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## **TABLE OF CONTENTS**

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>2</b>
<b>2.0</b>	<b>TRAFFIC ANALYSIS .....</b>	<b>2</b>
<b>3.0</b>	<b>RECOMMENDATIONS .....</b>	<b>4</b>

**FIGURES:**

<b>FIGURE 1</b>	<b>OVERALL SITE PLAN</b>
<b>FIGURE 2</b>	<b>ACCESS DEFINITION</b>
<b>FIGURE 3</b>	<b>HANNINGTON ROAD TRAFFIC ASSIGNMENT</b>
<b>FIGURE 4</b>	<b>TRAFFIC DISTRIBUTION</b>
<b>FIGURE 5</b>	<b>PM PEAK HOUR TRAFFIC ASSIGNMENT</b>
<b>FIGURE 6</b>	<b>LEFT TURN STORAGE LANE ANALYSIS</b>
<b>FIGURE 7</b>	<b>CONCEPTUAL INTERSECTION DESIGN</b>
<b>FIGURE 8</b>	<b>MODIFIED LOCAL "A" ROAD – TYPICAL SECTION</b>

## **1.0 INTRODUCTION**

Further to the Bear Mountain Master Partnership Rezoning Application (RZ-03-02), the September 27 Road Advisory Committee Recommendations, and the October 25 Terms of Reference for Hannington Road, the following traffic report reviews the impact of the proposed Residential, Resort Villas, Commercial and Golf Course development in the District of Highlands.

## **2.0 TRAFFIC ANALYSIS**

### **(A) METHODOLOGY**

The proposed development in the District of Highlands (DoH) is identified in relation to the initial access via Millstream Road and the future connection to the Trans Canada Highway (refer to figure 1). The traffic distribution along the various routes is discussed in general, followed by the trip generation for each type of development (Residential, Resort Villas, Commercial/Office and Golf Course). The number of trips generated by each individual development is identified, and distributed to proposed road access. Lastly, based on the traffic impacts, the proposed road improvements along Hannington Road have been reviewed and recommendations provided for the Hannington Road and the Millstream Road intersection.

### **(B) ROAD NETWORK**

The primary access to this Golf Course development is via the Bear Mountain Parkway (figure 1). This route provides direct access to the Clubhouse and is the centre of the development. The parkway will provide the principal access to both golf courses (District of Langford (DoL) and Highlands) and the Resort Villas. In the short term, it is expected that all development generated traffic along the parkway, including the Resort Villas located in the Highlands will use this route to access Millstream Road. In future, when the Trans Canada Highway connector is built, the southern portion of Hannington Road traffic and the westerly portion of the Parkway are expected to utilize this connection. Refer to figure 2 for a schematic description for the expected short term and longer term traffic distribution. For the purposes of this review it has been assumed that all the residential traffic located along Hannington Road will use this route (includes all Phase 2 DoL traffic) to access Millstream Road (figure 3). This is a conservative estimate which is likely to identify more trips than will actually occur and is intended to be a worst case scenario for analysis purposes. In future, when the Trans Canada Highway connector is built, it is expected that the traffic along the southern portion of Hannington Road will primarily use this new route and result in a reduction of traffic on Hannington Road. Also, it is very unlikely the Millstream traffic (north of Hannington Road) would travel via Hannington Road and the Bear Mountain Parkway to get to the TransCanada Highway.

The only exception may be those vehicles destined north to Duncan/Nanaimo which is expected to be very limited, due to the circuitous nature of this route.

**(C) TRAFFIC GENERATION**

The following table summarizes the weekday PM peak hour trip generation for the respective development activity, and is based on the following assumptions:

- Residential                      100 dwelling units (58 SF/42 MF)
- Resort Villas                      100 units
- Office/Commercial              3000 m<sup>2</sup> (2000 m<sup>2</sup> office/1000 m<sup>2</sup> retail)
- Golf Course                      18 holes

Table 1

Access Road	Land Use	Project Size	Rate	PM Peak Hour (VPH)			AADT
				In	Out	Total	
1. Hannington Rd (W)							2120
(a) DoH	SF	50 units	1.2 per D.U.	33	22	60	
	MF	50 units	0.68 per D.U.	22	12	34	
(b) DoL	SF	29 units	1.2 per D.U.	22	13	35	
	MF	70 units	0.68 per DU	32	16	48	
(c) DoH (5%)	GC	36 holes	3.7 per hole	4	3	7	
2. Hannington Rd (E) of Millstream Bridge							2960
(a) DoH	Office	2000 m <sup>2</sup>	1.8 per 100m <sup>2</sup>	6	30	36	
	Retail	1,000 m <sup>2</sup>	10.4 per 100m <sup>2</sup>	52	52	104	
3. Bear Mtn. Parkway	RV	100 units	.64 per room	36	28	64	

SF = Single Family    MF= Multi-family    GC = Golf Course    DU = Dwelling Unit  
 AADT = Average Annual Daily Traffic    RV = Resort Villas

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**(D) TRAFFIC ASSIGNMENT**

The traffic generation identified in table 1 is distributed along both Hannington Road and Millstream Road during the weekday PM peak hour (design hour). Refer to figure 4 for details.

The peak hour traffic volume is distributed assuming a 1% growth rate on Millstream Road to the 2012 horizon year and the aforementioned traffic assignment. Refer to figure 5 for details.

**(E) LEFT TURN STORAGE ON MILLSTREAM ROAD AND HANNINGTON ROAD**

Assessment of the left storage requirements using the Ministry of Transportation Site Impact Manual indicates that a 25m N/B left turn storage lane is required at the Millstream and Hannington road intersection. Refer to figure 6 for left turn warrant details. As a result, a left turn storage length of 30 meters is recommended to accommodate a 10 year horizon period at this intersection.

The conceptual intersection improvements are shown on the attached concept drawing (figure 7). This concept includes about 20 metres of left turn storage on the Hannington and about 30 meters of right turn storage in order to improve the overall traffic operations at this intersection.

**(F) HANNINGTON ROAD GEOMETRIC STANDARD**

The forecast traffic volume for Hannington Road west of the Millstream Creek Bridge is about 2120 vehicles per day (vpd) in the short term which is expected to be modestly reduced (perhaps 20%) when the Trans Canada Highway connector is completed.

East of the Millstream Creek Bridge to Millstream Road the forecast volume is about 2960 (vpd), specifically east of the Municipal office access road.

In view of the proposed development and the forecast traffic volumes, the preferred standard for Hannington Road between the District of Langford boundary and the Millstream Bridge is a modified local "A" road design. Refer to the attached typical road section (figure 8) which includes a flat 0.4m curb at the outside edge of the current roadway prism.

The Hannington Road East section, from the Millstream Creek Bridge to Millstream Road, the preferred standard is the Collector road design in order to effectively accommodate the forecast traffic flow.

### **3.0 RECOMMENDATIONS**

In summary, based on the forecast traffic volumes for the proposed Residential, Resort Villas, Office/Commercial and Golf course development, the following improvements are recommended:

1. Modified local "A" road design standard for Hannington Road from the District of Langford boundary to the Millstream Creek Bridge.
2. A Collector standard for Hannington Road from the Millstream Creek Bridge to Millstream Road.
3. At the Millstream Road and Hannington intersection, a 30 metre N/B left turn storage lane on Millstream plus a 20 meter left turn storage lane and a 30 meter right turn storage on the Hannington Road West leg.
4. The office/retail development adjacent to Millstream Road should be accessed via the Municipal office road.