Appendix A
Part 7 Transportation Baseline

1 Introduction

This appendix provides roadway descriptions for Highway 97, Highway 29, Jackfish Lake Road, Secondary North Bank Roads, 269 Road, Old Fort Road, 242 Road, 240 Road and 271 Road (refer to Figure 31.2 in Section 31 Transportation). The purpose of this appendix is to support Volume 4 Section 31 Transportation of the Site C Clean Energy Project EIS.

2 Transportation Baseline

2.1 Roadway Descriptions

2.1.1 Highway 97 North: Alaska Highway

Highway 97 runs from southern BC at the US border to the BC / Yukon border, travelling through the Peace region. Highway 97 in northeastern BC also connects with and supports a network of resource roads for petroleum development and forestry.

Highway 97 North enters northeast BC across the Pine Pass from Prince George, traverses through Chetwynd where it intersects with Highway 29 before travelling east toward Dawson Creek. From Dawson Creek Highway 97 runs north, crossing the Peace River at Taylor toward Fort St. John. From Dawson Creek north Highway 97 is also known as the Alaska Highway.

Data from Ministry of Transportation and Infrastructure (MOTI) Counter #P-43-2 (100km south of Chetwynd) on Highway 97 indicates that traffic volume has grown by 1.5% annually between 1992 and 2010 (NovaTrans Engineering Inc. 2012).

Table 1.1 summarizes annual average daily traffic (AADT) and Summer Average Daily Traffic (SADT) for various points on Highway 97.

Table 2.1 2012 traffic counts on Highway 97

Location (junction)	AADT	SADT
H97 S of H29 Charlie Lake	6,597	6,703
H97 E of 271 Rd	13,813	14,035
H97 E of 269 Rd	14,118	14,344
H97 E of 100th Ave	15,002	15,243
H97 S of Rd 238	8,720	9,370

NOTE:
AADT - Annual Average Daily Traffic, SADT – Summer Average Daily Traffic
SOURCE: VOLUME 2 APPENDIX B PROJECT TRAFFIC ANALYSIS

Commercial traffic volumes on Highway 97 generally peak in the first and fourth quarters of the year and decline in the second quarter, due to seasonal load restrictions on commercial hauling.

The South Taylor hill, where Highway 97 climbs down to the crossing of the Peace River from the south, is known locally as being prone to slow-moving southbound truck traffic,

which encounters a sustained steep grade and a sharp bend at the mid-point of the climb. It is also a challenge for highway maintenance as the hill is prone to movement. Lower and upper passing lanes help disperse traffic, but traffic can quickly become congested in the mid-section when heavily loaded trucks are on the road. Recent four-lane improvements north of Fort St. John have been undertaken, and work has commenced on the planned widening of Highway 97 between Fort St. John and Dawson Creek as part of the Provincial Government's long term plan to improve this highway. These improvements are expected to improve driving conditions, efficiency and safety on these routes.

2.1.2 Highway 29

Highway 29 is the main road linking the District of Hudson's Hope to Fort St. John on the north side of the Peace River.

Highway 29 joins the Alaska Highway approximately 10 kilometres northwest of Fort St. John. Moving west from this junction, the road serves five subdivisions and several farms in the first 5.5 kilometres. Approximately 13 kilometres west of the Alaska Highway, the road descends into the Peace River valley along the Cache Creek Hill. In 2003 - 2004 the Cache Hill was reconstructed to stabilize the continuous slide action prevalent along the river banks.

Highway 29 winds west along the river valley, dropping into the valley to cross Cache Creek and Halfway River. The Upper Cache road (116) originates from Highway 29 and extends 32.4 kilometres north serving agriculture and range lands before branching into a network of petroleum development roads (PDRs) that connect back to the Alaska Highway at Inga Lake. This network of development roads would provide an emergency route between Hudson's Hope and Fort St. John in the event of that Highway 29 becomes blocked east of this junction.

After Halfway River the Highway ascends once more onto the bench lands, after which it descends again into the valley to cross Farrell Creek and then ascends to the bench lands. Farrell Creek Road, another access road to northern areas for agriculture and industry, originates at this point and extends northward serving private agriculture properties, range tenures and forestry and oil and gas activity. When required, winter bridges are installed off Farrell Creek Road to access forest service roads and PDRs (which in turn access the Upper Halfway and beyond to the Muskwa Kechika).

Moving west from Farrell Creek road Highway 29 continues generally along the river valley before crossing Lynx Creek and ascending the bench through the District of Hudson's Hope, and then south to Chetwynd. The District of Hudson's Hope has some local services, but depends on Highway 29, its main thoroughfare, for access to retail shopping, health, air and bus transportation, recreation and other services in Fort St. John. Commuters drive this road daily between Fort St. John and Hudson's Hope.

Highway 29 serves agriculture properties and smaller residential parcels along its entire length. It also serves the oil and gas industries, coal developments, forest activities, and BC Hydro's existing hydroelectric dams and generation stations on the Peace River and the transmission system in the area.

Highway 29 transits habitat for deer and elk. In the winter months, with the short daylight hours and prevalence of wildlife crossing, there is an elevated risk of collision with wildlife.

In summer, Highway 29 is used by tourists and recreationalists. Access to both the Peace River, Halfway River and Williston Reservoir are important to local fishing, hunting and outdoor recreationalists. There are two recreational vehicle parks along the highway in addition to a number of informal sites.

The principal traffic pattern on Highway 29 is commuter trips between Hudson's Hope and Fort St. John, as well as from these two communities to various resource work sites accessible off of Highway 29 (Novatrans Engineering Inc. 2012). The most recent traffic counts for Highway 29 are found in Table 1.2. The relatively higher traffic volumes are toward the eastern end of the highway near its junction with the Alaska Highway.

Table 2.2 2012 Traffic counts on Highway 29

Location (junction)	AADT	SADT
W of Hwy 97 (Charlie Lake)	2,087	2,123
N of Farrell Crk	868	1,243
S of Farrell Crk	826	1,182
N of Canyon Drive	1,291	1,848
Beattie S of Canyon	1,541	2,207
Canyon Dr	1,175	1,682

NOTES:
AADT – Annual Average Daily Traffic, SADT – Summer Average Daily Traffic
SOURCE: VOLUME 2 APPENDIX B PROJECT TRAFFIC ANALYSIS

2.1.3 Jackfish Lake Road

Jackfish Lake Road is 57.3 kilometres in length, extending north from its junction with Highway 29 near the District of Chetwynd, and terminating approximately 30 kilometres southwest of the proposed dam site. The road is public from its intersection with Highway 29 to its intersection with PDR #69A at kilometre 47.23. This portion of the road is under MOTI jurisdiction. The last 30 kilometres of the road north of this junction are a system of resource roads leased to, and operated by, oil and gas developers and forestry companies under various crown lease and private agreements. It provides access for the oil and gas, forestry and agriculture industries active in the areas north of Chetwynd and south of the Peace River. This system of roads is not restricted from public access, but they are not constructed or maintained to a public road standard.

Jackfish Lake Road is generally in good condition. Its first 16 kilometres has a hot mix asphalt surface and the next 14 kilometres has a seal coat surface. The balance of the road is gravel.

Jackfish Lake Road links to PDRs that provide road access to active gas wells and facilities. There is upstream oil and gas activity on the plateau. The extent of oil and gas activities varies by season, but is usually concentrated during the winter months. Typically oil and gas companies demobilize their camps in the spring prior to spring thaw and provincial highway load restrictions, resulting in an increase in large oversized vehicles on these roads in the spring and fall months.

Under normal market conditions, there is active timber harvesting in the area, and in 2008 Jackfish Lake Road supported an estimated 6,000 loads of logs (NovaTrans Engineering

Inc. 2012). These numbers have increased with the recovery of the forest product industry in the past two years (most of the timber from the Project reservoir clearing as well as material for dam construction would be transported via the Jackfish road network).

The operators of the PDRs vary by season depending on development of the oil and gas sites. During the 2011 field season, operators included Devon (PDR72), Tembec (400 Road and Ice Bridge Road), CNRL (PRD 55) and Ardu (Del Rio Road).

At the southern portion of Jackfish Lake Road, there are a small number of residences, as well as industry (primarily gravel pit operations) located along the first 25 kilometres and some ranches, recreational areas, and residences. There are two commercial landholders situated on Jackfish Lake Road. Crystal Poultry hold several parcels at the north end of 47 kilometres; Penalty Ranch is situated near Pine River further down east near the intersection of 400 Road and Ice Bridge Road, and holds a large exclusive right grazing lease on the plateau. Traffic volumes shown in Table 1.3 are predominately industrial and related traffic.

Table 2.3 2012 traffic counts on Jackfish Lake Road

Location (junction)	AADT	SADT
W of Hwy 97 (Charlie Lake)	2,087	2,123
N of Farrell Crk	868	1,243
S of Farrell Crk	826	1,182
N of Canyon Drive	1,291	1,848
Beattie S of Canyon	1,541	2,207
Canyon Dr	1,175	1,682

NOTES:
AADT – Annual Average Daily Traffic, SADT – Summer Average Daily Traffic
SOURCE: NOVATRANS ENGINEERING INC. (2012)

2.1.4 Secondary North Bank Roads

A system of secondary roads situated on the north bank of the Peace River and south of the Alaska Highway in the vicinity of Fort St. John connects the highway corridor to the proposed dam site. Some of these roads would be used by workers commuting to the project site, as well as trucks hauling rip rap from the Wuthrich Quarry and materials and equipment from several locations. These roads are described in this section and illustrated in Table 1.4.

Table 2.4 2011-12 traffic counts on North Bank roads

Dates	Location (junction)	AADT	SADT	Profile
24-Aug-11	242 W of Old Fort		2917	Rural
8-Sep-12	242 W of Old Fort	2226		Suburban
24-Aug-11	Old Fort S of 242		2812	Rural

Dates	Location (junction)	AADT	SADT	Profile
8-Sep-12	Old Fort S of 242	2323		Suburban
24-Aug-11	Old Fort N of 240		667	Rural
		551		Suburban
24-Aug-11	Old Fort S of 240		527	Rural
		436		Suburban
24-Aug-11	240 W of Old Fort		328	Rural
	240 W of Old Fort	266		Rural
27-Oct-11	269 S of 240		407	Rural
	269 S of 240	330		Rural
23-Aug-11	269 S of 242		1186	Rural
		961		Suburban
31-Jul-12	85th Ave W of 100 St.	1135	1373	Rural

NOTES:
AADT – Annual Average Daily Traffic, SADT – Summer Average Daily Traffic
SOURCE: VOLUME 2 APPENDIX B PROJECT TRAFFIC ANALYSIS

2.1.4.1 Secondary North Bank Road: 269 Road

269 Road originates south of the Alaska Highway approximately 1.4 kilometres west of Fort St. John and extends south for 4.2 kilometres. At its southern terminus, this road would serve as the principal access point to the dam construction site. 269 Road is currently classified by MOTI as a minor collector road. It is an approved 85 tonne route and is normally restricted to 100% of legal axle loading during seasonal road restrictions.

269 Road is bordered by residences and agricultural land for its entire length, with residences concentrated on the east side of the road, and farms on the west side. It collects traffic from the Pacific, Locke and Grandhaven subdivisions.

The Fort St. John land fill - the Peace River Regional District's largest waste disposal site - is located at the southern terminus of 269 Road. The number of daily loads transported to the dump ranges between 130 and 300, with the greatest use on weekends (NovaTrans Engineering Inc. 2012). Vehicles using the land fill are mostly cars and light trucks.

The 296 Road surface is designed for light to moderate traffic weights and volumes. It is characterized by narrow lane widths, narrow shoulders and steep ditches. The surface condition shows little rutting or visible signs of heaving or pavement breakage. Several low overhead utility lines crossing the roadway would require lifting for over height loads or permanent relocation if the route was to see a substantial increase in over height loads.

There are approximately 68 private residents' driveways that directly access 269 Road and eight subdivision or cross roads.

2.1.4.2 Secondary North Bank Road: Old Fort Road

Old Fort Road originates at the Alaska Highway along the west boundary of Fort St. John. The road is aligned due south for 4 kilometres then descends the banks of the Peace River and progresses 4 kilometres to the residential area of Old Fort and Old Fort Loop.

The first 2.0 kilometres bordering Fort St. John serves a combination of residential, mixed commercial and light service industrial properties, including a truck wash, a commercial sign producer, and an oil and gas contracting company. South of this, the balance of the road serves primarily agriculture properties and the Old Fort subdivision located at the end of the road.

The intersection where Old Fort Road meets Highway 97 is also where 242 Road (an east-west route) connects with Highway 97. A Rona store is situated on the southwest corner of this intersection.

At the southern end of Old Fort Road, a small residential community, private aggregate pit and a number of owner-operator trucking companies, independent contractors and other service providers are located along the bank of the river.

Old Fort Road is generally in good condition. It is an approved 85 tonne route and is normally restricted to 100% of legal axle loading during seasonal road restrictions from the Alaska Highway to the junction of 240 Road (Crossover Road), while the balance down into the Old Fort subdivision is restricted to 70%. There are 30 private driveways and two cross roads that directly access directly Old Fort Road.

On Old Fort south of 242 Road, traffic is a mix of residential, commercial and dump traffic. Traffic on Old Fort to the North and South of 240 Road is mostly residential traffic with some land fill traffic to the north of 240 Road.

2.1.4.3 Secondary North Bank Road: 242 Road

242 Road is a heavily used industrial and subdivision road. It originates at the same junction as Old Fort Road at the western perimeter of Fort St. John. It serves a small private airfield, the Grandhaven Community Hall as well as a number of light industry yards and rural subdivisions. 242 Road intersects with 269 Road 1.6 kilometres west of the city, and with 271 Road, another 4 kilometres west. Continuing west of this intersection, 242 Road serves residential, rural small businesses and agriculture properties. It is an approved 85-tonne route and is normally restricted to 100% of legal axle loading during seasonal road restrictions from the Old Fort road to the junction of 269 Road, with the remainder of the road restricted to 70%. Traffic on this road is primarily commercial, residential and traffic accessing the landfill site at the south end of 269 Road.

2.1.4.4 Secondary North Bank Road: 240 Road

240 Road is an east-west gravel road, 1.6 kilometres in length, connecting 269 Road and Old Fort Road, 4 kilometres south of the Alaska Highway. It is bordered by mostly agricultural land and fields, and a few residences. The posted speed limit is 70 km/hr, and there are stop signs for eastbound traffic at Old Fort Road, and westbound traffic at 269 Road. 240 Road would serve as a link to the proposed camp site at the southern end of 269 Road for southbound traffic from Old Fort Road. Conversely, 240 Road would also be a route for northbound traffic from the Project site to Old Fort Road and into Fort St. John.

Traffic is a mix of residential and vehicles destined for the land fill at the south end of 269 Road.

2.1.4.5 Secondary North Bank Road: 271 Road

271 Road is a north-south route situated 3.3 kilometres west of Fort St. John. It extends from its origin 3.5 kilometres south of 242 Road to north of the Alaska Highway and beyond. It is the least populated of the north-south corridors described herein, and is the principal route to the Wuthrich Quarry located 3 kilometres north of Fort St. John.

In 2008, the twinning of the Alaska Highway proceeded past this road resulting in the installation of traffic lights and other intersection improvements.

This road supports industrial operations, a nursery, residential properties and agriculture. 271 road serves a number of oil and gas installations with industry driveways and roads connecting directly to the road. Going south, the publicly maintained portion of the road ends at the 242 intersection. Beyond this, the road continues another 3.5 kilometres and is maintained by local residents and industry. Road conditions deteriorate at the southern leg, and the road ends at a posted private property. 271 Road is an approved 85 tonne route and is normally restricted to 70% of legal axle loading during seasonal road restrictions.

2.2 References

2.2.1 Literature Cited

BC Ministry of Transportation and Infrastructure. BCMOTI. 2011. *Traffic count data.* Obtained from NovaTrans Engineering Inc. August 2012. Victoria, BC.