock quarry including a shipping terminal) to utilized their loading facilities infrastructure in Auld's Cove to unload coal and pet coke shipments and then transfer them by train to Point Tupper and Trenton. The Auld's Cove facility has simple docking piles and requires belted unloading vessels to unload the coal onto a holding area and then it is transferred to railcars.

The existing unloading facility has several disadvantages. It is limited in space, trains are required to shunt cars in and out to enable loading and conflicting scheduling with other vessels contracted by Martin Marietta to ship out rock from its quarry have resulted in significant demurrage charges.

These disadvantages are offset by better freight rates, the opportunity of lower negotiated freight rates resulting from back hauls transporting rock from the Martin Marietta quarry and a limited capital investment requirement by NSP. The belted self-unloading vessels can bring in a full capacity load, as the Canso Strait is the deepest natural harbour on the North American Atlantic coast. While the rated capacity of the self-unloading vessel is approximately 60,000 metric tonnes the practical capacity is closer to 55,000 metric tonnes.

3. Point Tupper

NSP is currently evaluating the option to build a new unloading terminal at Point Tupper and increasing the coal storage facility by 75,000 metric tonnes to enable transhipment of coal to the Trenton generating station. This option also provides greater flexibility with respect to risk management (i.e., would help to mitigate risk of supply interruption within the Strait of Canso) regarding Cape Breton based generating stations. This would provide NSP with greater flexibility and lower costs particularly as they relate to demurrage currently being incurred at the congested Auld's Cove site. By developing a new unloading terminal adjacent to its Point Tupper generating station it would eliminate rail costs from Auld's Cove, require fewer rail cars and reduce unloading costs. Savings in rail car loading to Cape CBNS offsets the additional cost of rail transportation distance (i.e. Point Tupper to Auld's Cove) when shipping to Trenton.

E. Transportation differential analysis

This section of our report discusses two options, the constraints associated with each option and the costs compared to savings available to NSP.

NSP and CBNS have provided information regarding their transportation handling costs related to coal shipments in order that we may analyze the differential cost/savings of utilizing the CBNS line between Sydney and Point Tupper to transport coal for use by NSP in its various generating stations. This analysis has been prepared from the information provided by NSP and CBNS. We have accepted the information as provided without independent review. Our analysis is presented on the basis of cost/saving differentials relative to NSP's current transportation arrangement in order to protect the confidentiality of commercial agreements with their service providers.

1. Two Options

There are two options that would generate additional rail volume between Sydney and Point Tupper. The first alternative is the shipment of coal and pet coke from Sydney to Point Tupper and Trenton. The second would be the shipment of coal and pet coke from Auld's Cove or Point Tupper to Lingan and Point Aconi.

2. Transportation Constraints and Costs

Each of the above noted options have their own practical constraints and cost/savings relative to NSP's current transportation model, i.e., shipment of coal to Point Aconi and Lingan via the Port of Sydney and to Point Tupper and Trenton via Auld's Cove.

a) First Option - Coal by rail from Sydney to Point Tupper and Trenton

There are no apparent capacity constraints that would inhibit/prohibit NSP from transhipping coal to Point Tupper and Trenton through the Port of Sydney. NSP does have a short-term service agreement with Martin Marietta that would not allow for the elimination of terminal handling costs at Auld's Cove in the short term.

Cost differentials were examined in four categories, ocean freight, demurrage, terminal handling costs and rail freight rates. All cost and saving differentials are expressed in dollars per metric tonne.

Ocean Freight

We examined ocean freight rate information provided by NSP and estimated ocean freight rates from source of supply based on averages of rates from various shippers weighted by source of

supply utilizing actual coal imports for 2001. Our calculations indicated an ocean freight differential between Auld's Cove and Sydney of $0.63 per metric tonne, i.e., it would cost an average $0.63 per metric tonne more to ship coal to Sydney than Auld's Cove. NSP uses in its analysis a freight rate differential of $0.80 per metric tonne.

Demurrage

The increased volume of coal shipments would result in an additional eighteen (18) to twenty (20) vessel unloading in Sydney over and above the current forty (40) to forty-five (45) vessel unloading. Increased vessel unloading will likely result in delays for which NSP would be responsible for demurrage. According to NSP, they anticipate the net increase in demurrage would approximate $0.33 per metric tonne.

Terminal Handling Cost

Contractual obligations under NSP's terminal service agreements require them to pay both service providers' terminal handling cost. In essence, there would be no saving in the short term, only additional cost for terminal handling.

There is a possibility that existing service fees may decline as a result of the additional volume being spread over the same fixed cost component of the contract. However, there is also a provision requiring NSP to pay the premium labour costs as a result of increased volume over contractual requirements. The renegotiated service fee would also require the inclusion of a rail rate from the international pier to the rail interchange for shipments to Point Tupper and Trenton. NSP has provided estimates of these costs for purposes of our analysis.

The best case (i.e., least cost) scenario assumes after the expiration of the Martin Marietta terminal service agreement, NSP does not renew its contract with Martin Marietta nor establish a Point Tupper terminal unloading facility. In that set of circumstances, there would be a net additional cost differential in terminal handling costs by replacing Auld's Cove with Sydney of approximately $0.43 per metric tonne based on current rates to a maximum saving of up to $0.52 if current rates are negotiated to reflect economies of scale related to increased volume.

Rail Rate

A comparison of rail rates from Auld's Cove to Point Tupper and Trenton being replaced by those from Sydney resulted in a net cost differential of approximately $3.91 per metric tonne.

Conclusion

Based on our analysis, we have concluded that in the best case scenario there would be a net additional cost differential approximating $4.35 to $5.30 per metric tonne, if NSP was to ship coal destined for Point Tupper and Trenton via the Port of Sydney as compared to NSP's current receiving terminal located in Auld's Cove.

In our review of NSP's evaluation of the Point Tupper terminal option, the cost differential would be greater than Auld's Cove by approximately $2.00 to $3.00 per metric tonne.

b) Second Option – Coal by rail from Auld's Cove/Point Tupper to Point Aconi and Lingan

Currently, Auld's Cove is handling 900,00 metric tonnes and is unloading, handling and shipping in a restricted portion of Martin Marietta's shipping terminal. NSP indicates substantial capital investment in unloading facilities would be required if additional volume was to be landed at Auld's Cove. The Martin Marietta terminal operation handles approximately 3.0 million metric tonnes of aggregate per annum. Based on current facilities, Auld's Cove does not have the capacity to handle an additional 1.9 to 2.0 million metric tonnes of coal. NSP also has a ten-year service agreement with its existing service provider that requires NSP to pay a minimum service fee essentially equivalent to all fixed costs including capital.

In addition, if coal is sent by rail to Point Aconi from Auld's Cove/Point Tupper:

- A coal transhipment facility will be required to transfer the coal from the railcars to trucks. There is no facility currently constructed that would enable this to take place outside the international pier; and

- The Point Tupper terminal facility would have to be substantially increased to handle the 222% increase in volume.

Cost differentials were examined in four categories, ocean freight, demurrage, terminal handling costs and rail freight costs. All cost and saving differentials are expressed in dollars per metric tonne.

Ocean Freight

Our ocean freight analysis indicated that shipping coal from Auld's Cove/Point Tupper would likely yield ocean freight savings of $0.63 to $0.80 per metric tonne.

Demurrage

Shipping all coal and pet coke requirements to Point Tupper would result in approximately fifty-eight (58) to sixty-five (65) vessel unloadings in Point Tupper. Given the nature of the ocean freight contracts which allow a ten day window during which a vessel could arrive, there is a high probability, based on past experience, more than one vessel will arrive at the same time or so close together resulting in unloading delays and demurrage costs. At present, NSP is incurring demurrage charges at the Auld's Cove location. Demurrage is likely to be incurred at a newly constructed terminal facility at Point Tupper where volumes would be three times that at Auld's Cove. NSP currently does not incur demurrage charges in Sydney as its service provider is responsible under contract for these costs. The current demurrage cost per metric tonne at Auld's Cove approximates $0.67 per metric tonne. The demurrage cost per metric tonne in Sydney was estimated by NSP at $0.33 per metric tonne. It is likely demurrage would result in a net cost differential of $0.33 to $0.67 per metric tonne, if coal destined for Point Aconi and Lingan was shipped from Point Tupper.

Terminal Handling Costs

Contractual obligations under NSP's terminal service agreements require them to pay both service providers' terminal handling cost. In essence, there would be no saving in the short term, only additional cost for terminal handling.

The only option for transhipment from the Strait of Canso would require a new terminal to be constructed at Point Tupper designed to handle 3.0 million metric tonnes of coal.

Such a terminal facility for transhipment of coal to Sydney has not been examined by NSP and no estimate has been made of what terminal handling costs would be in this scenario. There would be a requirement for significant capital expenditures to allow for handling and holding of an annual volume of 3.0 million metric tonnes given the different varieties of coal and pet coke being imported. For purposes of our analysis, we have used NSP's current preliminary estimate associated with the much smaller terminal facility capable of handling and holding an annual volume of 900,000 metric tonnes.

The rail line to Lingan is essential to the delivery of coal to the Lingan generating station. It is the only viable transportation route given the quantity of coal required to operate the generating station. Whether coal is shipped from Sydney or Point Tupper, the costs related to this transportation route would be the same. This is the same for trucking costs to Point Aconi.

Our analysis of the remaining terminal handling costs assumed the international pier facilities in Sydney would be utilized for transhipment of coal destined for Point Aconi. Handling costs included an estimate of the fixed cost component of the existing Service Agreement for Sydney

as part of the cost of transhipping coal destined for Lingan. Based on these assumptions, we estimated NSP's net terminal handling cost differential at approximately $3.98 per metric tonne.

Rail Rate

In the current transportation arrangement, NSP is not required to utilize CBNS service to tranship coal received in Sydney. The cost to deliver coal to Sydney from Point Tupper based on CBNS quoted rates approximates $6.73 per metric tonne.

Conclusion

Based on our analysis, we have concluded that there would be a net additional cost differential of $10.21 to $10.38 per metric tonne for coal shipped to Point Aconi and Lingan from Point Tupper as compared to Sydney.

F. Other considerations

NSP has advised that they carried out financial modeling to determine the transportation costs for various options including those outlined above prior to deciding on their current transportation arrangement. In addition to cost, NSP also took into account risk management considerations.

Using two ports to import coal (one with an alternative unloading facility) significantly mitigates the risk associated with supply interruption relative to a single port importation model.

NSP has indicated that they would be prepared to commit to certain financial support within reasonable commercial terms to support continuation of the rail line as part of a contingency plan in the event of supply interruption through one port or the other currently used to import coal. Specifically, NSP would be prepared to provide, over a ten year period, $1 to $2 million dollars on a net present value basis provided the arrangement is approved by the Nova Scotia Utility and Review Board and there would be a guarantee the rail line would operate for a ten year period.

Appendix J

Future Traffic Flows

February 13, 2003

Exhibit J-1

Metric Tonnes Inbound – By Truck (Scenario: 2004 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	15,403	N/a
Petroleum Products	2,144	N/a
Food and Agricultural Products	52,900	N/a
Other	1,315	N/a
Central Canada		
Raw Materials	2,845	N/a
Petroleum Products	760	N/a
Food and Agricultural Products	11,050	N/a
Other	7,997	N/a
Western Canada		
Raw Materials	8,700	N/a
USA		
Raw Materials	1,117	N/a
Total	**104,231**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-2

Metric Tonnes Outbound – By Truck (Scenario: 2004 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	49,354	N/a
Food and Agricultural Products	34,450	N/a
Central Canada		
Raw Materials	4,572	N/a
Food and Agricultural Products	1,500	N/a
Manufactured Goods	12,261	N/a
Western Canada		
Manufactured Goods	2,223	N/a
Total	**104,360**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-3

Metric Tonnes Inbound – By Rail (Scenario: 2004 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	204	N/a
Central Canada		
Raw Materials	15,022	N/a
Petroleum Products	800	N/a
Food and Agricultural Products	4,526	N/a
Western Canada		
Raw Materials	22,641	N/a
Food and Agricultural Products	2,790	N/a
USA		
Raw Materials	13,842	N/a
Total	**59,825**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-4

Metric Tonnes Outbound – By Rail (Scenario: 2004 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	28,000	N/a
Central Canada		
Raw Materials	700	N/a
Western Canada		
Manufactured Goods	499	N/a
Total	**29,199**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-5

Metric Tonnes Inbound – By Truck (Scenario: 2007 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	15,926	N/a
Petroleum Products	2,144	N/a
Food and Agricultural Products	52,900	N/a
Other	1,315	N/a
Central Canada		
Raw Materials	3,061	N/a
Petroleum Products	760	N/a
Food and Agricultural Products	11,050	N/a
Other	8,147	N/a
Western Canada		
Raw Materials	8,700	N/a
USA		
Raw Materials	1,117	N/a
Total	**105,120**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-6

Metric Tonnes Outbound – By Truck (Scenario: 2007 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	49,861	N/a
Food and Agricultural Products	34,450	N/a
Central Canada		
Raw Materials	4,572	N/a
Food and Agricultural Products	1,500	N/a
Manufactured Goods	13,261	N/a
Western Canada		
Manufactured Goods	2,223	N/a
Total	**105,867**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-7

Metric Tonnes Inbound – By Rail (Scenario: 2007 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	224	N/a
Central Canada		
Raw Materials	16,382	N/a
Petroleum Products	800	N/a
Food and Agricultural Products	4,526	N/a
Western Canada		
Raw Materials	22,652	N/a
Food and Agricultural Products	2,790	N/a
USA		
Raw Materials	15,677	N/a
Total	**63,051**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-8

Metric Tonnes Outbound – By Rail (Scenario: 2007 With Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	14,000	N/a
Central Canada		
Raw Materials	700	N/a
Western Canada		
Manufactured Goods	907	N/a
Total	**15,607**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-9

Metric Tonnes Inbound – By Truck (Scenario: 2004 Without Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	15,262	N/a
Petroleum Products	2,144	N/a
Food and Agricultural Products	52,900	N/a
Other	2,813	N/a
Central Canada		
Raw Materials	11,153	N/a
Petroleum Products	1,560	N/a
Food and Agricultural Products	11,860	N/a
Other	6,500	N/a
Western Canada		
Raw Materials	112	N/a
Food and Agricultural Products	2,790	N/a
USA		
Raw Materials	13,662	N/a
Total		
	120,756	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-10

Metric Tonnes Outbound – By Truck (Scenario: 2004 Without Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	47,867	N/a
Food and Agricultural Products	34,450	N/a
Central Canada		
Raw Materials	4,572	N/a
Food and Agricultural Products	1,500	N/a
Manufactured Goods	11,961	N/a
Western Canada		
Manufactured Goods	2,722	N/a
Total	**103,072**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-11

Metric Tonnes Inbound – By Truck (Scenario: 2007 Without Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	15,606	N/a
Petroleum Products	2,144	N/a
Food and Agricultural Products	52,900	N/a
Other	2,963	N/a
Central Canada		
Raw Materials	11,368	N/a
Petroleum Products	1,560	N/a
Food and Agricultural Products	11,050	N/a
Other	6,500	N/a
Western Canada		
Food and Agricultural Products	3,600	N/a
USA		
Raw Materials	14,620	N/a
Total	**122,311**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Exhibit J-12

Metric Tonnes Outbound – By Truck (Scenario: 2007 Without Rail)		
Origins	**Destinations**	
	Industrial and Central Cape Breton (Metric Tonnes)	**Strait Area (Metric Tonnes)**
Maritimes		
Raw Materials	48,374	N/a
Food and Agricultural Products	34,450	N/a
Central Canada		
Raw Materials	4,571	N/a
Food and Agricultural Products	1,500	N/a
Manufactured Goods	11,961	N/a
Western Canada		
Manufactured Goods	2,722	N/a
Total	**103,578**	**N/a**

Note: Information on cargo volumes to or from the Strait Area was not available from the Shipper Survey. No respondents indicated any tonnages originating or terminating in the Strait Area.

Appendix K

Implications of Modal Shift

February 13, 2003

This appendix examines the implications of identified modal shifts from rail to truck in the event of discontinued rail service, and the implications on other current rail users who lack alternative transportation options.

A. Methodology to determine extent of modal shifts

CBNS identified current users of rail service and carloads moved for a recent twelve month period. In total, there were 24 rail users of which fourteen were based in Cape Breton. In the reporting period, a total of 1,212 carloads were moved by all users, including Sysco and Cape Breton Development Corporation (CBDC). Sysco, CBDC and one other rail user are not expected to be active rail users in 2003 or beyond. Adjusting total rail car movements to reflect these discontinued movements, there were effectively a total of 864 rail cars moved in the report period by currently active shippers. Eleven shippers/receivers accounted for about 85% of this traffic base.

The potential impact on current rail users of a required modal shift away from rail was determined by reviewing the users' completed shipper surveys. According to the responses, there were two possible scenarios for current rail users if rail service is discontinued. Current rail users would either:

- Switch their mode of transportation; or
- Cease to operate and/or transport goods on Cape Breton Island.

1. Traffic subject to modal shift

Eight rail shippers indicated that discontinued rail service would cause them to switch transport modes. In all cases, traffic would shift from rail to truck.

We determined the incremental tonnes resulting from a modal shift, from the survey results for 2004 (assuming no rail service). The total incremental tonnes that would shift to truck by 2004 were 27,946. We did not consider the year 2007 (assuming no rail service) for this analysis because the change in the volumes projected by the users between 2004 and 2007 was small, just 2.8%. From the incremental truck tonnage, we determined the number of truckloads. We assumed that each incremental truckload would transport twenty-five (25) tonnes, based on maximum truck weights in Canada. (No traffic at risk of modal shift would be moved by truck in the U.S., where trucking weight limits are lower.) Therefore, the total number of truckloads was calculated to be 1,118, based on 27,946 metric tonnes divided by 25 metric tonnes per truckload.

We also determined the increased volume of truck kilometres (km) in terms of truck-kms and tonne-kms on Cape Breton highways and Nova Scotia and New Brunswick highways (as far as Moncton where applicable). To do this, we considered the transfer points from rail to truck. The intended transfer points (Point Tupper, Halifax, Moncton or Montreal) were obtained either from survey responses or from interviews with the rail users.

From this information, we determined the extent of extra Cape Breton traffic by taking into account the location of companies to either the Canso Causeway or Point Tupper (depending on the point of transfer between modes). The Canso Causeway was used in the kilometre calculation for Cape Breton if the company planned on transferring goods to truck at a point off Cape Breton Island. If Point Tupper was the transfer point of choice for the company, it was used as the parameters for the calculation. And as a result, for companies choosing Point Tupper as their transfer point there would be no implication on increased truck traffic on Nova Scotia or New Brunswick highways.

By taking into account the rail users' intended transfer points, we determined the amount of truck volume (number of trucks and truck tonnes) on highways on mainland Nova Scotia and New Brunswick as far as Moncton. The kilometre distances from the Canso Causeway to Halifax and Moncton were obtained from DOTPW: 263 km to Halifax and 305 km to Moncton. We also assumed that trucks driving to or from Cape Breton would return empty. Therefore to take into account the return trip, the truck-kms to and from the destination were used. We assumed that the truck would return on the same route, therefore it would be the same km as the loaded truck. Incremental truck kilometres and tonne kilometres were calculated using the following formulas:

Cape Breton Truck-kms for loaded and empty trucks

# of incremental truckloads x distance in km on Cape Breton highways

NS/NB Truck-kms for loaded and empty trucks

# of incremental truckloads x km on NS or NB highways as far as Moncton, in relation to the transfer point

Cape Breton Tonne-kms

# of incremental tonnes x distance in km on Cape Breton Highways

NS/NB Tonne-kms

# of incremental tones x km on NS or NB highways as far as Moncton, in relation to the transfer point

The survey results were adjusted to reflect known rail users who did not respond to the survey. All amounts were increased using a multiplier. This included adjusting the following amounts:

Incremental tonnes shifted to truck;
# of incremental truckloads;
Cape Breton loaded and empty truck-kms;
NS/NB loaded and empty truck-kms;
Cape Breton tonne-kms;
NS/NS tonne-kms;
Incremental costs (including one-time investment, transportation and handling costs, other recurring costs, wage costs and loss of sales revenue);
FTE's.

The multiplier was determined based on rail traffic data obtained from CBNS for the twelve-month period from December 1, 2001 to November 30, 2002. Total revenue carloads were adjusted to remove the effect of former shippers not expected to be active rail users in future (regardless of the railway's status). From that, the number of carloads for companies who would cease to operate or who would not use Cape Breton transportation any longer as a result of the loss of rail was deducted to derive the number of remaining active shippers. Then the number of annual carloads from survey respondents was deducted to calculate the remaining traffic for active rail users who did not respond to the survey. We assumed that all these non-respondents would switch to truck in the event of loss of rail service.

The calculation is detailed below:

2002 Rail Traffic	XX	Railcars
Less: Carloads of former rail users not expected to be active in the future	(XX)	Railcars
Less: Carloads of companies who would cease to operate or transport goods across Cape Breton	(XX)	Railcars
Less: Carloads from survey respondents	(XX)	Railcars
Remaining number of carloads for those who did not respond	XX	Railcars

The remaining number of carloads was then divided by the rail traffic of those who did respond to the survey, to come up with a multiplier of 1.6. This multiplier was then applied to all results listed above. For instance, the number of rail freight tonnes of survey respondents that would

shift to truck (27,946) was adjusted for non-responses by the multiplier of 1.6 to estimate total incremental truck tonnes due to a modal shift to truck for current rail shippers of 44,714 tonnes.

2. Traffic subject to elimination

For the analysis of companies (4 shippers) who would cease to operate and/or transport goods within Cape Breton Island, we reviewed the lost volumes of commodities being shipped and the related impacts. We identified the current volumes in tonnes (26,033) and the corresponding number of railcars (417) that would no longer be transported to or from Cape Breton. The impacts on the local economy were measured in dollars by looking at the loss of sales, the impact of spending on locally-sourced goods, the impact in reduction of wages and related full-time equivalent employees, and the impact on increased costs to companies for relocation away from Cape Breton.

We also considered the impact on Marine Atlantic for inbound rail traffic transloaded for furtherance to Newfoundland (939 truckloads) that would no longer be shipped out of North Sydney. We multiplied the number of foregone truckloads by Marine Atlantic's commercial rates (approximately $500 per truckload).

B. Overall direct economic impact

The overall direct impact of a modal shift away from rail results in some measurable consequences, but the effect may not be as significant as originally anticipated, particularly in terms of lost person-years of employment and lost sales. The absence of rail is likely to result in the relocation of at least two significantly rail-dependent companies and the diminishment of another. In aggregate, this would result in lost sales of approximately $3.7 million, and a reduction in local employment and wages of 13.5 person-years of direct employment and $290,000 in wages. Local providers of goods such as fuel and services such as snow clearing would likely encounter reduced sales estimated at about $240,000. Marine Atlantic is expected to experience some decline in truck traffic with the departure of major building supply reloaders/transhippers from Cape Breton. This is estimated to translate into a decline in Marine Atlantic tariffs approximating $470,000. These impacts are summarized in Exhibit K-1.

Outside Cape Breton, a Newfoundland-based distributor of grains and feeds anticipates the loss of rail service on Cape Breton Island will result in incremental capital costs of about $900,000 related to the construction of necessary storage facilities.

Current users of rail who will make a modal shift following closure of service anticipate incremental operating costs and plant investment. Exhibit K-1 summarizes these impacts.

Exhibit K-1
Economic impact assessment based on expected actions of current rail users

Factor	Companies closing or reducing operations	Companies shifting transport modes	Combined impacts
On-going impacts			
Current rail users			
Lost sales	$3,700,000	$0	$3,700,000
Lost person-years employment	13.5	3	16.5
Lost wages	$290,000	$130,000	$420,000
Increased transport costs	n.a.	$1,600,000	$1,600,000
Other operating costs	n.a.	$240,000	$240,000
Local service providers			
Lost revenue from current users	$240,000	$0	$240,000
Marine Atlantic			
Lost revenue from current users	$470,000	$0	$470,000
One-time impacts			
Investment in facilities elsewhere	$900,000	$0	$900,000
Investment to alter facilities	n.a.	$1,120,000	$1,120,000

Off-setting positive economic impacts would arise, such as increased economic activity generated by trucking companies, including local truckers. These positive impacts have not been quantified.

C. Impact from VIA Rail

Based on our discussions with VIA Rail representatives, it is our understanding that VIA Rail would not wish to acquire the Cape Breton rail infrastructure in the event of abandonment by CBNS. In other instances where VIA Rail has acquired track infrastructure, its rail service was either deemed an essential service (e.g., Gaspé), or its frequency and revenues were particularly significant (e.g., a portion of the route between Montreal and Ottawa). Neither condition applies in the case of Cape Breton. Therefore, in the event of abandonment by CBNS, VIA Rail's Bras d'Or seasonal excursion service would also be eliminated. We estimated the impact on the tourism sector in that eventuality, based on discussions with VIA Rail, information obtained from

the Department of Tourism (DOT), and our understanding of excursion tourist spending patterns in Atlantic Canada.

1. Accommodation

VIA Rail plans to increase the fare for its Bras d'Or service in 2003, to upgrade elements of the excursion experience and attempt to win repeat business from former patrons. We have assumed that the service improvements will be sufficiently attractive so that a fare increase will not result in a reduction in total ridership compared to last year. Based on figures for last year's total ridership, and considering the uneven split between Sydney-destined load factors versus Halifax-destined (return) load factors, and assuming that overnighting passengers in Sydney would occupy hotel rooms based on double occupancy, we estimate that the Bras d'Or service generates some 800 room-nights annually in Sydney. Resulting hotel revenues are estimated at $83,000 for hotel operators, plus another $12,500 in government taxes.

2. Other Bras d'Or passenger spending in Cape Breton

Based on VIA Rail's experience with load factors on the return journey, we estimated the number of passengers that are likely to remain in Cape Breton for one or more days (and contribute to Cape Breton tourist spending), compared to the number who would return to Halifax on the Bras d'Or the following morning (without contributing to tourist spending in Cape Breton). We further assumed that those passengers that did not return on the Bras d'Or would spend one extra day in Cape Breton.

Figures provided by DOT based on a tourist exit survey conducted in 2000 indicate that individuals visiting Nova Scotia for pleasure spend on average up to $58 per person per day for items corresponding to the types of spending that would be expected of visiting Bras d'Or passengers (restaurants, taxis or car rental, handcrafted products, recreation and entertainment, other shopping, and other items). This figure is comparable to our experience with cruise passenger spending in smaller centres of Atlantic Canada, whose spending patterns would resemble those of Bras d'Or "land cruise" patrons. Based on this average spending times the number of passenger-days estimated within Cape Breton, we estimate that other spending would equal some $78,000 annually.

3. Retention of tourist revenues through modal shift

VIA Rail's market intelligence over its past three years of experience with the Bras d'Or indicates that a very high proportion (94%) of its patrons originate from outside of Nova Scotia. While

some patrons may travel on the Bras d'Or solely for the train experience, VIA Rail believes that most of its ridership is composed of tourists who would otherwise be visiting Nova Scotia anyway. This is consistent with VIA Rail's positioning of the product, with seats sold in blocks to tour operators. Therefore it is reasonable to assume that a good proportion of the tourist spending in Cape Breton attributable to Bras d'Or passengers would occur even in the event of train service cancellation, with the tourists reverting to other modes of travel. (In particular, many of the Bras d'Or patrons are visiting Nova Scotia on motor coach tours of the Maritimes, in which case they would likely still tour Cape Breton by motor coach, instead of substituting passenger rail for a day.)

We have conservatively assumed that 50% of the tourism economic impacts initially attributable to the Bras d'Or train would be retained in the event of train cancellation, by tourists substituting other modes of travel. Therefore, applying a factor of 50% to the economic impacts from accommodation and other spending, we estimate that the reduction in economic impacts for the tourism sector in Cape Breton from the cancellation of the Bras d'Or service would amount to approximately $80,000 per year.

4. Other impacts not quantified

In addition to the amount of $80,000 cited above, other impacts should be noted which we have not quantified. These include the contribution by VIA Rail to CBNS for track access fees (understood to cover operating expenses such as diesel fuel, train crew wages, and a contribution to track maintenance, train control, insurance and overhead); other spending by VIA Rail within Cape Breton (e.g., victualling); spending by VIA Rail On-Board Service staff within Cape Breton for accommodation; and impacts from foregone spending in other parts of Nova Scotia by some tourists and VIA Rail.

D. Changes compared to current highway traffic

1. Incremental and current levels of large truck traffic

Exhibit K-2 illustrates the additional potential traffic levels from goods transportation shifted from the rail to the highway mode in Cape Breton as a result of the loss of rail service. For illustrative purposes, we have analyzed two roadway segments: Trunk 4 between St. Peter's and Sydney Forks, and Highway 105 between Orangedale Road and the Victoria/Cape Breton County Line. We have conservatively assumed that the incremental large truck traffic in terms of vehicle counts (as used in this analysis) equals twice the required number of trucks to handle the goods tonnage: this assumption means that the trucks would carry goods in one direction then return empty. To the extent that the extra trucks could pick up backhaul movements of current volumes moving by truck, that would reduce the number of incremental trucks counted.

In Chapter II the existing volumes of large truck traffic (and total vehicle traffic) were presented for these same highway segments, on an average daily basis. It is apparent that Highway 105 has 4.6 times the large truck traffic of Trunk 4. One would expect that the incremental truck traffic caused by a modal shift would also reflect this preponderance towards Highway 105. However, for the sake of argument we allowed in our analysis for 25% of the incremental large truck traffic to travel via Trunk 4. When analyzing Highway 105, we looked at the results if all incremental truck traffic went by the TCH. The results are shown below.

Exhibit K-2

Incremental and current vehicle counts for large trucks

Highway	Segment	Large Truck Volume p.a. Incremental	Current	% Increase	All vehicles Current p.a.	% Increase
4 *	St. Peters to Sydney Forks	895	27,375	3.3%	912,500	0.1%
105 **	Orangedale Rd. to C.B. County	3,578	127,020	2.8%	1,460,000	0.2%

* *Analysis for Trunk 4 assumes one-quarter of incremental truck traffic travels via Trunk 4*

** *Analysis for Highway 105 assumes all incremental truck traffic travels via Highway 105*

The assumed incremental truck traffic on Trunk 4 would result in an increase of 3.3% compared to the number of large trucks currently using that roadway. A similar increase of 2.8% would occur for Highway 105 if one assumes that all incremental truck traffic went that way. The incremental truck traffic would add a considerably smaller proportion to the total volume of vehicle traffic (i.e., 0.2% or less).

2. Additional collisions due to incremental truck traffic

Using the same assumptions as above for analysis purposes regarding the number of incremental large trucks that might travel over the segments under discussion of Trunk 4 and Highway 105, we determined the additional vehicle-kilometres that would result on an annual basis. These are shown in the first column of data in Exhibit K-3 below. (For example, the 895 incremental truck trips annually, each traveling the 72.2 kms under study on Trunk 4, generate an additional 64,646 vehicle-kilometres each year.) Applying the observed collision rates for this section of Trunk 4 (based on the average for the past five years, as described in Chapter II), one would expect the incremental vehicle traffic to result in an additional 0.02 collisions per year involving property

damage only (PDO): in other words, a negligible increase. The increases expected for Highway 105 are of a similar level.

Exhibit K-3

Incremental collisions from additional large truck volumes

Highway	Segment	Incremental V.-Kms p.a.	Incremental collisions per year (#) PDO	Injury	Fatality
4 *	St. Peters to Sydney Forks	64,646	0.02	0.02	0.00
105 **	Orangedale Rd. to C.B. County	295,149	0.07	0.04	0.00

* *Analysis for Trunk 4 assumes one-quarter of incremental truck traffic travels via Trunk 4*

** *Analysis for Highway 105 assumes all incremental truck traffic travels via Highway 105*

3. Incremental roadway damage

Some stakeholders interviewed for this study expressed concern at the extent of roadway damage to Cape Breton highways that would be caused by additional trucks in the event of a required modal shift from rail to truck. We investigated and quantified the extent of the impact.

We reviewed the findings of five studies that quantified the dollar impacts in terms of marginal costs attributable to each additional large truck (e.g., 80 kip 5-axle combination truck) traveling on a highway (and focused on "rural interstate" or "intercity highway" results where findings distinguished between rural versus urban highway travel). Two of the five studies expressed marginal costs in terms of cost per vehicle-kilometres (or Imperial equivalents), while the other three expressed costs in terms of freight tonne-kilometres.

We carefully reviewed the origin-destination freight patterns for those current users of rail who would shift traffic to truck if required, and considered both the Cape Breton origin or destination, the origin or destination at the other end of the routing, and the proposed site for a rail-truck reload site where appropriate. We thereby computed the amounts due to a required modal shift to truck for: incremental truck-kms (in two directions) and tonne-kms within Cape Breton; and incremental truck-kms (in two directions) and tonne-kms in the rest of Nova Scotia and up to Moncton, New Brunswick. Our findings based on truck-kms and tonne-kms were comparable.

We estimate that the marginal costs for roadway damage caused by the incremental increase in truck traffic as a result of modal shift from rail would be in the order of $50,000 annually for Cape Breton highways, and $80,000 annually for highways in the rest of Nova Scotia and up to Moncton. Much of the freight volumes would only shift modes from rail to truck at Point Tupper, which explains the relatively low results for the rest of Nova Scotia despite the longer route mileage. We consider these annual results to be minor in relation to total roadway maintenance costs incurred by DOTPW.

Transportation costing studies typically also monetize other types of impacts from additional traffic, including congestion, collisions, air pollution, noise, climate change, and enforcement. We believe it is not necessarily appropriate to attempt to monetize these types of impacts within the scope of a transportation market study, and in any event based on previous research, these impacts would not give rise to significant results in this instance.

E. Implications for Cape Breton Regional Municipality development

1. Context

Recent data indicate that the community's economy has noticeably shifted toward the service sector in response to declining numbers of jobs in traditional industries. Activities within the knowledge-based economy have expanded and jobs have opened in other industry sectors. For the most part, the economy of Cape Breton is being restructured on the strength of a rapidly evolving national and world-wide telecommunications infrastructure.

Despite the drop in CBRM population since 1970 from about 130,000 to just under 110,000, Statistics Canada data show that over the same period employment remained relatively steady despite the loss of more than 5,000 jobs in the coal and steel industries. This is an indication of the transformation of the CBRM economy towards other sectors.

2. Go forward

Expectations are that going forward there will be a variety of opportunities for economic growth within CBRM. One school of thought is that the best near term prospects reside within the knowledge-based, oil and gas, tourism, environmental and arts and culture sectors. Strategies for growth involve a range of tactics including incremental direct investment, enterprise start-ups, strategic infrastructure development, new export oriented business and increased research and development. A recent study of best opportunities for incremental direct investment commissioned by federal and provincial agencies is understood to emphasize value added manufacturing, marine bioceuticals and low-tech pharmaceutical production.

It would seem reasonable to assume that Cape Breton's location relative to major markets will continue to remain a key factor in investment decisions, particularly as regards resource and mineral development, large scale-manufacturing and transhipment of commodities to name just a few. To a lesser degree development of CBRM's economy in the longer-term will be governed by labour force availability that is adversely affected by steady population decline.

3. Impact of modal shifts

Historically rail was an essential component of CBRM's infrastructure and was of fundamental economic importance to key resource industries, particularly coal and steel. In more recent years, changes in both the direction and character of CBRM's economy have diminished rail's consequence. The absence of rail will contribute to a further economic shift toward service, and specialized knowledge-based industries. The Port of Sydney likely would feel the impact of a reduction in modal opportunities. All three major port installations, Sydport, Sysco and Sydney Marine Terminal can reasonably be expected to experience a narrowing of options in efforts to attract general and bulk cargos.

As indicated by DNR, Cape Breton Island is rich in an array of mineral deposits. In the case of several deposits, efforts are ongoing to develop commercial mining/quarrying operations. Given the nature of the industry and the importance of moving large volumes of material, the absence of rail will very likely limit options for successful commercialization.