



3536696 CANADA INC
FAIRWINDS REAL ESTATE MANAGEMENT INC

FAIRWINDS TRANSPORTATION OVERVIEW

FINAL REPORT

NANOOSE BAY, BC



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BACKGROUND STUDY

FINAL REPORT

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1.0 CURRENT ROAD NETWORK

1.1 Introduction

Fairwinds Community and Resort is a neighbourhood located on the east coast of Vancouver Island in Nanoose Bay, B.C. The community of Nanoose Bay is located north of Highway 19 and is within the Electoral Area E of the Regional District of Nanaimo. A map of the Fairwinds neighbourhood in relation to Nanoose Bay is provided in FIGURE 1.1.



FIGURE 1.1 MAP OF THE FAIRWINDS COMMUNITY

Fairwinds, including the Lakes District and Schooner Cove, is within an area designated by the Regional District of Nanaimo (RDN) as an Urban Containment Area in the Regional District's Regional Growth Strategy. In doing so, the Regional District recognizes that area within Fairwinds is suitable for growth and the RDN's policy is to encourage the development of compact, complete communities within these boundaries. Since Fairwinds is within a defined growth area as specified by the strategy adopted by the RDN, it achieves the main goal of managed urban growth in meeting the wider region's growth management objectives. Thus, the planning process for Fairwinds may further ensure that

planning and development will be completed in a coordinated and consistent manner.

Fairwinds, including development to date and planned development at both the Schooner Cove and Lakes District neighbourhoods, currently occupies an area of approximately 1,350 acres. To date, the Fairwinds Study Area has developed generally according to the original 1983 Master Plan and is composed of 652 single family homes, 69 multi family units, an 18-hole golf course and an existing marina of over 300 berths. Currently, planning for the Fairwinds Lakes District and the redevelopment of Schooner Cove is underway. Fairwinds has a current allowance for 2,500 residential units, while Schooner Cove can further accommodate an allowance of 188 residential units. Together, future growth in the Lakes District and Schooner Cove is currently recognized within the OCP to accommodate up to 2,688 residential units. As such, there is a residual capacity of 1,918 units should Schooner Cove and the Lakes District develop to its full potential under the current OCP.

The planned residential development in the Lakes District is oriented towards retirees and an older demographic seeking an active, healthy lifestyle within a sustainability-oriented community that provides recreational opportunities (golfing, boating, walking) as well as local access to day-to-day shopping conveniences within the community.

1.2 Report Objectives

The objectives of this report are to:

- Describe the current road network concept and linkages;
- Describe the current road network characteristics and road network levels of service; and
- Review the future growth in the Region and growth in the Lakes District and Schooner Cove.

1.3 Connectivity

Regional Road Network Overview

The current regional road network is cohesive and efficient. The two main access roads into Fairwinds, Dolphin Drive and Powder Point Road form a logical loop which provides effective connectivity to the adjacent urban communities of Nanaimo and Parksville. The roads also connect to Red Gap Village within Nanoose Bay, which is also recognized as an Urban Containment Area under the OCP. Currently, the area offers retail and community facilities in addition to a mix of residential development. Red Gap is located just north of Highway 19, near the intersection of Powder Point Road and Northwest Bay Road.

Within close proximity to Nanoose Bay are two cities: the City of Parksville and the City of Nanaimo. The City of Parksville is approximately 15 kilometres to the northwest, and the City of Nanaimo (northern limits) is approximately 20 kilometres to the southeast. From Nanoose Bay, Highway 19 provides a major and efficient link to the two cities. Highway 19, which is approximately 406 kilometres long and runs from the City of Nanaimo in the south to Port Hardy in the north, is the main route between most destinations on Vancouver Island. From Nanoose Bay, access to Highway 19 is provided off two intersections: Highway 19 and Franklin's Gull Road and Highway 19 and Northwest Bay Road. It is expected that trips to the City of Parksville and other destinations to the north use the access at Franklin's Gull Road, and that trips to the City of Nanaimo and other destinations to the south use the access at Northwest Bay Road. Fairwinds is therefore well served by a local road network that provides efficient circulation via a loop configuration; an effective regional road network that provides efficient links with Parksville to the north and Nanaimo to the south; and world-class ferry facilities that connect the Greater Nanaimo area with the British Columbia Mainland.

In addition to ferry services and flight services, VIA Rail Canada runs a passenger train along the coast of Vancouver Island. The route runs from the City of Victoria to the City of Courtenay and has a station in Nanoose Bay.

Local Road Network Overview

The Nanoose Bay road network is made up of several main roads that connect to the main Highway (Highway 19) allowing for access to communities north and south of the area. All of the major roads in Nanoose Bay are two-lane roads that are efficient and sufficient for existing and expanded traffic use. The main roads comprising the road network are shown in FIGURE 1.2 and are described in detail below.

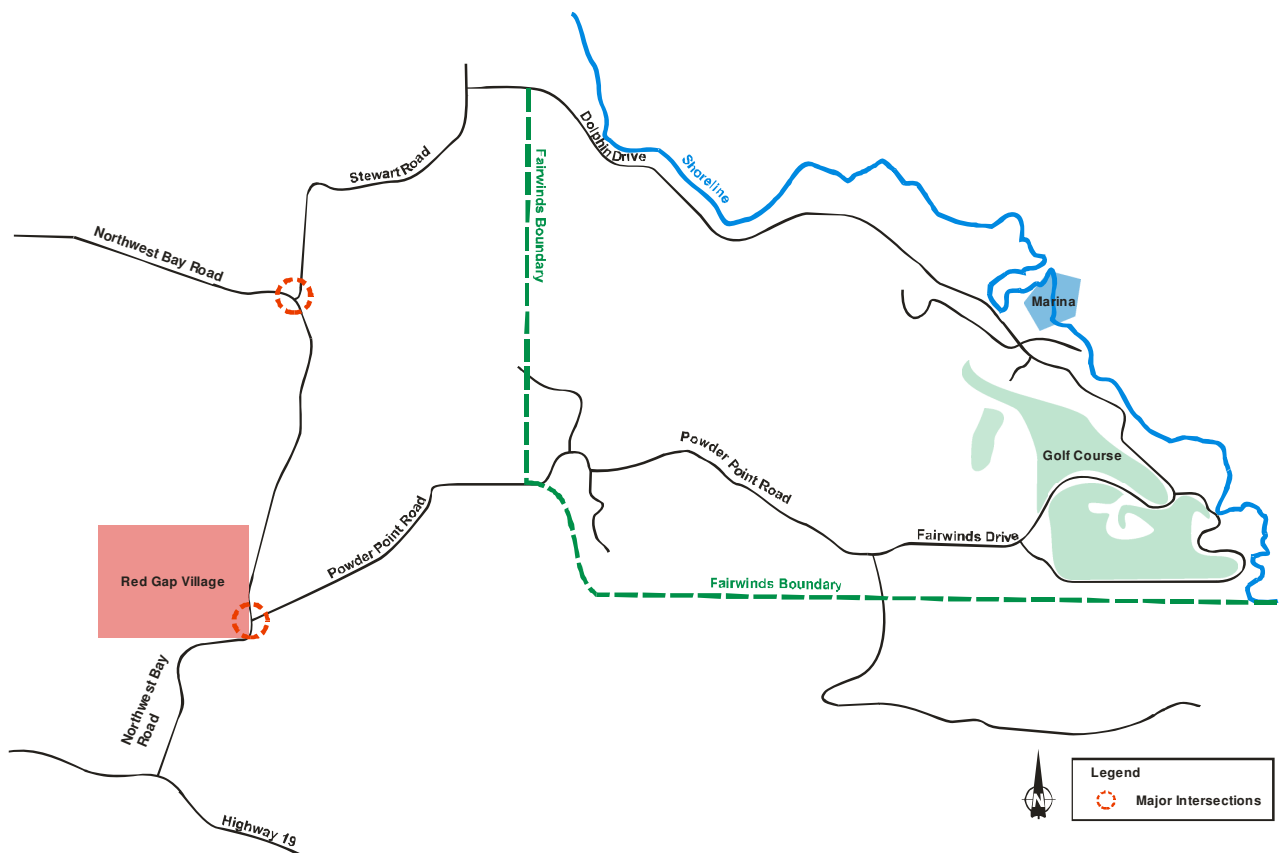


FIGURE 1.2 NANOOSE BAY ROAD NETWORK

Northwest Bay Road

Northwest Bay Road is approximately 10 kilometres long and provides access to the community of Nanoose Bay. The road begins in the south at Highway 19 and ends in the north at Franklin's Gull Road. Both intersections serve as the main accesses to Nanoose Bay. In the study area, Northwest Bay Road also intersects with Powder Point Road and Stewart Road to form two intersections. These two intersections provide access to land uses east of Northwest Bay Road, which are mainly comprised of Fairwinds and are delineated in FIGURE 1.2.

Stewart Road / Dolphin Drive

Stewart Road, approximately 3 kilometres long, begins at the intersection with Northwest Bay Road and continues along the northern coast of Nanoose Bay as Dolphin Drive for approximately 5 kilometres. Stewart Road serves as a connection between Northwest Bay Road and Dolphin Drive. It is believed that a significant portion of the traffic to Schooner Cove and to the residential units currently developed within the Fairwinds neighbourhood along the northern coast of Nanoose Bay uses Dolphin Drive.

Powder Point Road / Fairwinds Drive

Powder Point Road intersects with Northwest Bay Road near the Red Gap area and is about approximately 2 kilometres long before continuing as Fairwinds Drive. Typically, traffic to the Golf Course and residential units in the southern part of Fairwinds uses Powder Point Road.

Dolphin Drive and Powder Point Road are the two main roads which provide access from Fairwinds Drive to Highway 19 via the main intersection of Highway 19 and Northwest Bay Road, leading to the urban communities of Parksville and Nanaimo. Travel to the City of Parksville and to the City of Nanaimo takes approximately 15 minutes and 30 minutes respectively. Both roads are currently sufficient in terms of linkages to other communities. By forming a continuous loop, it covers all of the current Fairwinds lands and allows for the local network to be a connected network.

1.4 Transit Network

Transit service in Nanoose Bay is operated by the Regional District of Nanaimo in partnership with BC Transit. Transit service is operated daily on Northwest Bay Road and is provided by Route #90 - INTERCITY. The Route #90 – INTERCITY bus operates seven days a week between 7:30 AM and 7:30 PM. During the weekdays, there are approximately seven buses running throughout the day. During the weekends, service is limited to four buses a day. The Route #90 – INTERCITY bus route map is shown in FIGURE 1.3.

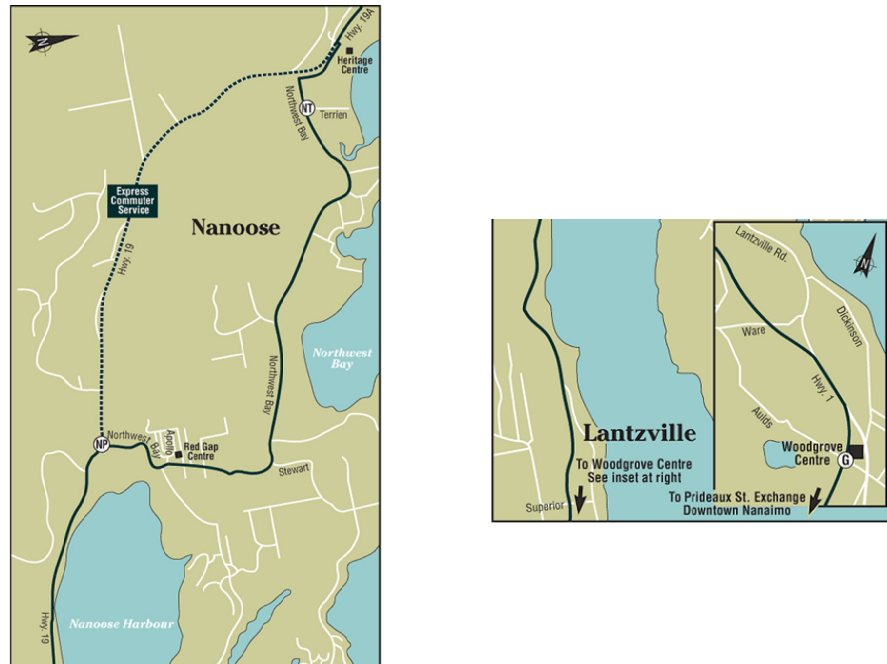


FIGURE 1.3 ROUTE #90 – INTERCITY ROUTE MAP

The RDN has reviewed transit access to Fairwinds and to Schooner Cove in the past and is continuing to explore providing bus service to the area via Stewart Road / Dolphin Drive / Fairwinds Drive / Powder Point Road. With further development and additional density within the Lakes District and Schooner Cove, opportunities to introduce additional transit service to the area can be explored. Enhancing transit services will support sustainability objectives and encourage travel by modes other than the private automobile.

1.5 Pedestrian and Cycling Networks

The road network and allowances within Fairwinds generally provide pedestrian and cycling connections within the community. There is an expectation within Fairwinds, however, that as more development occurs in the Lakes District and Schooner Cove, roads constructed to urban standards can further add to the existing pedestrian and cycling facilities to support active living, healthy lifestyles, an alternative to automobile travel, and linkages to the larger network as per the RDN's Regional Parks and Trails Plan.

2.0 CURRENT TRAFFIC VOLUMES

2.1 Link Volumes

Weekly traffic counts were conducted at three main locations between July 9, 2008 and July 28, 2008 to capture the existing directional traffic on the major road in Fairwinds. All three locations were on Dolphin Drive within Fairwinds. It was determined that counts conducted at this time would provide the most accurate representation of summer conditions for design purposes. Summer months generally represent the higher end of traffic typically generated by the area over the course of a year. Thus, traffic gathered from a week in July already reflects an above-average condition. While traffic volumes within a given week may fluctuate, the operating conditions captured here are likely applicable to the majority of the 52 weeks throughout a given year. As traffic volume analysis typically considers the peak 15-minute flow (Highway Capacity Manual, 2000), it should be noted that traffic count data was recorded in 15-minute intervals.

The traffic counts confirm that the main roadways servicing Fairwinds are operating at excellent levels of service, with relatively low volumes generated throughout the day. Since the counts were captured in the summer period, it is probable that roadway operating conditions in Fairwinds are no worse than those described in this section a majority of the time in a given year. The following locations on Dolphin Drive were surveyed:

- Dolphin Drive east of Stewart Road;
- Dolphin Drive west of Outrigger Road; and,
- Dolphin Drive east of Sherbrooke Road.

A summary of the daily two-way traffic volumes at each of the main count stations, which captured weekly volumes on Dolphin Drive, is presented in FIGURE 2.1. The data is also presented in the context of the practical capacity of a two-lane rural roadway, which according to the TAC Geometric Design Guide for Canadian Roads is approximately 5,000 vehicles per day. The residual capacity of the roads based on the collected volume is discussed in greater detail later in this report.

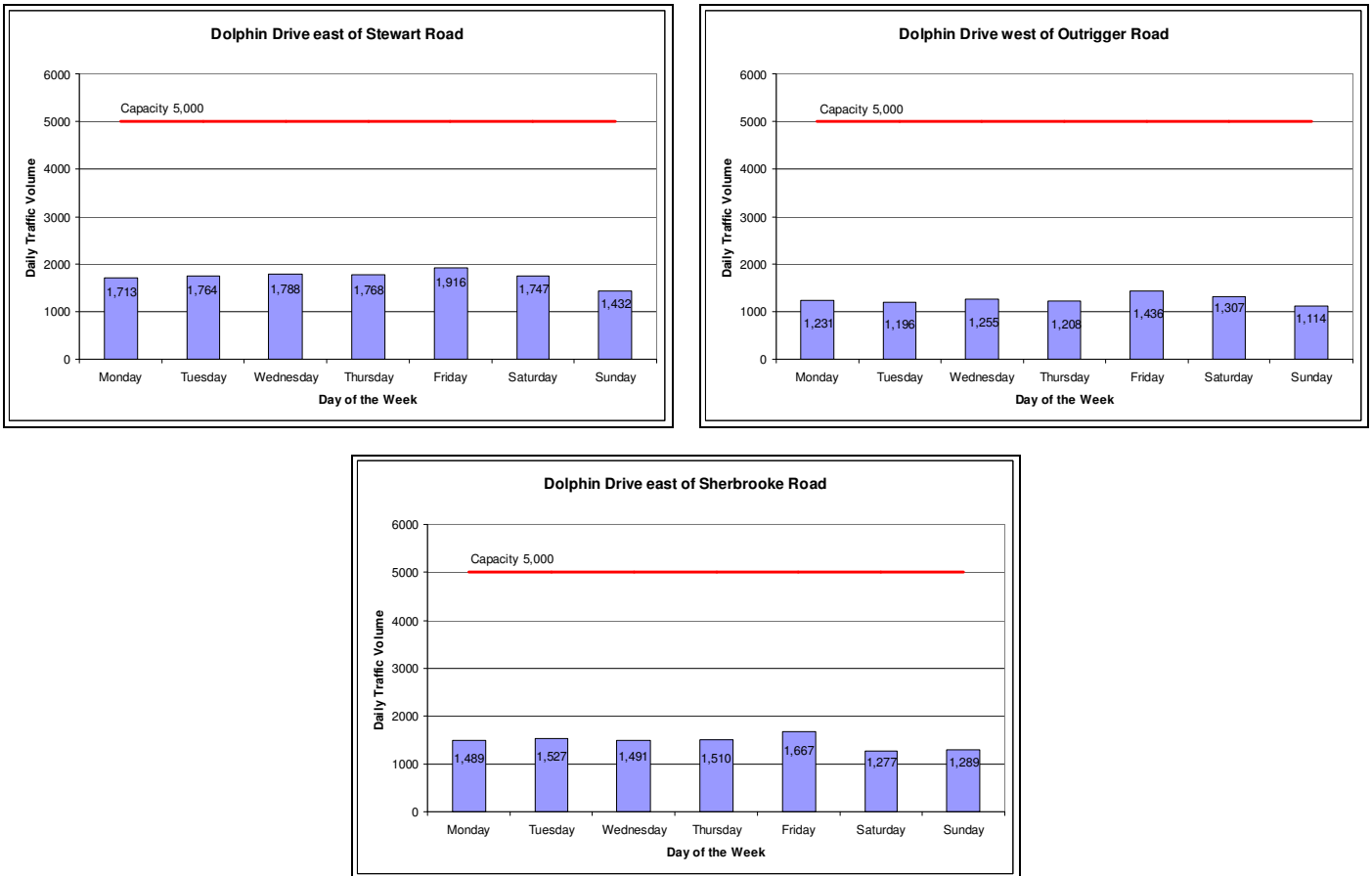


FIGURE 2.1 NANOOSE BAY DAILY TRAFFIC VOLUMES

From FIGURE 2.1, it can be concluded that traffic volumes in Fairwinds are relatively similar throughout the week, and are highest on Friday.

To conduct further analysis on the weekly trends, the average weekday traffic volumes between Monday and Thursday was analyzed and is presented in TABLE 2.1.

TABLE 2.1 AVERAGE TRAFFIC VOLUMES ON DOLPHIN DRIVE IN FAIRWINDS ON REGULAR WEEKDAYS

LOCATION	EASTBOUND	WESTBOUND	TWO-WAY
Dolphin Drive east of Sherbrooke Road	790	714	1,504
Dolphin Drive east of Stewart Road	877	881	1,758
Dolphin Drive west of Outrigger Road	599	624	1,223

Given that the traffic volumes on weekdays other than the Friday are relatively consistent, a typical weekday condition was studied. A typical weekday condition is defined as any weekday condition other than Friday. The typical weekday condition excludes Friday as it was obvious that there are differences in traffic on Friday as compared to the rest of the week such that evaluating a Friday would not constitute a regular condition suitable for design/capacity analysis.

Further evaluation of the traffic data was conducted by isolating one day within the weekday period (Monday to Thursday) to determine the peak hour of traffic in Fairwinds. Based on the trend illustrated in FIGURE 2.1, Thursday was determined to be the weekday with the highest traffic volumes.

As such, Thursday data from each of the count stations was extracted and a fourth count station was used at Powder Point Road west of Fairwinds Drive to capture Thursday traffic volumes at the opposite end of the Fairwinds development. The 24-hour count data on a Thursday for Dolphin Drive and for Powder Point Road is presented in FIGURE 2.2 and FIGURE 2.3 respectively.

The volumes are presented in the context of theoretical capacity, which is shown to be 1,600 vehicles per hour per lane under free flow conditions. This theoretical capacity represents the capacity of a non-signalized rural road (Chapter 20, Highway Capacity Manual) at a particular point on the roadway given that free flow conditions are occurring. It should be noted that this is the theoretical operating capacity of the roadway, and should not necessarily be considered as a desired condition. This theoretical capacity would be limited if through traffic meets delays at an intersection.

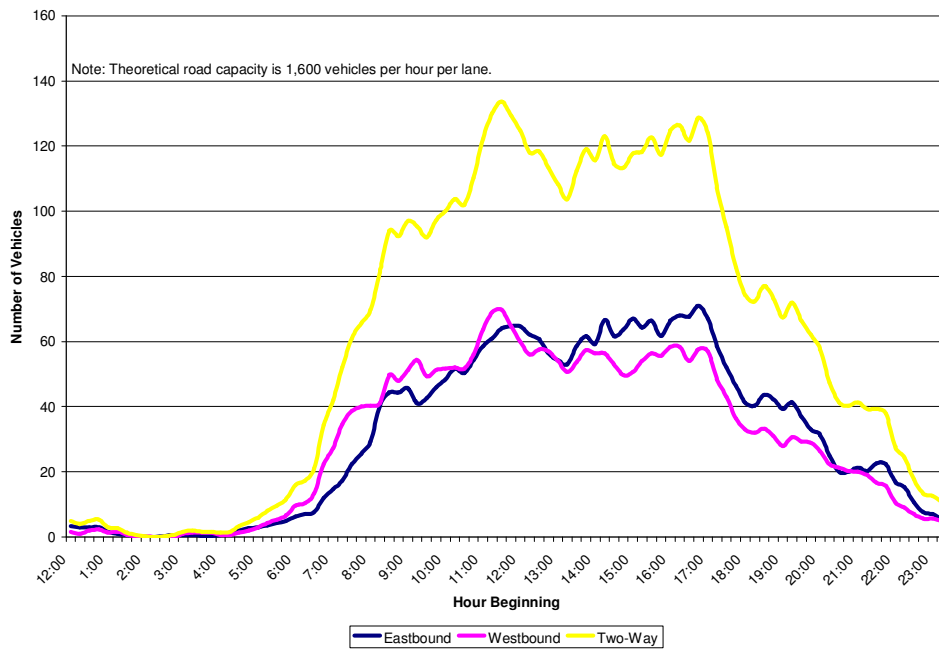


FIGURE 2.2 DOLPHIN DRIVE AVERAGE DIRECTIONAL TRAFFIC VOLUMES

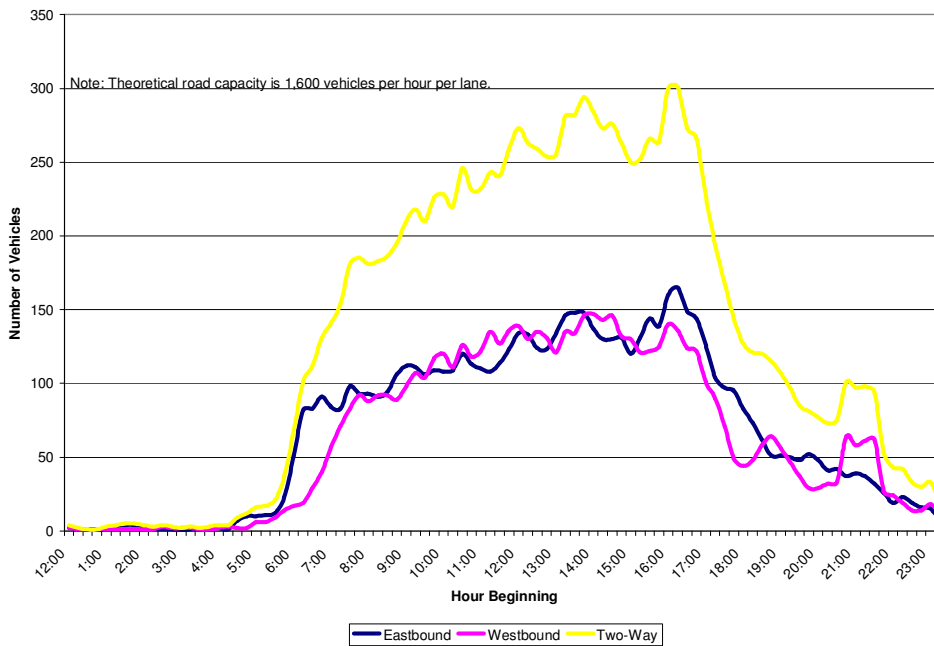


FIGURE 2.3 POWDER POINT ROAD AVERAGE DIRECTIONAL TRAFFIC VOLUMES

- On both Dolphin Drive and Powder Point Road, eastbound and westbound traffic volumes are relatively similar throughout the day. On both roads, westbound volumes are slightly higher during the morning hours and eastbound volumes are slightly higher during the afternoon hours.
- Volumes along Powder Point Road are slightly higher than volumes on Dolphin Drive, likely due to the external golf course traffic. The traffic counts indicate that no combination of one-hour periods exceed a two-way volume of approximately 300 vehicles along Powder Point Road during the course of the day. The data was collected in 15-minute intervals and the graph implies that no combination of four 15-minute intervals over the course of a day could exceed 300 vehicles while no combination of one-hour total two-way volumes along Dolphin Drive exceed approximately 140 vehicles during the course of the day.
- On both Dolphin Drive and Powder Point Road, the morning peak hour appears to be between 11:00 AM and 12:00 PM, and the afternoon peak hour appears to be between 4:45 PM and 5:45 PM. Specifically during the morning peak hour, there is a two-way total of 122 and 232 vehicles on Dolphin Drive and Powder Point Road respectively. During the afternoon peak hour, there is a two-way total of 137 and 266 vehicles on Dolphin Drive and Powder Point Road respectively. The peak hours of the study area, particularly the morning, are different than what is usually seen in typical commuter communities. The travel pattern is representative of a retirement community, which is not unexpected because Nanoose Bay is predominantly made up of the senior population, who do not need to commute to and from work. For the remainder of the study, the hour between 11:00 AM and 12:00 PM is referred to as the Study Area Morning Peak Hour, and the hour between 4:45 PM and 5:45 PM is referred to as the Study Area Afternoon Peak Hour.

A summary of the study hour traffic volumes on the major links of the road network is shown in FIGURE 2 4.

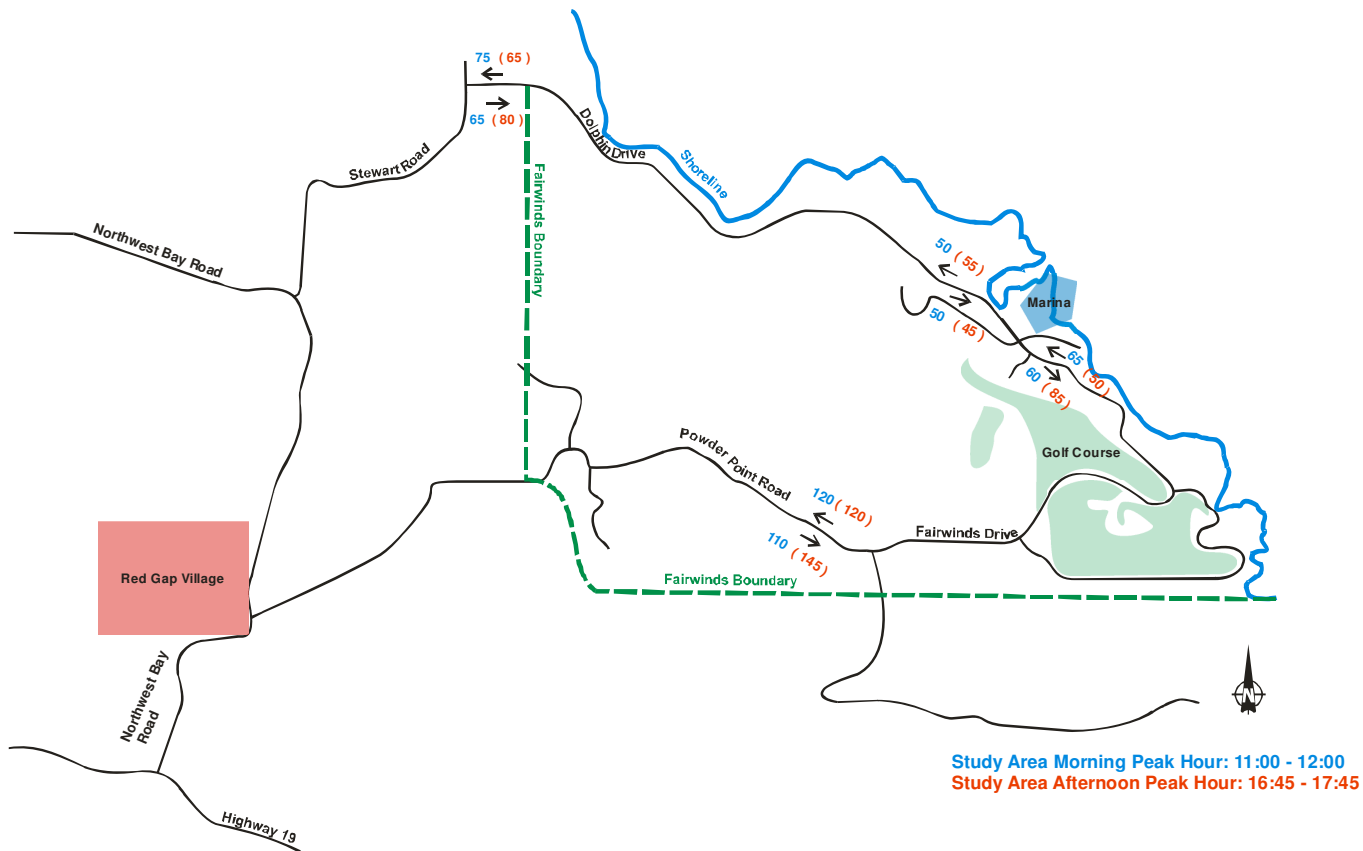


FIGURE 2.4 NANOOSE BAY LINK VOLUMES

Considering that the main roadways servicing Fairwinds are intended to function as rural collector roads (with the standards for such set by the Ministry of Transportation), the traffic counts confirm that the roads are operating at excellent levels of service, with relatively low volumes generated throughout the day.

2.2 Intersection Volumes

Intersection volumes were derived for five locations in Nanoose Bay based on 24-hour directional counts and site observations. The following intersections were studied:

- Northwest Bay Road and Stewart Road (unsignalized);
- Stewart Road and Davenham Road (unsignalized);
- Dolphin Drive and Outrigger Road/Redden Road (unsignalized);
- Dolphin Drive/Fairwinds Drive and Andover Road (unsignalized); and,
- Northwest Bay Road and Powder Point Road (unsignalized).

The hourly traffic count information for the five study intersection is shown in FIGURE 2.5.

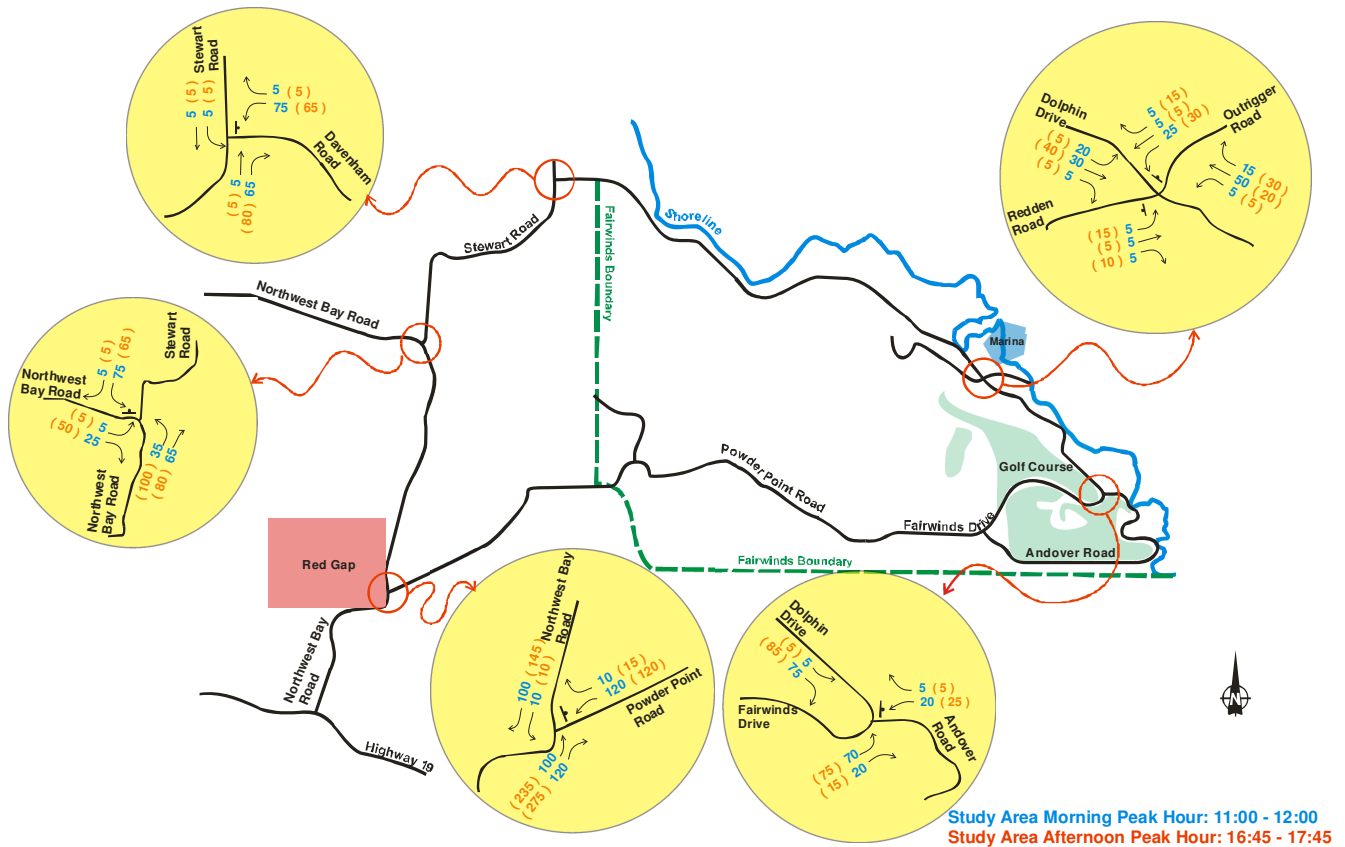


FIGURE 2.5 NANOOSE BAY INTERSECTION TURNING MOVEMENTS

A review of the Ministry of Transportation’s count information showed that intersection count data is available for the intersection of Highway 19 and Northwest Bay Road, one of the main access points to Nanoose Bay. The intersection was surveyed between September 26, 2006 and October 6, 2006 by the Ministry. As it was established that Thursday generates the highest volumes for a regular weekday, traffic data for Thursday, September 28, 2006 was evaluated.

A summary of the 24-hour count information at the intersection for Thursday, September 28, is presented in FIGURE 2.6.

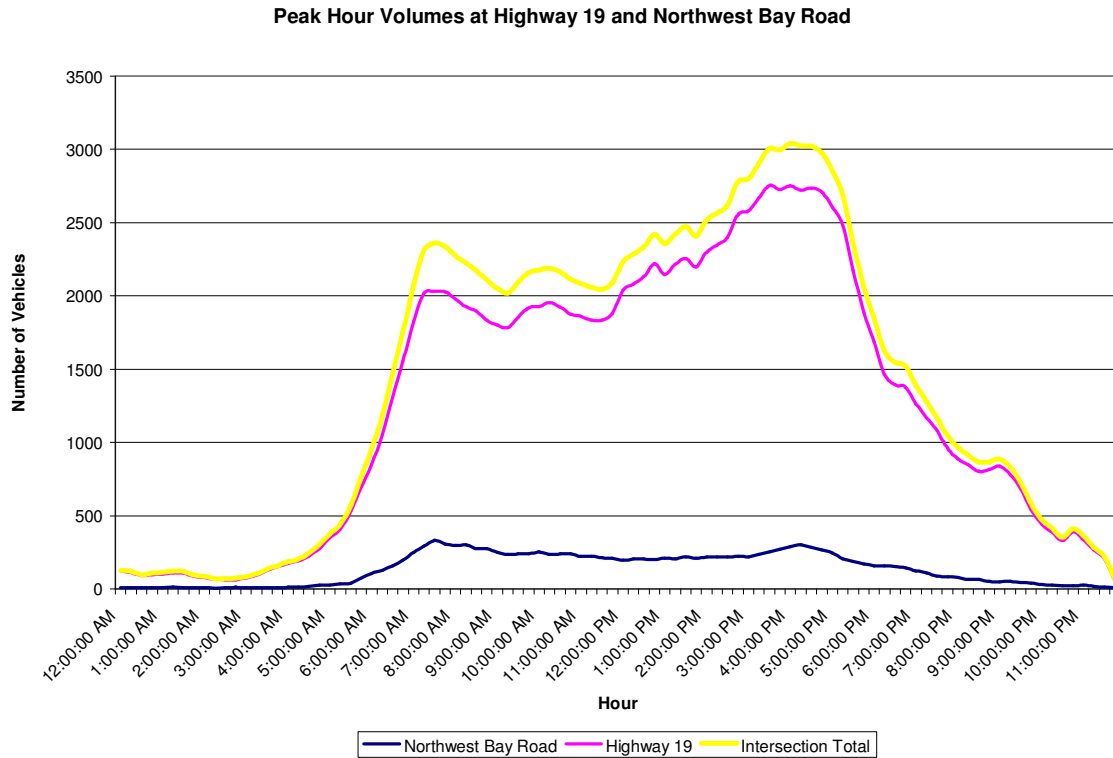


FIGURE 2.6 PEAK HOUR TRAFFIC VOLUMES AT HIGHWAY19 AND NORTHWEST BAY ROAD

- The morning peak hour of the intersection is between 7:30 AM and 8:30 AM, and the afternoon peak hour of the intersection is between 4:00 PM and 5:00 PM. Therefore, the peak hours at the intersection are different than the peak hours in Nanoose Bay. This is expected as travel patterns on Highway 19 should reflect travel patterns to and from work. To differentiate the intersection peak hours from the Study Area Peak Hours, the hour between 7:30 AM and 8:30 AM is referred to as the Northwest Bay Road Morning Peak Hour, and the hour between 4:00 PM and 5:00 PM is referred to as the Northwest Bay Road Afternoon Peak Hour for the remainder of the study.

To evaluate traffic distribution from the intersection of Highway 19 and Northwest Bay Road to the study area, turning movements at the intersection were evaluated for the Study Area Morning Peak Hour (11:00 AM to 12:00 PM) and for the Study Area Afternoon Peak Hour (4:45 PM to 5:45 PM). The turning movements at the intersection during the Study Area Morning and Afternoon Peak Hours are shown in FIGURE 2.7.

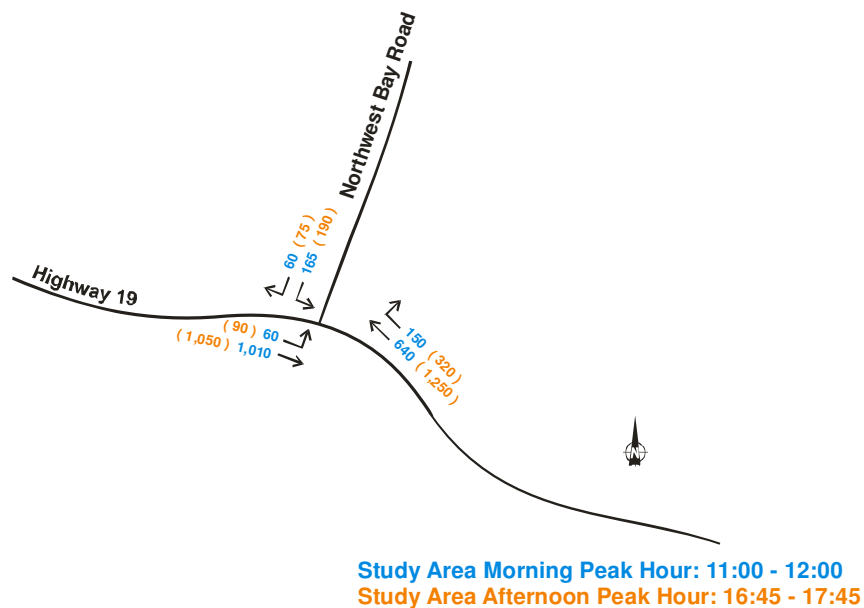


FIGURE 2.7 TURNING MOVEMENTS AT HIGHWAY 19 AND NORTHWEST BAY ROAD – STUDY PERIODS

- Eastbound volumes are higher during the Study Area Morning Peak Hour study period and westbound volumes are higher during the Study Area Afternoon Peak Hour, suggesting more travel to/from Nanaimo during the Fairwinds peak periods.

As already discussed, the Study Area Peak Hours are different than the Northwest Bay Road Peak Hours. It is also interesting to note the activity at the intersection during the actual peak hours, which are between 7:30 AM and 8:30 AM and between 4:00 PM and 5:00 PM. The turning movements at the intersection during the morning and afternoon peak hours are shown in FIGURE 2.8.

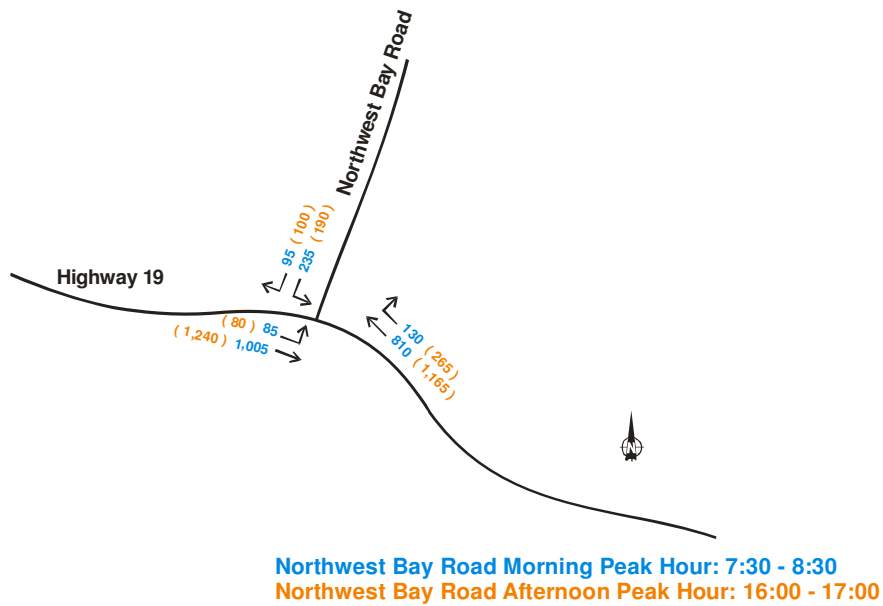


FIGURE 2.8 PEAK TURNING MOVEMENTS AT HIGHWAY 19 AND NORTHWEST BAY ROAD – PEAK PERIODS

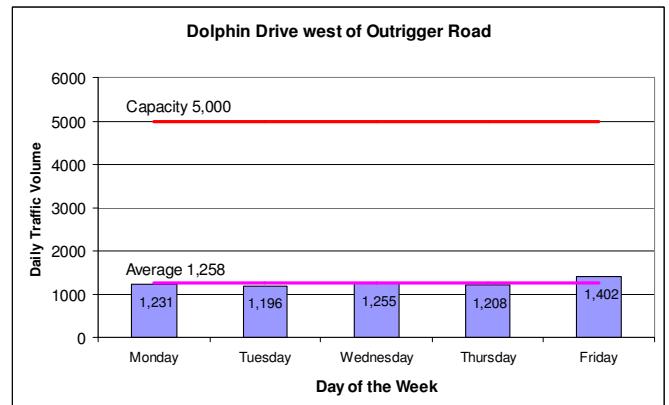
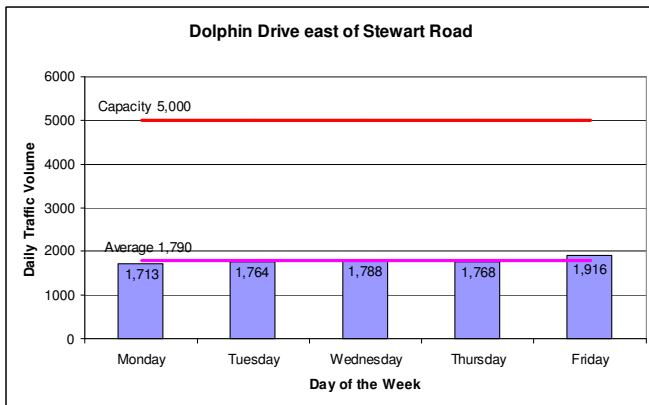
- Similar to the traffic patterns experienced during the Study Area Peak Hours, eastbound volumes are higher during the Northwest Bay Road Morning Peak Hour and westbound volumes are higher during the Northwest Bay Road Afternoon Peak Hour. Traffic volumes are generally higher during the Northwest Bay Road Peak Hours than during the Study Area Peak Hours. This suggests that more travel to/from Nanaimo during the typical roadway peak periods.

The intersection traffic volumes suggest that even at the peak travel hour within Fairwinds, all turning movements at respective intersections can be completed with no delay and at excellent levels of service.

2.3 Available Roadway Capacity

Roadway capacity analysis was conducted along the major roads of Nanoose Bay based on 24-hour directional counts. According to the characteristics of rural roads specified in the TAC Geometric Design Guide for Canadian Roads, the major roads of Nanoose Bay appear to have characteristics that allow them to be classified as rural collector roads. Also according to the guide, rural collector roads typically service a two-way annual average daily traffic (AADT) of less than 5,000 vehicles. It should be noted that while this is the typical threshold/practical capacity, it does not necessarily represent theoretical capacity of the roadway. When the typical threshold is exceeded, the roadway may not be operating as efficiently as intended and improvements may need to be considered to maintain optimal operating conditions. However, all collected AADT data is well below the AADT threshold of 5,000 vehicles, which suggests that the road is indeed functioning as a rural collector based on current volumes.

A summary of the average weekday two-way traffic volumes for each of the count stations on Dolphin Drive is presented in FIGURE 2.9. The capacity of 5,000 vehicles is also shown in the figure.



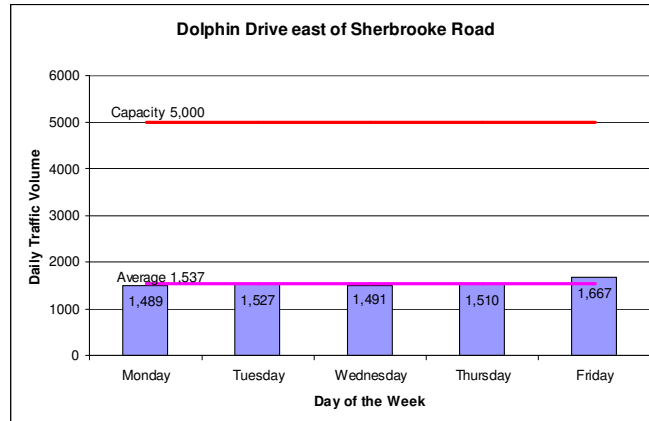


FIGURE 2.9 DAILY TRAFFIC VOLUMES ON DOLPHIN DRIVE

- The average weekday two-way volumes on Dolphin Drive range between 1,258 vehicles to 1,790 vehicles, and the average weekday two-way volume on Powder Point Road is 2,791 vehicles. These volumes are within the practical capacity of a rural collector road, of up to 5,000 vehicles per day.

The data also suggests a significant reserve capacity with the existing road network in Fairwinds to accommodate further growth.

2.4 Available Intersection Capacity

Intersection capacity analysis was also conducted at the intersections using Synchro 6.0 software. The software evaluates the capacity in terms of levels of service, which are assigned on a scale of “A” to “F” with “A” being little or no delay to “F” indicating that the movement exceeds theoretical capacity. Typically, municipalities target an overall intersection volume-to-capacity ratio of 0.85 or a level of service “D” or better. The definition of LOS criteria for unsignalized intersections is given in TABLE 2.2.

TABLE 2.2 LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

(SOURCE: HIGHWAY CAPACITY MANUAL, 2000)

LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (sec)	IMPACT ON MINOR STREET TRAFFIC
A	≤ 10	Little or no delay
B	> 10 - 15	Short traffic delays
C	> 15 – 25	Average traffic delays
D	> 25 – 35	Long traffic delays
E	> 35 – 50	Very long traffic delays
F	> 50	Unacceptable traffic delays

Tabular summaries of the levels of service for the intersections in Nanoose Bay, which are unsignalized, are provided in TABLE 2.3. A tabular summary of the levels of service for the signalized intersection of Highway 19 and Northwest Bay Road is provided in TABLE 2.4. It should be noted that although traffic volumes at the intersection of Highway 19 and Northwest Bay Road were examined for both the Study Area Peak Hours and the Northwest Bay Road Peak Hours, capacity analysis was only conducted for the Study Area Peak Hours. It is expected that during the commuting peak hours (Northwest Bay Road Peak Hours), levels of service may be marginally worse; however, only a small portion of the traffic would be attributable to Fairwinds. Analyzing the Study Area Peak Hours would provide a “worst case” analysis, particularly at the internal Fairwinds intersections which would be busiest at this time.

**TABLE 2.3 CAPACITY ANALYSIS OF UNSIGNALIZED INTERSECTIONS –
 NANOOSE BAY INTERSECTIONS**

INTERSECTION	MOVEMENT	AM PEAK HOUR				PM PEAK HOUR			
		VOLUME (vph)	MOVEMENT CAPACITY (vph)	CONTROL DELAY	LOS	VOLUME (vph)	MOVEMENT CAPACITY (vph)	CONTROL DELAY	LOS
Northwest Bay Road and Stewart Road	SBLR	87	888	9.5	A	76	776	10.1	B
	EBLT	33	1482	1.3	A	60	1377	0.7	A
Stewart Road and Dolphin Drive	SBLT	11	1523	3.7	A	11	1502	3.7	A
	WBLR	87	952	9.2	A	76	942	9.2	A
Dolphin Drive and Outrigger Road/Redden Road	NBLTR	16	827	9.4	A	33	870	9.4	A
	SBLTR	38	801	9.7	A	54	881	9.4	A
	WBLTR	76	1572	0.5	A	60	1558	0.7	A
	EBLTR	60	1530	2.8	A	54	1551	0.8	A
Dolphin Drive/Fairwinds Drive and Andover Road	SBLT	87	1495	0.5	A	98	1495	0.4	A
	WBLR	27	836	9.5	A	33	818	9.6	A
Northwest Bay Road and Powder Point Road	SBLT	120	1328	0.8	A	168	1016	0.6	A
	WBLR	141	693	11.5	B	147	483	15.7	C

MOVEMENT : SB – SOUTHBOUND; NB – NORTHBOUND; EB – EASTBOUND; WB – WESTBOUND; LT – LEFT, THROUGH, RT – RIGHT, THROUGH, LTR – LEFT, THROUGH, AND RIGHT TURN MOVEMENTS

VOLUME : ACTUAL VEHICULAR FLOW MAKING THE RESPECTIVE TURNING MOVEMENT WITHIN THE HOUR

MOVEMENT CAPACITY – CALCULATED CAPACITY OF THE MOVEMENT BASED ON CONFLICTING VOLUMES

CONTROL DELAY – CALCULATED AVERAGE DELAY TO THE MOTORIST MAKING THE RESPECTIVE MOVEMENT BASED ON THE GENERAL CONFLICTING TRAFFIC FLOW

LOS – LEVEL OF SERVICE (LOS “E” and LOS “F” indicates movements at or exceeding capacity)

TABLE 2.4 CAPACITY ANALYSIS OF SIGNALIZED INTERSECTIONS

INTERSECTION	AM PEAK HOUR						PM PEAK HOUR				
	AVERAGE CONTROL DELAY (seconds)	LOS	MOVEMENT				AVERAGE CONTROL DELAY (seconds)	LOS	MOVEMENT		
			LANE	DELAY (seconds)	V/C RATIO	LOS			DELAY (seconds)	V/C RATIO	LOS
Highway 19 and Northwest Bay Road	11.4	B	SBLR	9.0	0.30	A	10.4	B	18.3	0.50	B
			WBT	9.4	0.50	A			9.6	0.71	B
			WBR	7.7	0.10	A			6.5	0.71	A
			EBL	8.7	0.26	A			21.6	0.68	C
			EBT	13.8	0.79	B			8.8	0.60	C

Based on the capacity analysis, the existing intersection performance can be summarized as follows:

- There are no capacity issues at any of the five intersections in Nanoose Bay.
- The signalized intersection of Highway 19 and Northwest Bay Road operates at good overall levels of service during both study periods – the typical roadway peak hour and the Fairwinds study peak hour.
- The analysis indicates ample residual capacity both at an intersection and link level to accommodate further growth in the area.

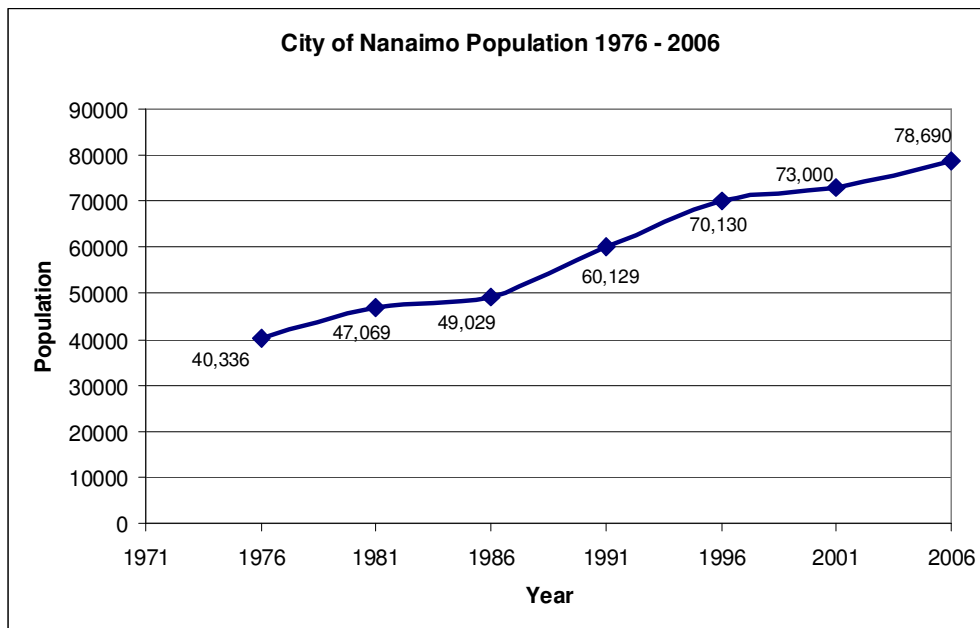
The traffic counts confirm that the main roadways servicing Fairwinds are operating at excellent levels of service, with relatively low volumes generated throughout the day.

3.0 FUTURE GROWTH

The future growth of Nanoose Bay strongly influences growth expected of Fairwinds. To predict future growth for Nanoose Bay, population trends for the City of Nanaimo and the City of Parksville were examined.

3.1 Nanaimo's Growth

Over a 25-year period between 1976 and 2001, the population of the City of Nanaimo grew from 40,336 to 73,000, reflecting an average growth rate of 3.2 percent. The most recent Census (2006) suggests that the City of Nanaimo has a population of 78,690. While this suggests that growth is not happening as rapidly now, the current Census data as compared to the 2001 data still suggests an upward growth trend, reflecting an annual growth rate of approximately 1.7 percent between those periods. A graphical representation of the City of Nanaimo's population trends is shown in FIGURE 3.1.



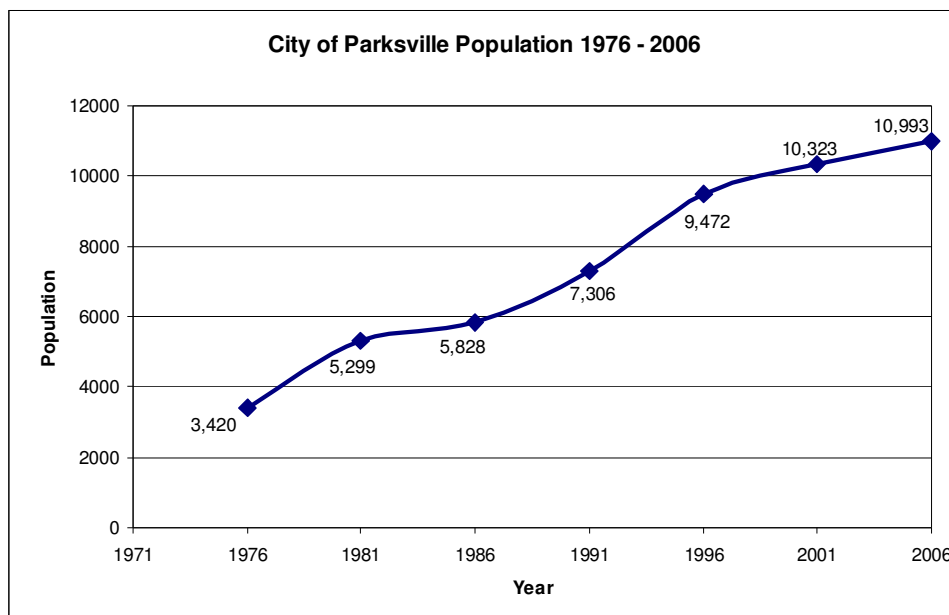
Source: Statistics Canada

**FIGURE 3.1 POPULATION TRENDS OF THE CITY OF NANAIMO FROM 1976
– 2006**

Based on the 10-Year Review of Plan Nanaimo, the City of Nanaimo’s Official Community Plan, the population of the City is expected to increase at a slower rate over the next 25 years. By the year 2031, the City of Nanaimo is expected to add 34,000 new residents, bringing the total population of the City to approximately 113,000. This suggests an annual growth rate of over 1.7 percent per year between 2006 to 2031, for a total increase of 43 percent from the current 2006 Census population. Of the 34,000 new residents, 20,000 are expected to be over 65 years of age.

3.2 Parksville’s Growth

Between 1976 and 2001, the population of the City of Parksville grew from 3,420 to 10,323, reflecting an average growth rate of 8 percent, and a total population in 2001 of more than double the population at 1976. The most recent Census (2006) suggests that the City of Parksville has a population of 10,993. While this suggests that growth has slowed, the City of Parksville is currently using a growth rate of 1.3 to 2.5 percent per year for their Development Cost Charge calculations, suggesting a continued upward growth trend. A graphical representation of the City’s population over the 25-year period between 1976 and 2006 is presented in FIGURE 3.2.

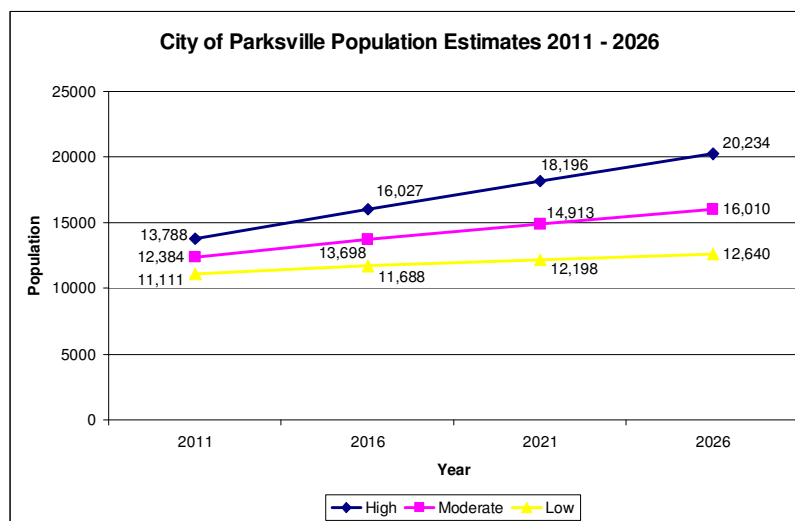


Source: Statistics Canada

FIGURE 3.2 POPULATION OF THE CITY OF PARKSVILLE



From FIGURE 3.2, it can be seen that the population of the City of Parksville increased most rapidly during the period between 1985 and 1995. Although growth has stabilized over the last few years, Parksville is still predicted to grow at a rate faster than the province’s average growth rate. Based on the BC Stats People Model up to the year 2026, a graphical representation of the predicted population levels for the City of Parksville is shown in FIGURE 3.3.



Source: BC Stats People Model

FIGURE 3.3 POPULATION ESTIMATES FOR THE CITY OF PARKSVILLE

- Depending on the growth scenario, the BC Stats People Model predicts that the population of the City of Parksville will grow to between 12,640 and 20,234 people by the year 2026.
- The high end of this model equates to a growth rate of 3 percent per annum for total growth of approximately 47 percent between 2011 and 2026.

Similar to the City of Nanaimo, the City of Parksville also has a much older population than other BC municipalities. Currently, approximately 30 percent of the population are above the age of 65. The above 65 age group is also expected to experience the fastest population growth.

3.3 Growth in the Lakes District and Schooner Cove

As set forth in Section 1.1, under the current OCP, the Study Area has the potential to grow from 770 residential units to 2,688 residential units including commercial areas, with the majority of the units being accommodated in the Lakes District. Although detailed housing plans are not yet available, additional housing would likely take on a variety of forms, including single family, compact single family, and condominium/apartments. For analysis purposes, it was assumed that the remaining capacity for residential housing to build-out at the Lakes District and Schooner Cove would be split equally among the three aforementioned housing types.

Since the residential component will form the majority of the new development in the Lakes District and Schooner Cove, a trip generation analysis was completed to assess the potential trip generation for this level of development. Typical engineering practice is to forecast trips based on the Institute of Transportation Engineer's Trip Generation Handbook, and this was used as a starting point. It is known that the Fairwinds demographic is comprised of a higher portion of retirees in a self-sustained community as opposed to a highly urbanized suburban community with a large proportion of the population being working age with family which the handbook's rates are typically based upon. Thus, the likely trip generation at Fairwinds will be somewhat less than those reflected by a similar land use class from the handbook.

Also, there is the potential to introduce Transportation Demand Management (TDM), which will further reduce the need for locals to drive in order to make trips within Fairwinds. TDM is a general term for strategies that would result in more efficient use of transportation resources. These strategies focus on reducing the need or scope for new transportation infrastructure by managing demands through improved efficiency. Examples include:

- Carpool and vanpool services;
- Auto-Share; and
- Inter-community transit.

The above measures may further reduce trips from the new residential development in the Lakes District and Schooner Cove.

Given the prevailing Fairwinds demographic and TDM potential, trip reductions have been conservatively assumed to be 15 percent. TABLE 3.1 displays the potential trip generation of the new residential growth in the Lakes District and Schooner Cove assuming a 15 percent reduction on conventional generation rates based on the ITE Handbook.

TABLE 3.1 POTENTIAL TRIP GENERATION OF THE LAKES DISTRICT AND SCHOONER COVE RESIDENTIAL USES

RESIDENTIAL TYPE	NUMBER OF UNITS	TRIP RATE (ITE)	REDUCTION (TDM, RETIREMENT COMMUNITY)	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Standard Single Family	639	0.77 AM 1.02 PM	15%	109	310	419	355	200	555
Compact Single Family	639	0.69 AM 0.92 PM		94	282	376	321	180	501
Condominium/Townhouse	640	0.44 AM 0.52 PM		43	197	240	181	102	283
Totals	1,918			246	789	1,035	857	482	1,339

* Note – AM and PM Inbound and Outbound Splits allocated according to the ITE Trip Generation Handbook. Compact single family was assumed to be 10 percent less the standard single family rate.

Based on the analysis, it can be concluded that should 1,918 additional residential units be constructed to achieve an OCP build-out condition, the additional residential dwellings would have the potential to generate 1,035 and 1,339 new two-way trips in the weekday AM and PM peak hours respectively. However, there is the potential for a much lower trip generation than those quoted above depending on the ultimate allocation of residential uses/lots (i.e. larger vs. smaller lots). The potential trip generation for 1,918 residential units roughly translate to a generation rate of approximately 1 trip every 1.9 units (0.54 trips per unit) being made in the AM peak hour and 1 trip every 1.4 units (0.70 trips per unit) made in the PM peak hour.

In considering the peak hour capacity and overall residual capacity of rural collector roads from the survey data, it can be concluded that all roads within Fairwinds have sufficient residual capacity to accommodate the additional residential development as contemplated under the current OCP. For example, Fairwinds Drive, the main route into Fairwinds, is currently utilized by approximately 3,000 vehicles per day whereas the practical capacity is 5,000 vehicles per day. Even with the additional trips that would be generated by potential additional development, the theoretical daily road threshold/practical capacity would not be reached along Fairwinds Drive.

Furthermore, according to the RDN's Road Network Plan, several new roads will be constructed in Nanoose Bay to accommodate future growth. The proposed major roads to service resultant development within the Urban Containment Boundary around Fairwinds are highlighted in FIGURE 3.4 based on the RDN's Road Network Plan in the Nanoose Bay Official Community Plan. From FIGURE 3.4, it can be seen that the RDN had previously accounted for plans to extend Schooner Cove Drive to service future development in The Lakes District, which is consistent with Ministry of Transportation & Infrastructure's (MoTI) planned alignment. The figure also shows a connection to Transtide Drive, which is considered by MoTI to be an emergency vehicle-only link.

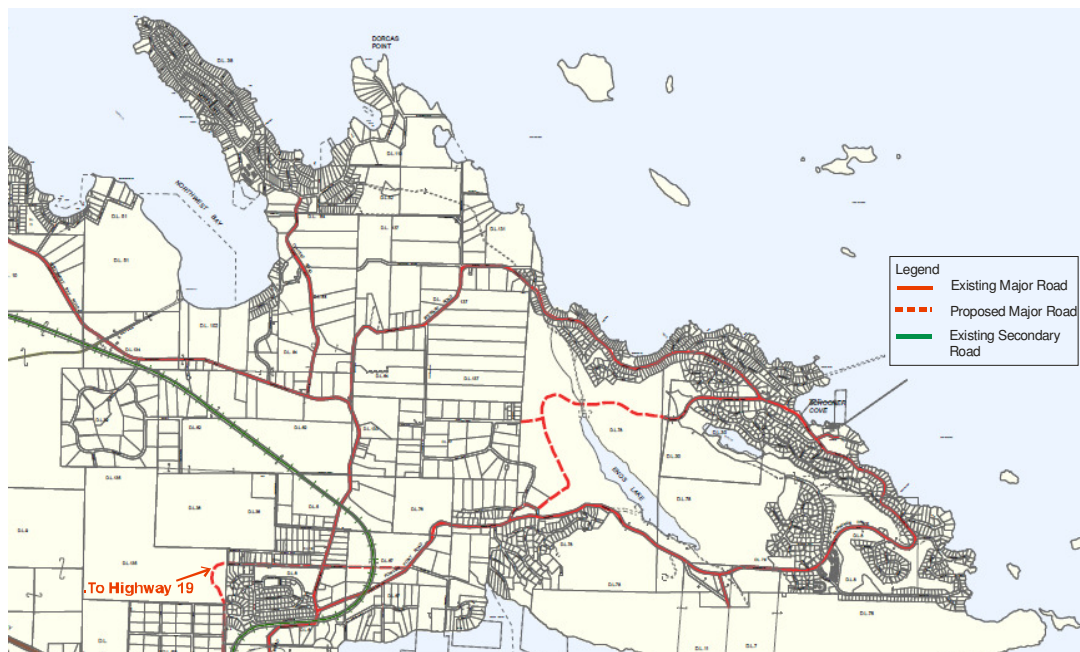


FIGURE 3.4 RDN ROAD NETWORK PLAN

4.0 GUIDING PRINCIPLES FOR THE FUTURE TRANSPORTATION NETWORK

Since the current road network has already been shown to address connectivity between adjacent urban communities and connectivity within the neighbourhood, the further development of a road network for the Fairwinds Study Area as part of the Lakes District and Schooner Cove Neighbourhoods will only add to the existing beneficial characteristics of the road network for Fairwinds. Several concepts and objectives for the development of a future road network which will connect to the existing network are:

- To support sustainability objectives by limiting the amount of paved area dedicated to roads while ensuring that safety and efficiency criteria are met;
- Enhance and support the expansion of attractive pedestrian and bicycle facilities with welcoming streetscapes;
- Enhance and support the provision of community-oriented transit and shuttle services;
- Support increased density development that will provide a mix of residential, commercial, office and recreational land uses, to minimize the need for longer distance travel and encourage multi-purpose trips to reduce the total number of trips made externally;
- Avoid the oversupply of parking to encourage the consideration of travel modes other than the private automobile; and,
- Where feasible, pursue opportunities for other Travel Demand Management measures, such as community carpool vehicles, pay parking at commercial nodes, and bicycle facilities at Schooner Cove to encourage sustainable and healthy living.

With the development of the Lakes District and Schooner Cove and the provision of a more connected, neighbourhood-oriented road network which embrace the above principles, further connections within Fairwinds will be enhanced and will benefit the residents of the community and also those of adjacent communities already served by efficient road connections to and from Fairwinds.



- Traffic Operations
- Transportation Planning
- Road Safety Engineering
- Transit and Sustainability
- Asset Management
- Project Management