



*Malaspina University- College*

*Transportation Demand Management (TDM) Strategy Update*

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## **EXECUTIVE SUMMARY**

In 2005, Boulevard Transportation Group completed a Transportation Demand Management (TDM) Study for Malaspina University-College's Nanaimo Campus. The scope of the study was to explore ways in which the campus could accommodate a significant population growth, while minimizing an increase in parking supply, and enhancing the overall campus sustainability. It was determined that the success of a TDM strategy at the University- College was founded on how the parking on site is managed, and therefore, a list of management strategies were developed to improve the efficiency of the parking facilities, while supporting the objectives and principles of TDM. The 2005 Study indicated that TDM measures are made up of a series of "carrots and sticks", with parking representing the "stick." No amount of promotion or incentive based programming will garner changes in travel habits if parking remains relatively inexpensive, abundant and overly convenient.

### **Background**

Since the 2005 TDM Study, the University- College is reporting an increase in parking demand, and the existing parking operations on site are not self-sufficient, with facilities having to subsidize the cost for people to park on site. Parking remains convenient and relatively inexpensive, resulting in a lack of revenue to re-invest in sustainable practices, including alternative transportation alternatives. In addition, very few of the recommended strategies have been implemented. Therefore, Malaspina has secured Boulevard Transportation Group to conduct an update of the existing TDM Study, and determine ways in which the University-College can ensure parking operations are self-sufficient, thereby generating a shift in travel behaviour and promoting the campus as a sustainable "green" institution.

### **Parking Observations**

Parking surveyors from Boulevard Transportation Group conducted volume (occupancy) counts over 6 hours on Wednesday, November 7<sup>th</sup>, 2007. To ensure consistency with the previous study, capacity was determined to be between 80-85%, and parking surveyors recording the total number of vehicles parked in each lot. The parking survey found that the demand for parking has increased since the previous study, with lot utilization reaching 92% between 10:30-11:30am, with 2152 of the 2352 parking spaces occupied. Volumes remained above capacity at 85% until 2:30pm, and then decreased to 67% with 1578 vehicles observed parking between 2:30-3:30pm.

### **Alternative Strategies**

Since the TDM Strategy was issued in 2005, there has not been any change in the cost to park on campus, with the only change being an increase in the times in which pay parking is in effect. As it

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stands, parking on site is very inexpensive in comparison with other Universities and Colleges in the Province, and is creating an imbalance with the other more sustainable modes of transportation on campus. In order to close the gap between driving and the other modes, and to raise parking revenues so that parking operations become self-sufficient, and funding is freed up for alternative modes, a number of parking price strategies have been presented to enable the University-College. The following is a list of these proposed strategies.

**Alternative Fee Structure**

The current cost at \$0.25 per half hour up to a maximum of \$2.00 for 9 hours is not reflecting the true cost to park at the site, and is not deterring drivers from using other more sustainable modes of travel such as carpooling, transit, cycling or walking to travel to and from the campus. By altering the current parking fee structure from a 15-minute increment to a 1-hour increment, with rates being \$1.00 for 4 hours or portion, \$2.00 for 8 hours, \$3.00 for 12 hours and \$4.00 for 24 hours, the University-College can increase revenues by \$11,500 per year over existing revenues. The change would not change the existing rates, but rather change the structure in which they are currently applied.

**Cap Parking Permits**

Currently, there is no limit to the number of parking passes sold on campus, despite a limit in the number of vehicles that can park on the site at one given time. While parking is on a first come, first served basis, and there is no guarantee to whether or not a person will get a spot. Individuals feel entitled to parking once they have invested in a pass, and therefore will circle the site looking for an available space. Analysis of capping parking passes at 500 4-month and 500 12-month passes per year was conducted, with the remaining users having to pay at the parking meters (ticket spitter machines). The result of capping the parking passes, results in an increased projected revenue of \$471,528 per year as a result of increased revenue from the sales at the ticket meter.<sup>1</sup>

**Eliminate Parking Permits and Implement Daily/ Weekly Fees**

In the original TDM Study, campus users, including faculty and staff indicated that they would be amenable to having books of tickets, or coupons that could be used daily, rather than having to buy a pass for the entire year. This would allow people to have a choice to drive, bike, bus or walk, without feeling they were wasting a day on their parking pass. There is a misconception that when a permit holder has invested in a pass, they presumably pay for their parking the first day, and thereafter, parking is free. “Free” parking does not create any incentive for commuters to consider their options

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<sup>1</sup> *Cap Passes at 500 Semester & 500 Annual, Malaspina University-College, Nanaimo, 2007*

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for arriving to work by alternative modes. The phasing out of parking passes is a realistic option for Malaspina University-College, and will likely result in much higher revenues for the institution. A quick revenue projection in order to determine the increase that could result in eliminating passes altogether determined that the net result was an increase of \$675,000 over the current revenue.<sup>2</sup>

**Premium and Economy Parking Model**

Malaspina could charge a higher rate for these “premium” parking lots, and the current rate for the rest of the site. Short term lots would be excluded from this structure. A premium and economy lot model would function so lots deemed “premium” would have rates of \$1.50/4 hours, \$3.00/8 hours, \$4.50/ 12 hours, and \$6.00 for 24 hours. Lots deemed “economy” would maintain the current rate structure of \$0.25 increments. Based on this model, projections reveal an increase of \$41,625.75 over existing.

**Continue to Invest in Supporting Modes- Re-Investment**

The creation of a sustainability fund through increased parking revenues will secure funding for improved facilities for alternative travel modes. The University- College should continue to provide “carrots” or incentives to the campus population through improved programs and strategies that support ridesharing, transit, cycling and walking on campus. By creating a secure Capital Reserve, there will be funding available to invest in facilities for improved walking, cycling and transit operations on campus. By securing funds for sustainability initiatives, the University- College is showing their commitment to being a leader in sustainable business practice.

**Summary Comparison of Parking Fee Structure Options**

<b>Parking Fee Options</b>	<b>Annual Projected Revenue Increase</b>
Status Quo*	-\$6,545.00
Alternate Fee Structure (\$1/ 4 hours)	\$11,500.00
Cap Parking Permits	\$471,528.00
Eliminate Parking Permits	\$675,000.00
Premium and Economy Parking Model	\$41,625.00
Meter Calibration Costs	\$4,000.00
(New Meters (\$250 per unit))	n/a

\*From Tasmi Financial Reports

<sup>2</sup> Chuck Stills, Manager Special Projects, Robbins Parking Service Ltd, E-mail dated October 23, 2007.



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### **Recommendations**

It is recommended that the University-College opt for a combination of Capping Parking Permits at 500 4-month and 500 12-month passes, and having the remaining users purchase tickets from the meter (ticket spitter machines). In addition to capping parking passes, the University-College could alter the current parking fee structure from a 15-minute increment to a 1-hour increment, with rates being \$1.00 for 4 hours or portion, \$2.00 for 8 hours, \$3.00 for 12 hours and \$4.00 for 24 hours. The change would not change the existing rates, but rather change the structure in which they are currently applied. A combination of these two pricing strategies could result in over \$480,000 in increased parking revenues. In addition, Malaspina University-College should increase the cost of employee parking passes to \$30.00 per month, \$90.00 for 4 months, and \$300.00 per year. Eventually, the University can work towards eliminating parking passes altogether, and only sell weekly and daily parking tickets, as some of the other Colleges on the Island have done with success.

By capping parking permits at Malaspina University- College, and altering the existing fee structure on campus, Malaspina will generate increased net revenue which can be put towards sustainability initiatives and infrastructure that supports alternative modes. It is recommended that the University-College establish a Capital Reserve to fund new programs and facilities that are supportive of sustainable transportation on site. Investments can be made in strategies aimed at shifting the demand to the other modes, resulting in a plan that sees no increase in parking capacity, a modest increase in parking fees by drivers and more choice for those people who are interested in travelling by alternative modes. The increased revenues from parking changes on site are invested into the following strategies/ infrastructure.

- **Sustainability Coordinator Position**
- **Increased subsidy of Employee Transit ProPass**
- **Transit U-Pass for students**
- **Transit Exchange on Campus**
- **Sidewalk/ Roadway Improvements**
- **Bike Lockers/ Racks**
- **Shower and Changeroom Facilities (trip end facilities)**

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## 1.0 INTRODUCTION

In 2005, Boulevard Transportation Group conducted a Transportation Demand Management (TDM) Study for Malaspina University- College in Nanaimo. The scope of the study was to explore ways in which the campus could accommodate a significant population growth, while minimizing an increase in parking supply, and enhancing the overall campus sustainability. This involved a comprehensive review of parking and traffic on campus in order to develop a list of recommended travel options and management strategies to shift the travel behaviour of the campus community and increase the use of alternative forms of transportation. Since the original study, few strategies have been put into action, and there is evidence that the demand for parking during the week has continued to increase, and parking operations are not self-sufficient, which is resulting a lack of funding for sustainable transportation alternatives. Therefore, Malaspina has commissioned Boulevard Transportation Group to undertake an update of the TDM strategy for the University- College, and review parking trends and characteristics, as well as the current management practices to determine ways in which the University-College can create a sustainable campus where parking and security operations are self-sufficient and where alternative forms of transportation are promoted and initiated.

### 1.1 Background

The 2005 study used baseline travel data to understand the challenges that existed at that time, as well as to identify opportunities for a strategy that would see an increase in the use of alternative modes of travel, such as transit, cycling, carpool and walking, thereby decreasing motor vehicle traffic and parking congestion on campus. It was determined that the success of a TDM strategy at the University-College was founded on how the parking on site is managed, and therefore, a list of management strategies were developed to improve the efficiency of the parking facilities, while supporting the objectives and principles of TDM. The following strategies were established:

#### **Strategies to Address Vehicle Use**

- Strategy #1 - Increase Parking Fees
- 1(a) Eliminate Permit System – Daily Parking Only
- 1(b) Increase Daily Fees
- 1 (c) Introduce Variable Lot Pricing
- 1 (d) Parking Fees for Evening and Weekends
- Strategy #2 - Increased Enforcement
- Strategy #3 - Increase the number of meters
- Strategy #4 – Install ‘General Loading’ zones
- Strategy #5 - Re-visit and Clarify the Purpose of Designated Stalls

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- Strategy #6 – Improve and Promote the Ridematching System
- Strategy #7– Establish a Cooperative Carshare Program on Campus
- Strategy #8 – Establish ‘Carpool Only’ Areas

**Strategies to Increase Transit Use**

- Strategy # 9- Introduce the U-Pass
- Strategy #10 – Subsidize a Transit Pass for Employees
- Strategy #11 - Expand Bus Waiting Area
- Strategy #12- Explore Establishing an Exchange on Campus
- Strategy #13 - Improve Passenger Information

**Strategies to Increase Cycling**

- Strategy #14 – Establish a Bicycle Users Committee
- Strategy #15- Install Covered Parking
- Strategy #16- Increase the Inventory of Secure Bike Lockers
- Strategy #17 – Advertise After-Trip Facilities
- Strategy #18 – Identify and Promote Bicycle Routes to Campus
- Strategy #19 – Establish Road Skills Course
- Strategy #20 – Establish a Bike Loan Program

**Strategies to Increase Walking**

- Strategy #21– Develop a Pedestrian Network Plan

**Strategies that Support the Overall TDM Plan**

- Strategy #22– Establish a TDM Coordinator
- Strategy #23 – Implement Guaranteed Ride Home (GRH)
- Strategy #24 - Introduce Staggered Class Start Times

**1.1.1 Implemented Strategies**

Since the Transportation Demand Management Strategy was issued in 2005, very few of the recommended strategies have been implemented, with the majority of changes being the “carrots” of the “carrots and sticks” that make up a successful TDM Strategy. The University College has seen some changes insofar as who is managing parking; however, there has been minimal change to how parking is being managed, including a number of options that were intended to shift travel behaviour to reduce parking demand and support alternative transportation modes. The following changes have been made:

- Pay Parking in effect 365 days a year
- Increase on site security personnel
- Ongoing support and provision of TDM supporting facilities

## 2.0 PARKING CHARACTERISTICS

Since the TDM study, there have been some changes to the campus parking supply, including a slight increase from the previous 2236 spaces on campus to the current total of 2342 spaces at the site; the result of the addition of new student housing and subsequent parking. In 2005, the Nanaimo campus had a total population of 15,745 students and employees, of whom 13,891 were full time and part time students and 1854 were employees.<sup>3</sup> Since then, the population at the campus has decreased to 13,692 full time and part time students, and 1249 employees for a total 14,941 students and employees at the Nanaimo campus.<sup>4</sup> There has also been a shift of parking spaces from the 'general' parking supply to the 'employee' category, likely the result of the accommodating the different types of demand being generated at peak periods. The way in which parking is managed has also changed, with Robbins Parking Services Ltd, in partnership with Westguard Security Services Inc., enforcing parking regulations and providing security services at the campus, an operation that was previously conducted by the University- College. Similarly, while the rates themselves have not changed, pay parking is currently in effect 24 hours a day, 7 days a week, and 365 days of the year, whereas in 2005, pay parking was only in effect 8:00am-4:00pm on Monday to Friday, 11 months of the year, and was not enforced during the month of July, weekends, or during holidays.

Parking Categories have remained the same as the previous study, broken into three categories:

- **Short-Term:** Metered parking only, permits are not valid. (minimum 30 minutes; 2-hour maximum)
- **General:** Parking for students, employees and visitors with a valid permit or ticket from the dispenser. (minimum of 30 minutes; no maximum)
- **Employee:** Parking for employees only with valid employee permit. (No time limit in effect).

## 2.1 Previous Study Parking Demand

The previous parking study at Malaspina identified parking volumes (occupancy of each lot) and turnover (how often the stalls are turning over in the course of the day). The volume study was conducted for eight hours on each day of the week, and took place during a typical one week period (November 15<sup>th</sup>-19<sup>th</sup>, 2004). The total number of cars parked in each lot was counted, at every hour, beginning at 8:00am, with the last count taking place at 5:00pm. An adequacy threshold of 80-85% was used to determine when the lot reached capacity, as it is generally accepted that when parking occupancy reaches 80 to 85%, the driver experiences the resource as "full," even though 15 - 20% of

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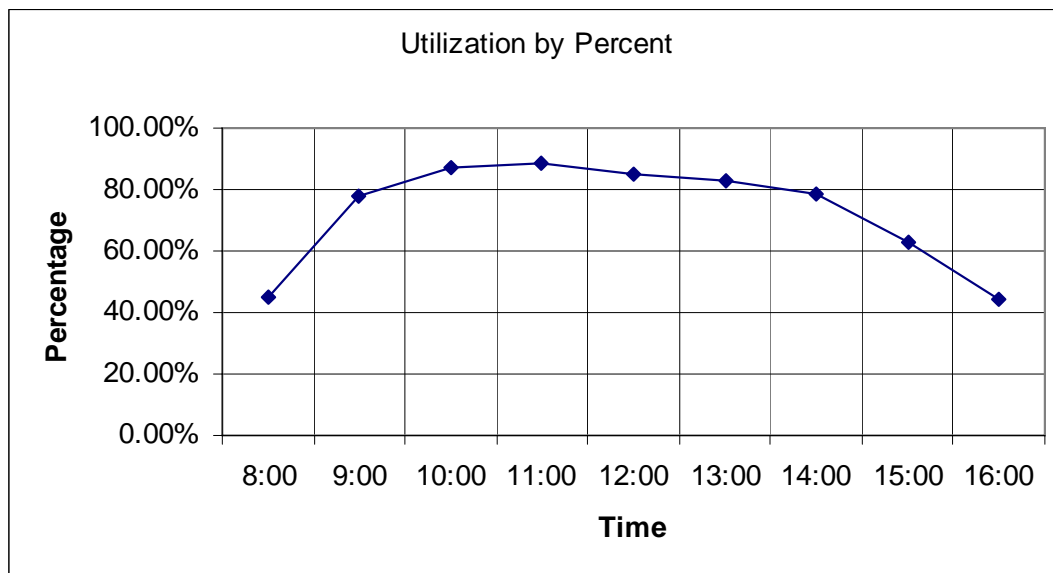
<sup>3</sup> 13891 students from website 'unduplicated'+ 1854 (2015 total \* 92%), February, 2005

<sup>4</sup> Diane Rembold, Human Resources Advisor for Systems and Projects at Malaspina University-College, 2007

the stalls are empty. This is because the stalls are spread out across campus and drivers cannot consistently predict where an available stall can be found. The study found that the parking supply appeared to be fully utilized, with just over 80% of the supply occupied between 9:00 am and 2:00 pm, with the peak demand occurring around 10:00am (see **Table 1**). The study also determined that based on existing conditions, any future growth on campus would likely result in a parking shortage.

The previous study found that the majority of parking demand appeared to be generated in the most convenient spaces, or those that are closest to the campus core, with the lots near the middle of the campus reaching capacity before those located at the bottom, or eastern portion of the site. It was determined that as a result of the grade, and the distance from these lots to the buildings at the campus core, individuals prefer to park as close to their destination as possible; however, when the most convenient parking spaces were occupied, the less convenient parking eventually reached capacity as well.

Table 1 - Parking Utilization of Lots in 2005



Focus groups were conducted during the TDM Study to determine the barriers that existed for the regular site users and identify any opportunities to improve the way in which parking was being managed at the campus. Results from the focus group sessions revealed that both employees and students at Malaspina agreed that the cost of parking on campus is very low and that the cost of a parking pass for the entire year is cheap enough to save the hassle of searching for a toonie everyday to pay for parking. The general consensus was that the price of parking would have to rise significantly before people would switch to other modes, and some felt that this would just push people to park on

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the surrounding roads off campus. They all supported an increase in parking if they knew that the other services such as transit and bike routes would be upgraded.

## 2.2 Current Parking Demand

In order to determine if there has been a change in the parking demand characteristics on campus since the previous study, parking surveyors from Boulevard Transportation Group conducted volume (occupancy) counts over 6 hours on Wednesday, November 7<sup>th</sup>, 2007. To ensure consistency with the previous study, capacity was determined to be between 80-85%, and parking surveyors recording the total number of vehicles parked in each lot. The parking survey found that the demand for parking has increased since the previous study, with lot utilization reaching 92% between 10:30-11:30am, with 2152 of the 2352 parking spaces occupied. Volumes remained above capacity at 85% until 2:30pm, and then decreased to 67% with 1578 vehicles observed parking between 2:30-3:30pm (**Table 2**).

Observations revealed that the highest demand was recorded in the employee parking lots, with 97% of the employee supply occupied between 10:30-11:30am, and remaining at this level until 1:30-2:30pm, when it dropped to 82%. The demand for parking was also high in the general parking spaces at 95%, with 1576 of the 1665 parking spaces occupied. In most lots on campus, parking demand peaked between 10:30-11:30am and remained above capacity until about 3:00pm, with fewer vehicles observed parking in the lots over the course of the day. The demand for parking was lower in the short term parking spaces throughout the day; however utilization was still high at 89% of short term parking spaces occupied between 10:30-11:30am. By 5:00pm, utilization of the short term stalls had decreased to 47% with 29 of the 62 spaces occupied. See Figures 1 and 2 for photos of parking on campus.



**Figure 1: Parking at Malaspina University- College on November 7, 2007**

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Table 2: Parking Utilization of Lots in 2007

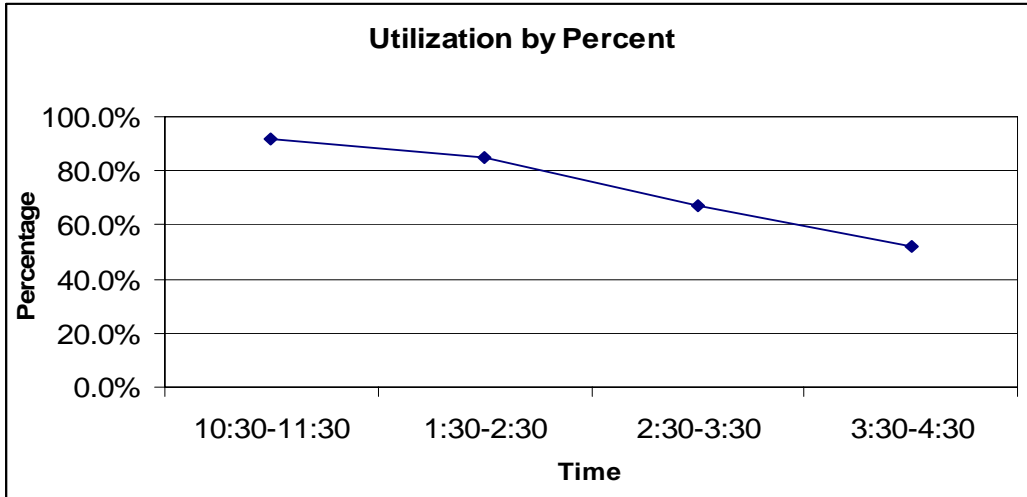


Figure 2: Employee parking has increased on site since the original study

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### 2.3 Cost of Parking

All parking at Malaspina University- College is pay parking, which is in effect at all times. The cost to park on site depends on the type and length of permit purchased with permits offering cost savings over the cost of a daily ticket. Parking on site is first come, first served and having a permit does not guarantee a person a parking space. The cost of parking at a short-term meter is \$0.25 per half hour, and \$1.00 per 2-hour maximum, while the cost of purchasing a ticket from the dispenser is \$0.25 per half hour to a maximum of \$2.00 for 9. Permit prices vary according to the type and duration of the pass, with the different permits listed in **Table 3**.

**Table 3: Parking Costs**

<b>Type (ticket or permit)</b>	<b>Cost</b>	<b>Terms</b>
Employee Lots (annual pass)	\$99.00	Employee only (also sold monthly)
General Lots (annual pass)	\$49.50	Students/Visitors (also sold monthly)
Motorcycle	25% off the rate for a vehicle permit (must register license plate numbers with parking office.	Parking is restricted to designated motorcycle parking spaces only; however, if a motorcycle only spot is not available, the driver must purchase a regular ticket from the dispenser and parking in a general or short term lot with no discount (drivers are asked to tear off the receipt end of their ticket as proof of purchase)
Carpool	\$49.50/ year Purchase a carpool permit at the same cost of a normal parking pass, but have access to designated carpool spaces.	Designated Carpool spaces are located in Parking lot "E", spaces are reserved for vehicles displaying a valid carpool permit from 7am to 11am, after 11am these are available for General parking
Contractor Parking	Request a special contractor permit from parking services	Eligible to park in short term or general parking spaces with valid permit
* permit can be refunded early if it is not used for the entire term		

Since the TDM Strategy was issued in 2005, there has not been any change in the cost to park on campus, with the only change being an increase in the times in which pay parking is in effect. However, when considering that the peak period parking demand is occurring between 10:00am-2:00pm, implementing pay parking in the evenings and weekends when there is not a significant demand, will have little impact on deterring individuals from driving their single occupant vehicles to the site. Increasing parking fees at Malaspina was one of the key strategies in the TDM Strategy for the campus, as method of changing travel habits and creating a disincentive for people to bring their vehicle to the site.

### 2.3.1 Comparison of Parking Rates at BC Institutions

As it stands, parking on site is very inexpensive in comparison with other Universities and Colleges in the Province, and is creating an imbalance with the other more sustainable modes of transportation on campus. Similar to the previous study, a comparison of parking fees from a number of BC institutions was conducted to determine if Malaspina University – College’s parking fees are comparable to other Universities and Colleges. **Figure 3** offers a detailed breakdown of the parking fees at each institution. When comparing Malaspina to the other BC institutions, it is evident that the cost to park at Malaspina is substantially lower than the other campuses, with daily parking rates at the other institutions ranging from \$2.00 at the Okanagan College, to \$10.75 at Simon Fraser University and \$12.00 a day at UBC. Royal Roads, Camosun and the University of Victoria all had higher “general” parking rates than Malaspina, for daily, weekly, monthly and permit parking. Permit costs at other institutions ranged from \$90.00 (8 months) at Okanagan College to \$682.00 at the University of British Columbia. At Thompson Rivers University in Kamloops, which is a similar type institution to Malaspina, the annual parking passes run from \$200-\$300 for general permit compared to \$49.50 for a year at Malaspina. Employee parking rates at Malaspina University College is much lower than the cost of parking for UVic or UBC employees; however, there were a number of institutions who provide parking for employees as a taxable benefit, and therefore a fee has not been established for comparison. At any rate, the overall cost of parking at Malaspina is much lower than that at other Universities and Colleges across the Province.

### 2.4 Revenues from Parking Permits

Malaspina University- College provided Boulevard Transportation Group with a summary of Pass Sale Stats from August 1- September 15, 2005 and also from August 1- September 15<sup>th</sup>, 2006, both of which detailed the total revenues gained from the sale of each type of parking pass (general/ student/ employee) as well as the specifics of what type of pass was purchased (1 month versus 12 months). The summary revealed that there was a minimal increase in the total number of parking permits sold

**Figure 3- PARKING FEE COMPARISON CHART**

University / College	Employee Parking					General Parking						
	Annual	Semester (4 months)	Monthly	Weekly	Daily	Annual	Semester (4 months)	Monthly	Carpool	Motorcycle	Daily	
<b>Malaspina University - College</b>	\$ 99.00	\$ 45.00	\$ 15.00	N/A	N/A	\$ 49.50	\$ 22.50	\$ 7.50	25% off for 2 people, 50% for 3 people, free for 4 or more people	25% off the rate of a vehicle	\$ 2.00	
<b>University of Victoria</b>	\$561.27 (full-time staff and faculty- "Reserved")	N/A	\$ 113.42	\$ 31.80	\$ 10.60	\$ 320.65	\$ 184.44	\$ 61.48	regular general or reserved rate	\$5.30 / day, \$15.90 / week, \$98.05 / year	\$5.30 (general) and \$10 (parkade)	
<b>Camosun College</b>	free parking for employees (tax benefit)					must buy multiple daily or weekly passes through ticketing machine			\$1.75 for 3 or more people	\$10 / month	\$ 3.50	
<b>University of British Columbia</b>	\$ 804.00	\$ 292.00	N/A	\$ 21.00	N/A	\$588 - \$682*	\$315 - 357	\$84 - 99	cost of normal permit + premium parking stalls & rewards	\$20.50 / month	\$12.00 (parkades) and \$4.25 (B-lots)	
<b>Royal Roads University</b>	\$115 (\$80 for hybrid / Smart Car)	N/A	\$ 35.00	\$ 15.00	\$ 8.00	\$115 (\$80 for hybrid / Smart Car)	N/A	\$ 35.00	\$85 / year for 2 people, \$60 for 3 people, \$30 for 4 people	\$100 / year	\$ 8.00	
<b>Thompson Rivers University</b>	available at no charge	temporary permits available at no charge					\$200 - \$300	\$100 - \$150	\$34 - \$50	no incentive, but service is available through <a href="http://www.carpool.ca">www.carpool.ca</a>	free in designated areas	\$2 - \$3
<b>Simon Fraser University</b>	N/A	\$128 - \$140 (\$352 for reserved parking)	N/A	N/A	\$ 10.75	N/A	\$128 - \$140 (\$352 for reserved parking)	N/A	\$236 / semester	\$27.75 - \$64 / semester	\$ 10.75	
<b>Okanagan College</b>	\$90*	\$ 50.00	\$ 20.00	N/A	\$ 2.00	\$90*	\$ 50.00	\$ 20.00	no incentive, but service is available through <a href="http://www.carpool.ca">www.carpool.ca</a>	same as for vehicle	\$ 2.00	

\* 8 months considered annual

from 2005 to 2006, with 60 additional passes sold from one year to the next, resulting in increased revenue of \$5,194.23. The summary indicated that this increase was attributed to the sale of employee passes, with 330 sold in 2006 compared to 282 in 2005.<sup>5</sup> That being said, considering the decrease in population from 2005 to 2007, the fact that there is still an increased number of pass sales suggests that more people are purchasing parking passes than in previous years. This is likely the result of the new practice of having pay parking in effect at all times, with individuals seeing the cost benefits of purchasing a parking pass at a reduced rate, rather than paying for parking at the ticket meter each time they are on site. With parking passes so cheap, there is no incentive for the University-College population to consider paying each day at the ticket, which in turn does not allow them to make a conscious decision to drive to the site each day.

### **3.0 ALTERNATIVE PRICING STRATEGIES**

Currently parking at Malaspina University College is convenient and relatively inexpensive, resulting in a lack of incentive to consider using alternative modes to travel to and from the site. The result is increased vehicle traffic and parking demand on site, which is putting pressure on the existing parking supply, and creating spillover into the surrounding neighbourhoods. In the original TDM Study in 2005, it was indicated that TDM measures are made up of a series of “carrots and sticks”, with parking representing the “stick.” No amount of promotion or incentive based programming will garner changes in travel habits if parking remains relatively inexpensive, abundant and overly convenient. Similarly, parking operations at the University-College are currently not self-sufficient, with facilities having to subsidize \$125,000 to pay for parking costs. This is resulting in a deficit, which is not being invested into other sustainable initiatives, such as facilities for alternative transportation. As many Universities and Colleges across the Province are reinvesting their parking revenues into facilities and infrastructure for alternative modes, Malaspina needs to play ‘catch-up’ and promote itself as a “green” institution. The following section outlines a number of parking price strategies to achieve this balance will enable the University-College to raise parking revenues so that parking operations become self-sufficient, and funding is freed up for alternative modes.

#### **3.1 Alternative Fee Structure**

The current cost at \$0.25 per half hour up to a maximum of \$2.00 for 9 hours is not reflecting the true cost to park at the site, and is not deterring drivers from using other more sustainable modes of travel such as carpooling, transit, cycling or walking to travel to and from the campus. Parking observations at the campus revealed that peak parking is occurring between 10:30-2:30 with well over 80% of the

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<sup>5</sup> *Malaspina University- College Passes Sold, 2005-6006*

overall resource occupied. In order to reflect the higher value of parking during these peak times and deter single occupant vehicle travel to the campus during peak hours, the University-College should consider creating graduated parking costs, with higher rates during peak hours. The University of Victoria has had success with their recent implementation of a parking fee during evenings and on Saturdays, which is a lower rate than what is being charged during the week between 8:30-4:30pm when there is a higher demand for parking. Malaspina provided research information of altering the current parking fee structure from a 15-minute increment to a 1-hour increment, with rates being \$1.00 for 4 hours or portion, \$2.00 for 8 hours, \$3.00 for 12 hours and \$4.00 for 24 hours. The change would not change the existing rates, but rather change the structure in which they are currently applied. Based on the existing ticket meter sales, the change resulted projected an increase of \$11,500 per year over existing revenues.<sup>6</sup> By re-structuring the fees during the peak times to reflect increased parking demand will likely encourage individuals to consider alternative modes of travel.

### **3.2 Cap Parking Permits**

Currently, there is no limit to the number of parking passes sold on campus, despite a limit in the number of vehicles that can park on the site at one given time. While parking is on a first come, first served basis, and there is no guarantee as to whether or not a person will get a spot. An increase in parking demand and parking passes gives drivers an expectation that there will be available parking when they reach their destination. Individuals feel entitled to parking once they have invested in a pass, and therefore will circle the site looking for an available space. As parking is at capacity, with almost all of the resource occupied during peak periods, the sale of more passes than there are spaces will result in unnecessary driving with vehicles circulating the lots looking for space, and increasing vehicle traffic and congestion on site. Drivers will also be frustrated that they have a pass yet are unable to find a place to park.

The University- College is aware of this and have investigated the impact of capping parking passes at the Nanaimo campus, a strategy that was recommended in the original study. Based on parking pass sale data from July 2005 to March 2006, Malaspina conducted analysis of capping parking passes at 500 4-month and 500 12-month passes per year, with the remaining users having to pay at the parking ticket meters. The investigation analysis assumed that employee permits would not be capped, and that the pass rates would remain the same at \$22.50 (4-motnh) and \$49.50 (12-month). The calculations assumed that the people paying at the ticket meter would be on campus for 16 days per month at the current rate of \$2.00 per day. The result of capping the parking passes, results in an increased projected

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<sup>6</sup> *Chuck Stills, Manager, Robbins Parking with Malaspina University-College, e-mail dated October 23, 2007*

revenue of \$471,528 per year as a result of increased revenue from the sales at the ticket meter.<sup>7</sup> As this option will not result in an increased fee for parking passes at the University-College, it may be better received than a straight price increase, and also works towards the potential for eliminating passes altogether (see section 3.3). In addition, the different users at Malaspina have become accustomed to paying low costs for parking passes which do not translate into a parking space on campus. By capping the number of parking passes being sold, the general users will feel confident that the University-College is making an effort to manage the parking demand on site, and that they will have a better chance of finding a parking space on campus. This is a much less contentious strategy than an outright increase in parking rates. Similarly, for those individuals who are unable to purchase a pass, they will be making a conscious decision each time they pay at the ticket meter, which should impact their decision to drive to the site each day - a choice which often results in people choosing alternative modes of travel.

### **3.3 Eliminate Parking Permits and Implement Daily/ Weekly Fees**

Parking at Malaspina is inexpensive in comparison to other Universities and Colleges in the province, and have remained static at \$2.00 per day for many years, with parking passes at a reduced rate. The current structure is resulting in Malaspina having to subsidize people parking on site, rather than raising revenues for improved sustainable investments. In the original TDM Study, campus users, including faculty and staff indicated that they would be amenable to having books of tickets, or coupons that could be used daily, rather than having to buy a pass for the entire year. This would allow people to have a choice to drive, bike, bus or walk, without feeling they were wasting a day on their parking pass. Students liked the idea of limiting parking passes on campus, and creating a lottery for those passes at the beginning of the year, as they did not feel that by increasing the cost of parking, people would stop driving to Malaspina. Generally, once an individual has invested in a parking pass, they do not want to “waste” it by cycling, walking or taking transit to the site, instead of parking. There is a misconception that when a permit holder has invested in a pass, they presumably pay for their parking the first day, and thereafter, parking is free. “Free” parking does not create any incentive for commuters to consider their options for arriving to work by alternative modes.

Camosun College in Victoria, BC sells permits in daily or weekly increments to encourage individuals to make a choice when purchasing a parking permit, and consider the cost of parking their vehicle each time they purchase a daily or weekly ticket. When forced to pay for parking on a more frequent basis, individuals will be more likely to consider the equation, the costs if they took transit, carpooled, cycled

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<sup>7</sup> *Cap Passes at 500 Semester & 500 Annual, Malaspina University-College, Nanaimo, 2007*

or walked to the site. At Camosun College, this practice was integrated over 3 years, by capping the parking passes in the first year, and slowly eliminating them altogether. This was a more sensitive process that allowed for users to become familiar with parking limitations on site, and make better choices over time, rather than forcing them into an instant behavioural shift. The phasing out of parking passes is a realistic option for Malaspina University-College, and will likely result in much higher revenues for the institution. A quick revenue projection to determine the increase that could result in eliminating passes altogether determined that the net result was an increase of \$675,000 over the current revenue.<sup>8</sup>

### 3.4 Premium and Economy Parking Model

As a result of its location on a slope east of the Nanaimo Parkway, there are some parking lots that have a higher demand for parking than others. Generally speaking, drivers will park as close to their intended destination as possible to avoid having to walk up steep slopes, especially in wet weather, which is common on Vancouver Island. The parking observations revealed that the demand for parking on the periphery of the campus were the last to fill, a sign that they are the last choice for individuals driving to campus, with those parking lots closest to the buildings reaching capacity first. With this in mind, Malaspina could charge a higher rate for these “premium” parking lots, and the current rate for the rest of the site. Short term lots would be excluded from this structure. A premium and economy lot model would function so lots deemed “premium” would have rates of \$1.50/4 hours, \$3.00/8 hours, \$4.50/ 12 hours, and \$6.00 for 24 hours. Lots deemed “economy” would maintain the current rate structure of \$0.25 increments. Premium lots are lots B, C, E, G, N, S, Q and F. Based on this model, projections reveal an increase of \$41,625.75 over existing. **Figure 4** illustrates the location of those lots that would be considered “premium” and those that would classify as “economy” lots, including the daily cost breakdown of the different lots.

#### 3.4.1 Meter Calibration Costs

In order for the short term lots to reflect and be consistent with the premium/ economy lot model throughout the rest of the site, the research provided by Malaspina estimated that it will cost Malaspina approximately \$4000 to retool the meters to be \$0.25 for 15 minutes instead of \$0.25 for 30 minutes. As the existing meters are older models, there is also an opportunity to replace the existing meter heads with new electronic units at \$250 per unit. These units are capable of easy calibration in order to allow for unlimited future rate adjustments, grace periods, and higher revenue controls.<sup>9</sup>

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<sup>8</sup> Chuck Stills, *Manager Special Projects, Robbins Parking Service Ltd, E-mail dated October 23, 2007.*

<sup>9</sup> Chuck Stills, *Manager Special Projects, Robbins Parking Service Ltd, E-mail dated October 23, 2007, p2.*

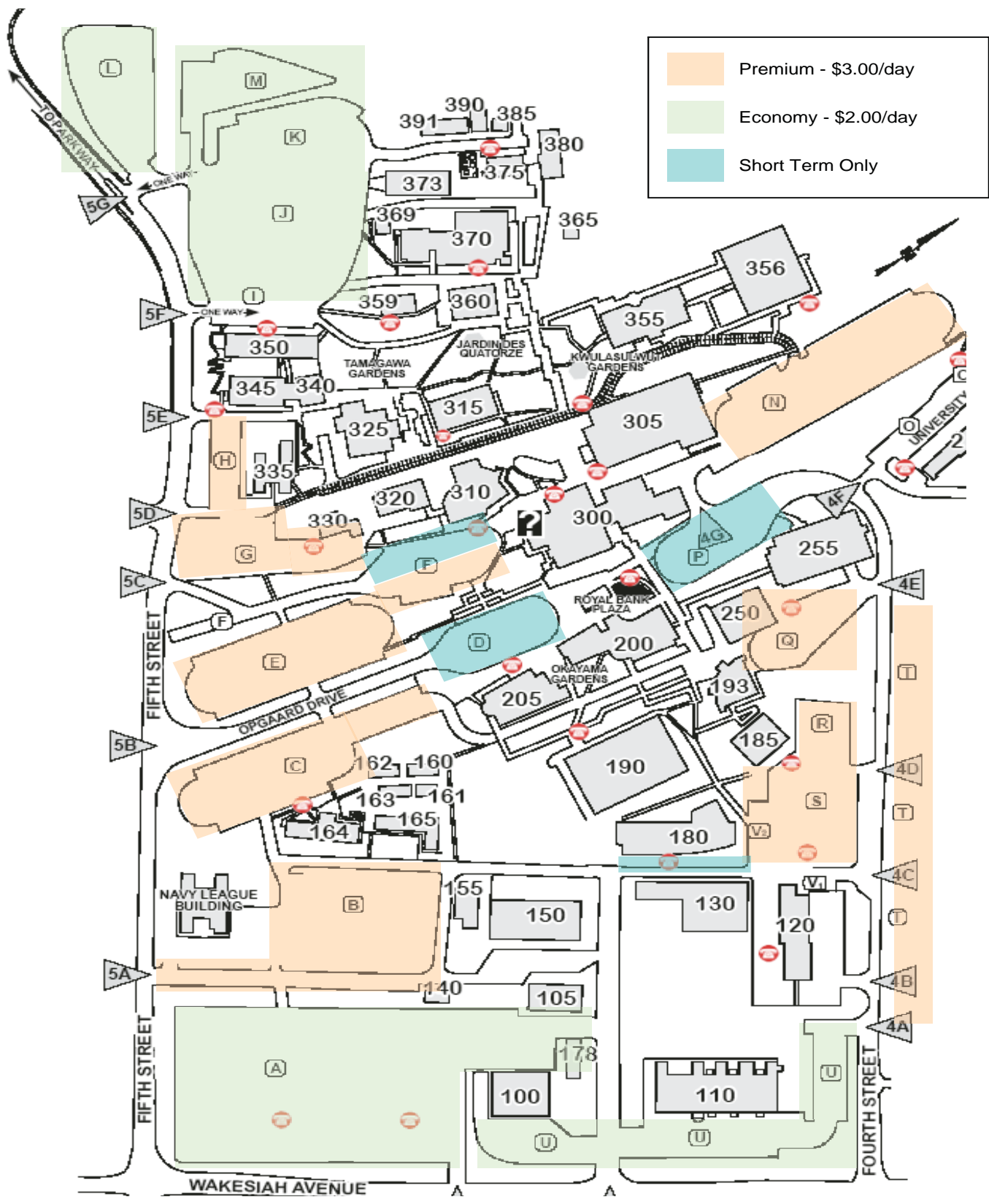


Figure 4  
Proposed Premium and Economy Parking Lot Model

### 3.5 Continue to Invest in Supporting Modes- Re-Investment

The creation of a sustainability fund through increased parking revenues will secure funding for improved facilities for alternative travel modes. The University- College should continue to provide “carrots” or incentives to the campus population through improved programs and strategies that support ridesharing, transit, cycling and walking on campus. The University of Victoria and Camosun College already allocate a large portion of parking revenues towards subsidies for the reduced rate transit passes for students (U-Pass) and employees (ProPass), in addition to other infrastructure and facilities that are supportive of sustainable travel on and off campus. By creating a secure Capital Reserve, there will be funding available to invest in facilities for improved walking, cycling and transit operations on campus. By securing funds for sustainability initiatives, the University- College is showing their commitment to being a leader in sustainable business practice. The following section outlines strategies/ infrastructure could be considered for re-investment of increased parking revenues.

#### 3.5.1 Establish a Sustainability Coordinator Position

One of the first steps in creating a successful TDM plan at Malaspina University-College is to appoint a person responsible for overseeing sustainability initiatives, including TDM. This could be a paid or volunteer position; however the person should have an understanding and an interest in TDM and ‘green’ commuting and is willing to dedicate some time to ensuring that the needs and demands of the various user groups are being met. This person would work with the various campus organizations to meet sustainability goals and to promote the institution as a “green” campus. The person will work with Facilities Management to promote transportation alternatives and opportunities, and increase awareness of the TDM program on site. This person would be in charge of organizing commuter events, contests and activities on site. Generally speaking, he or she would act as the point person or representative for the various employees, and offer ongoing feedback and insight in regards to the TDM plan.

#### 3.5.2 Improved Transit

Currently, the cost of parking on campus is substantially lower than purchasing a transit pass for both employees and students, which is not providing any incentive for individuals to consider taking transit to the site. **Table 4** offers a comparison of the parking and transit rates at Malaspina, which indicates a slight increase in the cost of transit since the previous study, while parking rates have remained the same.

**Table 4 – Parking and Transit Fee Comparison**

<b>Students</b>	<b>Parking</b>	<b>Transit</b>
Daily	\$2.00	\$4.50
Monthly	\$7.50	\$47.00
Semester	\$22.50	\$150.00
Annual	\$49.50	N/A

<b>Employee (Adult)</b>	<b>Parking</b>	<b>Transit</b>
Daily	N/A or \$2.00 (General stall)	\$5.75
Monthly	\$15.00	\$58.00
Semester (4 months)	\$45.00	N/A
Annual	\$99.00	\$597.36 (Employee ProPass)

### 3.5.3 Implement the U-Pass Program

If the University decides to change the parking fee structure on campus, there should be alternatives in place to provide the campus community with other options for travelling to the site. The U-Pass is another recommended strategy from the 2005 TDM Study that should be seriously considered as a tool in increasing transit ridership, and decreasing motor vehicle traffic and parking demand during peak periods. The U-Pass has been implemented in a number of Canadian and US Universities and Colleges, with the price included in the overall cost of tuition for the semester. Each institution has a different fee structure or system in place for managing the U-Pass; however, in most cases the increase in transit ridership and the aim to reduce single occupant vehicles at the sites has been consistent. The University of Victoria and Camosun College in Victoria have both been successful in their U-Pass programs. It is recommended that Malaspina engage RDN transit and work towards creating a mandatory U-Pass program for students, with the goal of implementing a U-Pass by Fall 2009.

### 3.5.4 Increase Transit ProPass Subsidy for Employees

The ProPass is a program offered by BC Transit where participating businesses give employees a monthly transit pass at a reduced monthly rate, and payments are made automatically via payroll deduction. The existing cost of the employee transit pass is \$597.36 per year, much higher than the cost of an annual parking pass, which is only \$99.00. Malaspina can use the increase revenues from the new parking structures to increase the subsidy for transit and lower the cost to employees, thereby closing the gap between parking and transit. In addition, the pass should be as flexible as possible, with as few barriers as possible. For example – utilization of the picture ID system on campus to create the

cards, special parking rates for transit pass holders for the days they need to drive, and monthly rather than annual passes, to encourage new riders to explore transit.

### **3.5.5 Transit Exchange on Campus**

Boulevard Transportation Group has been working with the University- College and the Regional District of Nanaimo (RDN) to develop options for a transit exchange at the Nanaimo campus to enhance service and provide a second transit exchange in the Nanaimo region. A transit exchange at the University College will result in increased transit service to and from the site, with the campus acting as an origin/ destination point for a number of routes in the area. A combination of a U-Pass and improved transit service to the campus will encourage different users to consider taking transit to the site, knowing that they will have a convenient travel option to the campus, at a similar or lower cost than parking on site.

### **3.5.6 Invest in Improved Pedestrian Network and Facilities**

There are a number of improvements that can be made both on and off site to facilitate walking as a travel mode. Improved walkability on site will benefit all users, including transit users, people getting dropped off, and even vehicle drivers. Improved pedestrian facilities that enhance the pedestrian experience will only help to encourage people to walk as a form of commuting. By providing maintenance and upgrades to the existing sidewalk and roadway network on campus, individuals will be more inclined to walk or cycle to campus. This includes creating well lit, clear pathways for pedestrians with good connectivity between buildings, and from the campus to the surrounding sidewalk system.

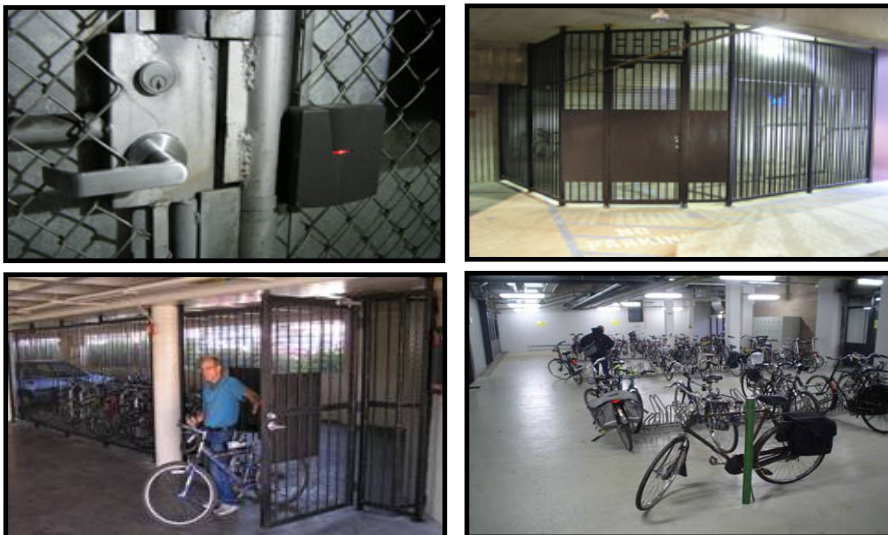
In addition to improving pedestrian facilities for the individuals who walk to the site as a form of commuting, it is also very important that there are strong pedestrian linkages between bus exchange and the buildings on campus. As there are a large number of individuals who arrive on site via transit, it is essential that these individuals can safely and efficiency enter the site without having to walk far to find the nearest entrance. As many of the employees walk to the transit stops after dark, Malaspina University-College should ensure that walkways are well lit, and visible, where individuals feel safe and secure after finishing their shift. Security personnel should be accessible to all campus users at any time, if that person requires assistance.

### **3.5.7 Invest in Cycling Facilities and Infrastructure**

Comments from the original focus group surveys indicated that there are numerous students and employees who are interested in biking to work; however, they do not feel safe leaving their bike

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locked up in one of the existing outdoor racks for fear of it being “stripped” of its parts or getting damaged in wet weather. Lock-up facilities for employees should be secure, long-term facilities in which employees feel safe leaving their bikes. Long-term bicycle storage is typically either a large, controlled-access room/space with individual hooks or racks on which employees can lock their bikes, or individual concealed lockers that a user places their own lock on or is assigned a key, seen in **Figure 5**. It is recommended, however, that any long term bike facility that is provided on site is in a well-lit, high traffic area to ensure safety of those individuals using it. The bike facility should be as close to the building entrance as possible, and should be visible and well signed for employee use.



**Figure 5: Example of long term bike lock up facilities recommended for Malaspina University-College**

In addition to long term lock up facilities, bike racks should also be considered for both short term bicycle parking. Certain students or employees may not feel it necessary to park their bike in an indoor bike cage or room, and would rather lock it outside adjacent to one of the many entrances on site. As wet and damp weather is one of the main barriers associated with cycling as an alternative travel mode, it is recommended that many of these bike racks are covered under existing awnings, or under some form of overhead shelter. Cyclists do not like arriving to work completely wet or coming out of the class or work to find their bike seat soaking wet. Covered bike parking provides protection from rain and other poor weather which in turn mitigates some of the challenges associated with cycling in bad weather conditions.

### 3.5.8 Shower/ Changeroom Facilities

As a result of the cold and wet weather that is common on the West Coast, cyclists often require a shower or want to change once they have reached their destination. Employees are generally required to look clean and presentable at work and having a changeroom and shower facility on site will allow them to be prepared for their shift, thereby removing any barrier to commuting by bicycle. Similar to the enclosed bike cage, shower and changerooms should be located in a controlled-access area within a central building on campus, such as an ‘employee only’ area or a central location within the building. For security reasons, employees should be asked to show proof that they work at the University-College before receiving a passcode or key-card for this facility.

### 3.6 Parking Squeeze

The availability of parking will also have a significant impact on a person’s decision to drive to the site. The Victoria Transport Policy Institute points out that most municipal parking requirements are based on worst-case scenarios and have a tendency to provide more parking than is actually required, with the objective of being “cautious and responsible”.<sup>10</sup> However, it is now considered more responsible to exercise social and environmental caution, realizing that automobile convenience and an oversupply of parking opposes this position. Transportation planning is starting to use an undersupply of parking or congestion as a means to alter travel behaviour- as the supply of parking approaches the demand, the transportation choices of individuals affected begins to change.

While a large undersupply could result in major parking disarray, a supply that just meets the demand can work to switch automobile drivers to non-automobile modes of transportation, and neutralize the deficiency in supply. This is commonly referred to as a “parking squeeze” when limiting the ability to provide every driver on site with a parking space. For example, in order to accommodate the increasing parking demand at Malaspina could eventually require the construction of a parkade, a considerable investment. To pay for this facility, Malaspina will have to substantially increase the cost of parking, or subsidize automobile drivers. A more sustainable option is to provide the minimum amount of parking to meet the expected demand, and invest in transportation alternatives which encourage commuters not to drive their single occupant vehicle to campus.

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<sup>10</sup> Todd Litman, *Parking Management*, Victoria Transport Policy Institute, April 2006, <http://www.vtpi.org>, p. 9.

## 4.0 RECOMMENDATIONS

Since the Transportation Demand Management Strategy was issued in 2005, there have been minimal changes at Malaspina University-College to generate a shift in the travel behaviour of the University community to take alternative forms of transportation, and reduce the demand for parking on site. In addition, the existing fee structure is resulting in a deficit in the parking operations budget, which is not allowing the University-College to re-invest the revenues into alternative strategies and facilities for sustainable practices. At the moment, the University-College is forced to subsidize the cost for people to park on site, suggesting that the existing fee structure is in-efficient and too cheap in comparison to common practice at other Universities and Colleges across the Province. The following section outlines recommendations for improving the existing parking operations on site to increase revenues from parking to re-invest in more sustainable options, and encourage employees, students and the general public to find alternative modes of travel to and from the site. Once this has been achieved, Malaspina University-College will be balancing the playing field for all modes of transportation, and promoting themselves and a sustainable “green” institution.

### 4.1 Pay Parking Structure/ Model

Based on the different fee structure options presented in section 3.0, there is an opportunity for Malaspina University College to increase their revenues from parking, thereby covering the costs of existing on site parking operations and having additional revenue to increase in more sustainable practices. While each of the different revenue options result in increased revenue for the University-College, there are some that result in substantial increases compared to others. **Table 5** offers a comparison of the projected revenue increase that would result from the different options.

**Table 5: Comparison of Parking Fee Structure Options**

<b>Parking Fee Options</b>	<b>Projected Revenue Increase</b>
Status Quo*	-\$6,545.00
Alternate Fee Structure (\$1/ 4 hours)	\$11,500.00
Cap Parking Permits	\$471,528.00
Eliminate Parking Permits	\$675,000.00
Premium and Economy Parking Model	\$41,625.00
Meter Calibration Costs	\$4,000.00
(New Meters (\$250 per unit))	n/a

\*From Tasmi Financial Reports

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In a discussion with Dan Sawchuk, President of Robbins Parking Services, the company that manages security and parking on site, he commented that there is a definite imbalance between parking and the other modes at Malaspina University-College, including transit, cycling, carpooling and walking, with a lack of incentive for individuals to consider shifting the current way in which they travel to the site. He was in support of altering the existing fee structure on site to even out the imbalance and to work towards self-sufficient parking operations where there revenue to re-invest into other more sustainable modes. However, he also commented that any increase in parking fees or changes to the existing structures should be gradual in order to be sensitive to a campus community that has become accustomed to paying a low rate of \$2.00 per day for a number of years. Dan Sawchuk noted that Robbins Parking Services have had experience altering fee structures at other colleges and corporations, and have found that individuals tend to be more receptive to a gradual transition rather than an abrupt change.

Therefore, it might not make sense for Malaspina to pick the option that is going to generate the largest increase in revenue, but rather choose the fee structure that is going to be optimal for the campus at the present time. A combination of options could be selected to increase efficiency and revenues, as well as ensure a balanced approach to all user groups. With this in mind, it is recommended that the University-College opt for a combination of Capping Parking Permits at 500 4-month and 500 12-month passes, and having the remaining users purchase tickets from the ticket meter. In addition to capping parking passes, the University-College could alter the current parking fee structure from a 15-minute increment to a 1-hour increment, with rates being \$1.00 for 4 hours or portion, \$2.00 for 8 hours, \$3.00 for 12 hours and \$4.00 for 24 hours. The change would not change the existing rates, but rather change the structure in which they are currently applied. A combination of these two pricing strategies could result in over \$480,000 in increased parking revenues.

However, as employee permits were exempt in this model of capping passes, there may be some resistance from the rest of the University community who will be affected by these proposed changes. Employees are generally ideal candidates for TDM strategies, as they are a captive market, and their travel habits are predictable and consistent. As employees are a key part of the University-College population, they should not be exempt from the proposed changes. The existing cost for an employee pass is \$15.00 per month, \$45.00 for 4 months and \$99.00 per year, which is not generating any incentive for employees to choose alternative modes. Malaspina University-College should increase the cost of employee parking passes to \$30.00 per month, \$90.00 for 4 months, and \$300.00 per year.

Eventually, the University can work towards eliminating parking passes altogether, and only sell weekly and daily parking tickets, as some of the other Colleges on the Island have done with success.

#### **4.2 Create a Sustainability Fund through Parking Revenues**

By capping parking permits at Malaspina University- College, and altering the existing fee structure on campus, Malaspina will generate increased net revenue which can be put towards sustainability initiatives and infrastructure that supports alternative modes. It is recommended that the University-College establish a Capital Reserve to fund new programs and facilities that are supportive of sustainable transportation on site. Investments can be made in strategies aimed at shifting the demand to the other modes, resulting in a plan that sees no increase in parking capacity, a modest increase in parking fees by drivers and more choice for those people who are interested in travelling by alternative modes.

It is recommended that the increased revenues from parking changes on site are invested into the following strategies/ infrastructure, as described in section 3.6.

- **Sustainability Coordinator Position**
- **Increased subsidy of Employee Transit ProPass**
- **Transit U-Pass for students**
- **Transit Exchange on Campus**
- **Sidewalk/ Roadway Improvements**
- **Bike Lockers/ Racks**
- **Shower and Changeroom Facilities (trip end facilities)**

In addition to the above recommendations, the list of recommended strategies from the original TDM Study still stands:

##### **Strategies to Increase Cycling**

- Strategy #14 – Establish a Bicycle Users Committee
- Strategy #18 – Identify and Promote Bicycle Routes to Campus
- Strategy #19 – Establish Road Skills Course
- Strategy #20 – Establish a Bike Loan Program

##### **Strategies to Increase Walking**

- Strategy #21– Develop a Pedestrian Network Plan

##### **Strategies that Support the Overall TDM Plan**

- Strategy #23 – Implement Guaranteed Ride Home (GRH)
- Strategy #24 - Introduce Staggered Class Start Times