University of Victoria

UNIVERSITY OF VICTORIA

TRAFFIC AND PARKING MANAGEMENT STUDY

FINAL REPORT

October 31 2008

OPUS

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FINAL REPORT

Opus International Consultants (BC) Ltd.

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EXECUTIVE SUMMARY

Introduction

The University of Victoria is one of Canada's leading comprehensive research universities, widely recognized for its innovative and responsive programs. The University has approximately 17,000 undergraduate students, 2,500 graduate students, and 4,100 faculty and staff, for a total campus population of more than 23,000 people. In addition, the University has a strong Continuing Studies (non-degree) division. The University is expected to grow in the future, with a specific focus on increasing the number of graduate students.

The University has invested in on-campus sustainability initiatives, and has adopted sustainability oriented goals for the future. As an example, the U-Pass program was introduced in 1998, providing students at the University a transit pass for the duration of the session year. This resulted in an increase in bus ridership into and out of the University, and a reduction in vehicular traffic.

Opus Hamilton Consultants Ltd. was retained by the University to produce a traffic and parking management study to support the University's aim of increasing sustainable transportation choices by reducing single-occupant vehicle trips, encouraging non-private auto trips, and reducing impacts on climate change. The two key objectives of this study are:

- Establish a parking supply and management strategy that supports sustainability objectives, is cost-effective, and is sensitive to the needs of all stakeholders; and,

- Establish a multi-modal on-site traffic management strategy that minimizes conflicts while promoting safe and efficient movement within the campus for all campus users.

An extensive stakeholder consultation program was undertaken as part of this study, in parallel with the technical work.

The findings and recommendations of this report take into consideration the input received during the stakeholder consultation process.

This report is organized into the following Parts:

- Part 1: Multi-Modal Traffic and Circulation.
- Part 2: Parking.
- Part 3: Transportation Demand Management.

A summary of each section is provided below.

Part One: Multi-Modal Traffic and Circulation

The main municipal roads that serve the University are McKenzie Avenue / Sinclair Road to the north; Cedar Hill Cross Road to the south; Gordon Head Road to the west and Cadboro Bay Road to the east. The municipal network is connected to the internal campus Ring Road through several roads that radiate from the internal ring, including McGill Road, Gabriola Road, Finnerty Road, University Drive, and West Campus Gate.

The BC Transit main campus transit exchange is located off Finnerty Road, and bus stops are located around the Ring Road. The main reservoir of campus parking is located between the Ring Road and the major municipal arterials. Within the campus, circulation is primarily provided by the Ring Road, a two-lane one-direction (counter-clockwise) road. The Ring Road is the main on-campus vehicle traffic distributer, transit route, service / delivery vehicle road, and bicycle and pedestrian circulation route, and it provides access to the campus parking lots. There is significant demand for all modes of traffic *along and across* the Ring Road. The multitude of functions served by the Ring Road and the competing demands along and across it result in several issues, including:

- The current two-lane geometry of the Ring Road promotes speeding and overtaking.

- The Ring Road is being used as a convenient road to access the on-campus parking lots. This concentrates vehicular traffic within the heart of the campus as drivers use the Ring Road to enter and exit the parking lots at peak arrival and departure times.

- Many marked crosswalks are provided along the Ring Road, but many other high pedestrian crossing demand areas do not currently have marked crosswalks.

- The sidewalks along both sides of the Ring Road feature discontinuities that encourage unexpected crossing movements. There are no marked bicycle lanes around the Ring Road.

Three options were developed to upgrade the Ring Road and address the current undesirable operational conditions. Option 1 retains the current geometry with minor upgrades. Option 2 converts the Ring Road to a single-lane multi-user facility that is more likely to encourage and accommodate sustainable transportation modes. Option 3 creates a shared street that is generally closed to private auto traffic and where all travel modes share the available space. The Option Evaluation Criteria and Results are shown in TABLE ES-1.

The **recommendation** of this report is to proceed with planning and preliminary design for implementing Option 2: Multi-User Road along the Ring Road. With Option 2, the geometry of the Ring Road will be modified: one lane will be provided for auto-traffic (including private vehicles, transit buses, and service / delivery vehicles). Two marked bicycle lanes will be provided, one in each direction. With Option 2, the Ring Road will remain a circulation road providing access to the facilities and parking lots within the Ring Road, but is expected to operate at slower average speeds. The report provides discussion about the implications of this option, and preliminary design guidelines.

The study included an examination of traffic congestion points, transit operations, bicycle operations, and pedestrian operations, among other on-campus circulation issues. Some of the key **recommendations** for these travel modes include:

- Consider conducting detailed intersection traffic operational and safety reviews at the main intersections that connect the campus to the surrounding municipal network. These intersections would include McGill Road at McKenzie Avenue; Finnerty Road and Gabriola Road at McKenzie Avenue / Sinclair Road; and University Drive at Cedar Hill Cross Road.

TABLE ES-1 RING ROAD OPTIONS: EVALUATION RESULTS

CRITERIA	Option 1: Current Geometry with Minor Upgrades	Option 2: Multi-User Road	Option 3: Shared Street	Comment
Pedestrian Safety and Efficiency	**3**	**1**	**2**	Pedestrians and cyclists are likely to be safest and most efficient with designated space provided in Option 2.
Bicycle Safety and Efficiency	**3**	**1**	**2**	
Transit Operations	**2**	**1**	**3**	With Option 2 there will be less traffic interfering with bus operations on the Ring Road.
Private Auto Operations	**1**	**2**	**3**	The existing condition (Option 1) is most favourable to private auto operations.
Consistency with University Sustainability Objectives	**3**	**2**	**1**	Option 3 will likely be most effective at promoting non-auto trips on campus.
Implementation Cost	**1**	**2**	**3**	Option 3 will require the most capital cost to implement.
TOTAL (Lower is better)	**13**	**9**	**14**	**Option 2 is preferred, based on an equal weighting for all criteria.**

- In conjunction with BC Transit, conduct a detailed review of the transit exchange geometry and operations, taking into account increasing transit service and the growth of the University.

- In conjunction with BC Transit, review the service levels during peak periods, and consider higher frequencies to reduce congestion and pass-bys. Also consider enhancing early morning and late evening service to better serve the off-peak campus users.

- In conjunction with the improvements to the Ring Road, consider alternatives to having the BC Transit buses circulating on the Ring Road, such as an internal frequent small shuttle service that operates solely on the Ring Road.

- As part of the improvements to the Ring Road, ensure that pedestrian facilities are continuous around the Ring Road.

- As part of the improvements to the Ring Road, provide two marked lanes for bicycle travel, one in each direction, along the Multi-User Road. Consider using a different pavement colour for the bicycle lanes on the Ring Road to further improve the conspicuity of the bicycle facilities.

- Review the feasibility of providing marked bicycle lanes on the campus roads connecting the municipal network to the Ring Road, namely McGill Road, Gabriola Road, Finnerty Road, University Drive, and West Campus Gate.

- Work with the District of Saanich and the District of Oak Bay to review the marked bicycle lanes on the municipal roads surrounding the campus, to ensure that bicycle connectivity, efficiency and safety are optimized.

- Within the next two years, review in detail the bicycle parking facilities on campus, to ensure that the facilities maintain pace with the campus growth.

It is **recommended** that the University consider the preparation of a campus Bicycle Master Plan to cohesively address many of the bicycle-related issues identified in this study.

Also as part of this study, overviews of road safety, Crime Prevention Through Environmental Design (CPTED) and accessibility were conducted on the University of Victoria campus. Appendix C presents the results in detail. Specific road safety engineering improvement opportunities for the Ring Road intersections with Finnerty Road and McGill Road, and for the West Campus Way and University Club / Lot 9 Access intersection, are included in the report. The key **recommendations** derived from the CPTED and Accessibility reviews include:

CPTED

- Seek opportunities to Improve natural surveillance at the following locations:
  - The areas just past McGill Road, continuing counter-clockwise around the Ring Road;
  - Locations of both covered and uncovered bike racks;
  - Gabriola Road; and
  - Remote sections of parking lots.

- Seek opportunities to improve pedestrian-level lighting, particularly in parking lots which rely just on vehicle designed lighting.

- Ensure that the future development and design of new transportation facilities (for all modes, including transportation connections to new buildings) include a CPTED review.

Accessibility

- Consider providing pedestrian transportation areas within parking lots that match or complement pedestrian desire lines.

- Ensure that dropped curbs are lined up with and present for all pedestrian crossings and crosswalks.

- Ensure that street furniture is positioned so as not to block or inhibit certain manoeuvres on sidewalks.

- Ensure that street furniture contains colour contrasting lines to ensure visibility to the visually impaired.

- Ensure that parking spaces for people with disabilities are positioned in areas that are nearest the destination of the general users of the parking lot, combined with safe areas for being able to manoeuvre in and out of vehicles.

- Provide alternate route signage to avoid the steep hill leading down parking lot 9 and University Club.

- Conduct Accessibility and Universal Access reviews as part of the development and design of new on-campus transportation facilities.

Part Two: Parking

In total, 4,236 parking spaces are currently provided in 30 different parking facilities. The majority of the campus parking supply is provided within at-grade surface parking lots, and most of the major parking lots are located between the Ring Road and the surrounding municipal road network. FIGURE ES-1 shows the parking lot locations within the campus context.

Over the years, the University has consciously pursued a policy of reducing parking availability inside the Ring Road, to create a denser academic and social core for the University inside the Ring.

The on-campus parking spaces are currently classified into seven categories. The two largest categories are General (73% of the total auto parking spaces), and Reserved (14%). The University Parking Services Department has the flexibility to reclassify parking spaces as needed to meet the changing demands of the campus.

The current parking occupancy levels were reviewed using parking survey data provided by the University. It is noted that finding empty parking spaces becomes difficult in large parking lots that are 85 percent (or more) occupied, and this results in excessive circulation. The occupancy survey results are summarized in TABLE ES-2.

Overall, parking occupancy reaches a mid-day peak of 75 percent. During this period, the General parking spaces are 80 percent occupied and the Reserved parking spaces are 60 percent occupied. During the mid-morning and mid-afternoon, the General parking spaces are less than 10 percent below the mid-day peak period.

The 2007 mid-day occupancy was analyzed at the 10 largest parking lots. The 10 largest parking lots provide 79 percent of the total parking supply. The results are presented in FIGURE ES-2.

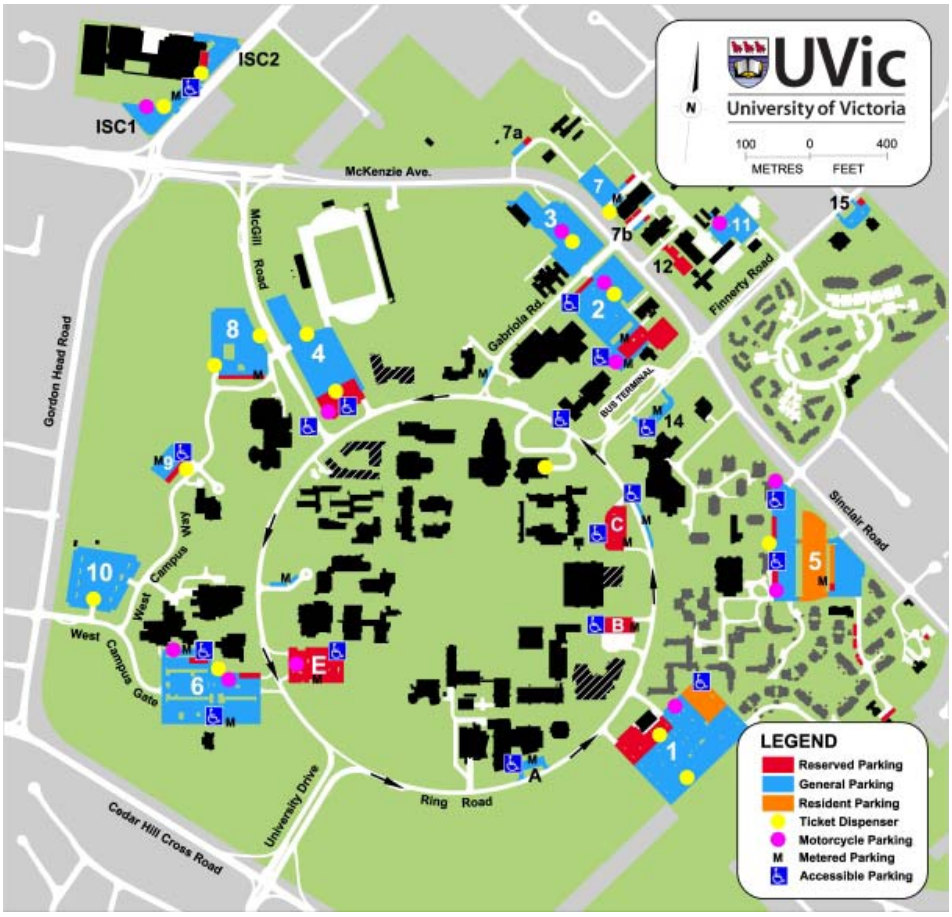

FIGURE ES-1 PARKING LOT LOCATIONS WITHIN THE CAMPUS CONTEXT

Blue, Red and Orange Areas are for General, Reserved and Resident parking respectively. Source: uvic.ca

TABLE ES-2 2007 OVERALL PARKING OCCUPANCY BY PARKING SPACE CATEGORY

PARKING SPACE CATEGORY	PERIOD			
	Mid-Morning	Midday	Mid-Afternoon	Afternoon
General	71%	80%	72%	48%
Reserved	56%	60%	56%	55%
Meter	59%	70%	64%	59%
Disabled	34%	41%	45%	36%
Other	46%	44%	33%	28%
TOTAL	67%	75%	68%	49%

Highest occupancy values highlighted in Green. Note that General parking spaces represent 73% of the total auto parking spaces.

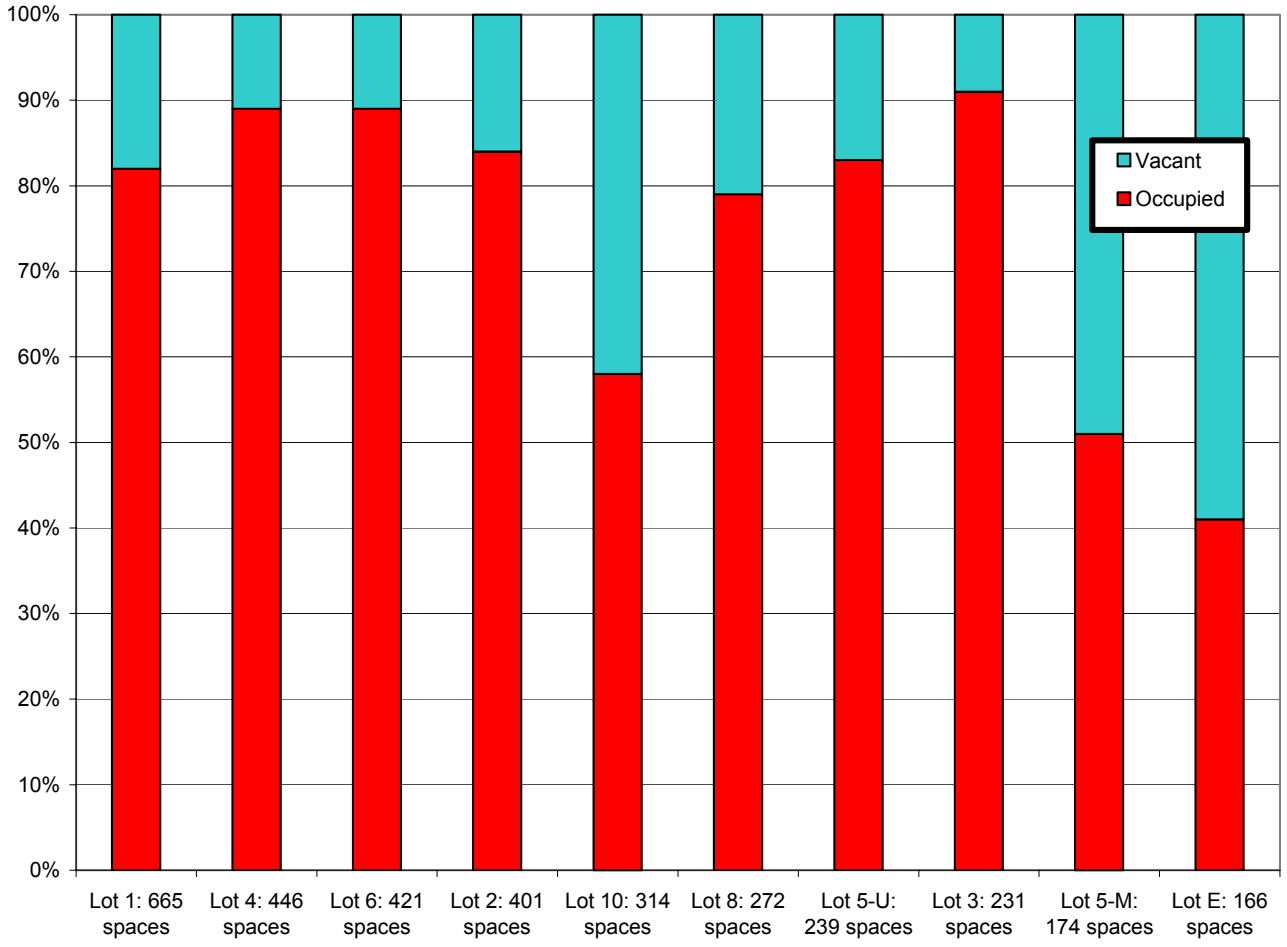

FIGURE ES-2 2007 MID-DAY PARKING LOT OCCUPANCY AT THE 10 LARGEST PARKING LOTS

The results reveal that six of the ten largest parking lots on campus are between 80 and 90 percent full during the mid-day period, and a seventh is just under 80 percent full. Lots 3, 4, and 6, which together provide 1,098 spaces or 26 percent of the campus total, are close to or exceeding 90 percent full during the mid-day period. The mid-morning and mid-afternoon occupancies for the 10 largest lots were found to be within a few percentages of the mid-day peak.

The conclusion of the parking occupancy analysis indicate that while there is some reserve parking supply during peak times compared to current demand, the University is quickly approaching “effectively full” conditions.

The largest and most popular parking lots are approaching or exceeding "effectively full" conditions during the mid-day period, and occupancies during the mid-morning and mid-afternoon periods are not much lower.

It is therefore **recommended** that planning for the future expansion of the available on-campus parking should commence immediately.

The amount of parking supply that will be required in the future was analyzed by using a parking model. The parking model included the following variables:

- The University's population in terms of undergraduate students, graduate students, faculty and staff.
- The rate of growth of the University's population to a 20 year horizon, using low, medium and high annual compound growth estimates of 1.8, 3.0 and 4.2 percent respectively, derived from the University's growth targets.
- The ratio of parking current supply to the University's population.
- The ratio of parking current peak demand to the University's population, and optimal parking supply representing a 15 percent increase over the peak demand.
- The impact of enhanced Transportation Demand Management initiatives on parking demand.
- The costs and revenues associated with providing parking.

The parking supply requirements generated by the parking model and the different variables that were tested are summarized in TABLE ES-3.

TABLE ES-3 PARKING SUPPLY REQUIREMENTS SUMMARY

GROWTH SCENARIO	ESTIMATED CAMPUS POPULATION IN THE YEAR 2028	PARKING SUPPLY ACCORDING TO…		
		Current Supply Ratio: 0.18 per population	Optimal Ratio: Current Peak Demand +15%: 0.15 per population	Optimal Ratio with Enhanced TDM: 20% reduction
Low	34,000	6,050	5,100	4,080
Medium	42,600	7,850	6,300	5,040
High	53,750	9,650	8,100	6,480

The range of future parking supply that the University should plan for in the coming twenty years is shown in Green. It is **recommended** that the University should plan for a total parking supply of between 5,040 and 6,480 spaces by the year 2028.

The **recommended** implementation plan is as follows:

- With a completion target between the years 2013 and 2018 (5 to 10 year horizon), plan for a total parking supply of approximately 5,040 spaces, a net increase of approximately 800 spaces. The value of 5,040 is expected to be sufficient if the medium growth rate materializes and is sustained for the long-term; and if the enhanced transportation demand management measures are introduced and achieve a 20 percent reduction in demand.

- The additional net 800 spaces are recommended to be provided in a parkade structure to increase the efficiency of land use on campus. The current location of at-grade parking Lots 2 and 3 is the preferred location for the parkade.

- Monitor the growth in the campus population, travel behaviour, and parking demand, on a regular basis.

- If the University's growth is faster than the estimated medium rate, or if the effectiveness of the enhanced TDM measures is lower than expected, planning for a total parking supply of up to 6,480 spaces by the year 2028 can proceed, once the initial expansion to 5,040 spaces is completed. The value of 6,480 would need to be confirmed as the actual growth pattern and travel behaviour changes become evident.

This two-step approach, with the first major increase in parking supply scheduled for a 5 to 10 year horizon and the second major increase, if needed, scheduled for a 20 year horizon, will allow the University flexibility to fine-tune the parking requirements and to measure and respond to the growth rate and the travel patterns as they materialize. The capital cost and revenue implications of the future parking requirements, as well as financing options, are discussed in the report.

In the short-term, between 2008 and 2013 as the planning proceeds for increasing the total parking supply from 4,236 to 5,040 spaces, the following parking management actions are **recommended** for consideration:

- Classify more parking spaces as General, and fewer parking spaces as Reserved and Student Resident.

- Enhance way-finding signs to encourage drivers to use the more remote parking lots where parking spaces are typically available.

- Implement the enhanced Transportation Demand Management measures (presented in Part 3 of this report) that encourage shifts in travel behaviour away from the singe occupant vehicle.

Part Three: Enhanced Transportation Demand Management

The University of Victoria currently has an impressive Transportation Demand Management (TDM) program in place, and this has helped to reduce the parking demand and the number of private auto trips to the campus. For example, according to campus surveys, there was a significant reduction in automobile driver trips between the 1996 and 2006 (from 58 to 44 percent) while transit passengers have increased from 11 percent to 27 percent. This may be attributed to the introduction of the U-Pass in 1998, and other TDM initiatives.

However, recent campus traffic surveys indicate that the modal split has generally remained constant between 2004 and 2006.

Looking to the future, there are opportunities for the University to introduce enhanced TDM initiatives to further promote the use of sustainable transportation modes. Research into TDM has found evidence that institutions that implement forwarding thinking, innovative and sometimes controversial policies and strategies attract the most forwarding thinking and innovative staff, faculty and students who respect such changes, and want to be part of an institution that has adopted them.

Based on research of the latest TDM initiatives including current best practices at other campuses, enhanced TDM initiatives are **recommended** for consideration, and these are listed in TABLES ES-4.

TABLE ES-4 TDM MEASURES UNDER THE UNIVERSITY'S JURISDICTION

TDM MEASURE	PRIORITY	COST	TIMELINE	CURRENT OR NEW
A. Emergency Ride Home	HIGH	LOW	SHORT-TERM	NEW
B. Enhanced Student Travel Choice Information		LOW On-going updating needed		
C. Enhanced Faculty and Staff Travel Choice Information				
D. Reduced Parking Pass Discount		LOW		
E. Restrict Parking Permits for 1st / 2nd Year Undergrads; Specifically On-Campus Housing Users				
F. Restrict Parking Permits Within a Three Kilometre Radius				
G. Spread-Out Morning Class Start Times			SHORT-TERM Aligned with bus timetable	
H. Flexible Staff Start Times			SHORT-TERM	CURRENT
I. Annual Parking Price Increase				
J. Car Pool Reserved Spaces in Desirable Locations			SHORT-TERM High profile immediately before car-pooling database	
K. Default Car-Pooling Database		MEDIUM	SHORT-TERM In-line with increased priority car-pool spaces	NEW
L. U-Pass for Staff and Faculty			SHORT-TERM	
M. End-of-Trip Cycling Facilities				CURRENT
N. Car-Free Days	MEDIUM	LOW		NEW
O. Car-Share Cars	MEDIUM	MEDIUM		CURRENT

The report provides further details and information on each of the recommended enhanced TDM initiatives. The report includes seven additional **recommended** TDM initiatives that require co-operation between the University and outside agencies.

The implementation of the enhanced TDM measures is expected to achieve a reduction in parking of approximately 20 percent, compared to current peak parking demand conditions. This reduction will occur cumulatively and over time, as the enhanced TDM measures are sequentially introduced. The expected reduction is an estimate based on experience elsewhere; the actual reduction is expected to fluctuate, and should be monitored through the University's regular traffic and parking surveys.

Prior to implementation, the University should identify and consult with the appropriate stakeholders to develop appropriate and acceptable implementation plans that will enjoy stakeholder support.

Summary

In summary, this reports presents recommendations related to multi-modal traffic, parking, and transportation demand management that the University can consider for implementation over the next 20 years. The recommendations are consistent with the University's sustainability objectives and the Campus Plan. Implementation of the recommendations in this report will result in a transportation environment that balances the safety and efficiency needs of all modes while promoting sustainable travel choices for the campus community.

1.0 INTRODUCTION

1.1 Background

The University of Victoria is one of Canada's leading comprehensive research universities. With ten Faculties and two Divisions, the University is widely recognized for its innovative and responsive programs.

The University has approximately 17,000 undergraduate students, 2,500 graduate students, and 4,100 faculty and staff, for a total campus population of more than 23,000 people. The University is expected to grow in the future, with a specific focus on increasing the number of graduate students.

Through its research activities, the University of Victoria has built a reputation for collaborative work that promotes an equitable balance of the governance, environmental, human and economic factors at the heart of global sustainable development. The University has invested in on-campus sustainability initiatives, and has adopted sustainability oriented goals for the future. Examples include:

- The U-Pass program was introduced in August 1998, providing students at the University a transit pass for the duration of the session year. This resulted in an increase in bus ridership into and out of the University, and a reduction in vehicular traffic.

- The Campus Plan for the University outlines goals and policy objectives for travel and parking, including a goal to reduce motor vehicle travel to the campus and encouraging alternative modes; a commitment to universal accessibility; and the need to minimize surface parking.

- In February 2007, the University finalized a new strategic plan titled "A Vision for the Future – Building on Strength". The plan outlines areas of growth and improvement related to people, quality, community, and resources, with specific objectives and responsibilities in each area.

Looking forward, the University is planning to further manage and plan the future parking, traffic, and safety issues at the Gordon Head Campus. The University continues to experience strong growth, with six new buildings set to open in 2008 and 2009. It is essential that future parking and traffic requirements are well managed and planned to achieve the optimal balance between efficiency, cost, impact to the surrounding community, convenience for all users, and sustainability.

Opus Hamilton Consultants Ltd. was retained by the University to produce a traffic and parking management study to support the University's aim of increasing sustainable transportation choices by reducing single-occupant vehicle trips, encouraging non-private auto trips, and reducing impacts on climate change.

1.2 Study Objectives

The two key objectives of this study as summarized by Opus Hamilton are:

- Establish a parking supply and management strategy that supports sustainability objectives, is cost-effective, and is sensitive to the needs of all stakeholders; and,

- Establish a multi-modal on-site traffic management strategy that minimizes conflicts while promoting safe and efficient movement within the campus for all campus users.

The recommendations of this study form part of the vision for the future of the campus, and are integrated with other planning, growth and sustainability objectives.

1.3 Study Area

The study area includes the entire Gordon Head Campus property, as well as the following roadways within the University site:

- The Ring Road;
- Finnerty Road;
- Gabriola Road;
- McGill Road;
- University Drive;
- West Campus Way; and,
- West Campus Gate.

The Ring Road is the most notable street within the study area, currently operating as a one-way circular road in the counter-clockwise direction. Other roads connect onto the Ring Road and provide access into the University. The study area is shown in FIGURE 1.1. The University is located within two municipalities: the District of Saanich and the District of Oak Bay.

FIGURE 1.1 STUDY AREA

1.4 Stakeholder Consultation

An extensive stakeholder consultation program was undertaken as part of this study, in parallel with the technical work. The findings and recommendations of this report take into consideration the input received during the stakeholder consultation process, which included:

- First round of internal stakeholder consultation in the form of a focus group held as two sessions on Friday February 15, 2008.
- First on-line survey which went live on March 11, 2008 and was closed on April 14.
- External stake holder consultation via telephone interview.
- Second round internal stakeholder consultation on Tuesday 10, June 2008 as a presentation of the recommendations followed by a discussion on the recommendations.
- Public open house on Tuesday 10, June 2008 with feedback forms available.
- Second on-line survey from June 10 to July 2, 2008 to provide feedback on the proposed recommendations.

More details on the Stakeholder Consultation process are provided in APPENDIX D.

1.5 Report Organization

This report is organized into the following Parts and Sections:

Part 1: Multi-Modal Traffic and Circulation. This Part includes Sections 2, 3 and 4.

Part 2: Parking. This Part includes Sections 5, 6, and 7.

Part 3: Transportation Demand Management. This Part consists of Section 8.

Appendices. The Appendices provide further information on the background documents reviewed as part of the process for this study; the TDM experience at other Universities; the safety, CPTED and accessibility reviews conducted on campus, and more details about the stakeholder consultation process.

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PART ONE

MULTI-MODAL TRAFFIC AND CIRCULATION

2.0 TRAFFIC, CIRCULATION, AND PARKING CONTEXT

This section of the report introduces the context to the traffic, circulation and parking patterns on the campus.

2.1 Campus Population and Growth Context

The current University of Victoria campus population is estimated as follows: approximately 17,000 undergraduate students, 2,500 graduate students, and 4,100 faculty and staff, for a total campus population of about 23,600.

To meet government-set objectives, the University is targeting increases of about 2 percent per year in the number of undergraduate students, and 7 percent per year in the number of graduate students.

If these growth rates are sustained for 20 years, there will be 25,200 undergraduate students and 9,700 graduate students in the year 2028. The proportionally increased number of faculty and staff will be 7,300, and the total campus population would reach 42,200, a 79 percent increase compared to 2008.

These are growth targets; actual future student numbers will depend on a variety of highly variable local, regional, national and international factors. For the purpose of the analysis and evaluation of parking, traffic, transit, pedestrian, and bicycle operations in this report, it is sufficient to ensure that the recommendations are robust enough to be responsive to the potential for significant growth. In the analysis of parking requirements, the Opus team used Low, Medium and High growth rates derived from the above values to test the sensitivity of the recommendations.

2.2 Campus Traffic and Circulation Context

The University of Victoria Gordon Head campus is surrounded by primarily single-family and multi-family residential neighbourhoods.

It is a relatively unique campus setting that is neither isolated (University of British Columbia at Point Grey; Simon Fraser University on Burnaby Mountain) nor integrated into a busy downtown environment (McGill University in Montreal; University of Toronto). The same roads that access the University of Victoria are used by local residents on their daily commutes to and from work. This setting emphasizes the need for the University of Victoria to take into consideration its neighbours, and to encourage sustainable travel modes to reduce congestion around the campus.

The main on-campus circulation is provided by the Ring Road, which serves many functions, as described below. While the Ring Road is sometimes called University Drive, it is referred to as the Ring Road in this report.

2.3 Surrounding and Connecting Roads

The main municipal roads that serve the University are McKenzie Avenue / Sinclair Road to the north; Cedar Hill Cross Road to the south; Gordon Head Road to the west and Cadboro Bay Road to the east. These four roads, shown in FIGURE 2.1, effectively form an outer municipal circulation ring around the campus. These roads experience congestion during typical morning and afternoon commuter peak periods.

The municipal network is connected to the internal campus Ring Road through several roads that radiate from the internal ring, including McGill Road, Gabriola Road, Finnerty Road, University Drive, and West Campus Gate. These roads, also shown in FIGURE 2.1, experience congestion during typical peak campus arrival and departure times.

The BC Transit main campus transit exchange is located off Finnerty Road, and bus stops are located around the Ring Road.

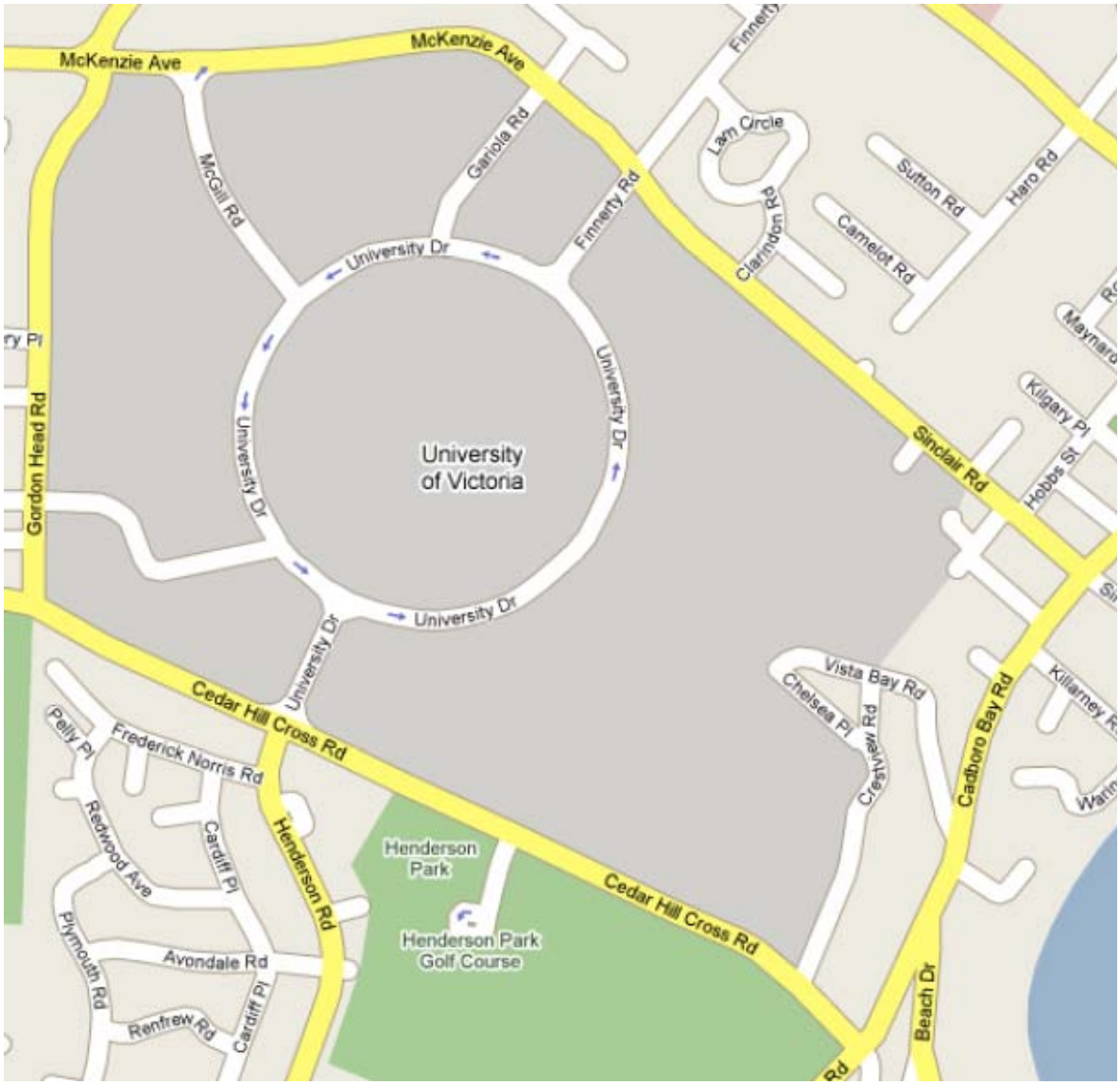


FIGURE 2.1 ROAD NETWORK SURROUNDING THE CAMPUS

2.4 Parking Lot Access

The main reservoir of campus parking is located between the Ring Road and the major municipal arterials. Parking Lots 1, 2, 3, 4, 6, 8, 9, and 10 are the main source of parking supply.

Lots 1, 2, 4, 6, and 8 are busiest due to their location relative to the campus facilities. The parking lot locations are shown in FIGURE 2.2.

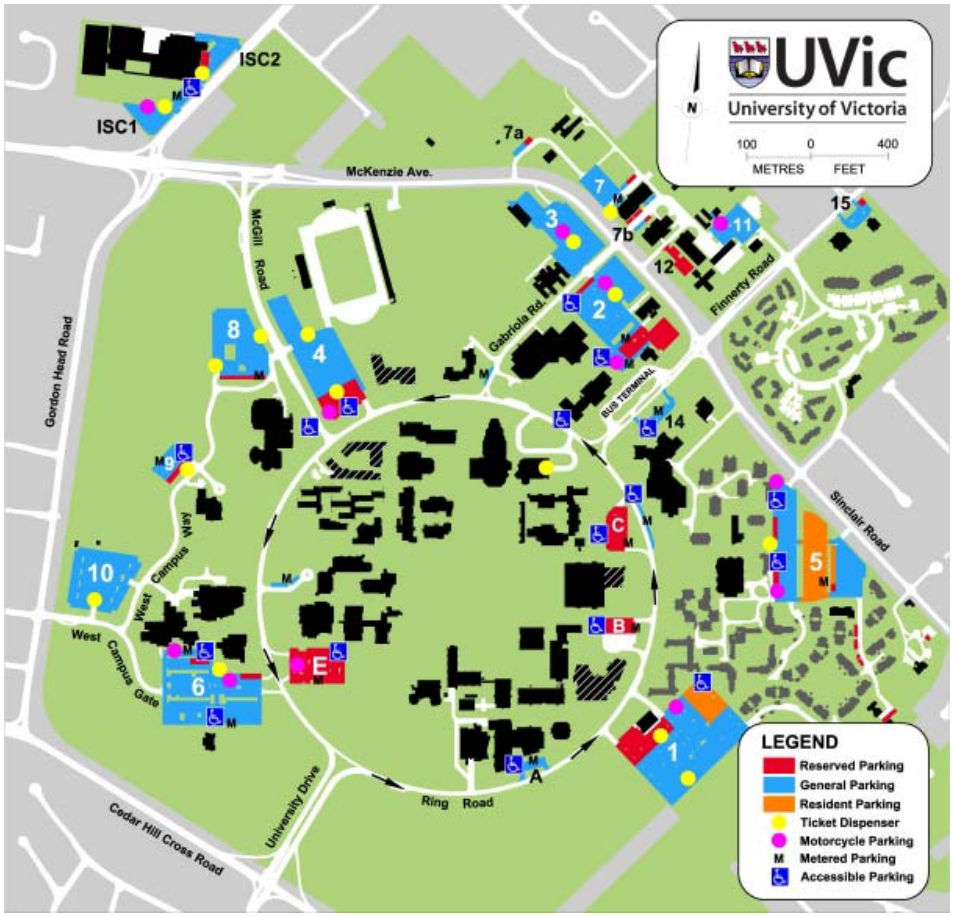


FIGURE 2.2 PARKING LOT LOCATIONS WITHIN THE CAMPUS CONTEXT

Blue Areas are for General Parking. Source: uvic.ca

With the exception of Parking Lot 1, all of the major General parking lots on campus are accessible from the connecting roads that link the campus to the outside municipal network, namely McGill Road, Gabriola Road, University Drive, and West Campus Gate. Drivers can choose to enter and exit the parking lots without using the Ring Road. However, the Ring Road also currently connects to the parking lots, and is therefore used as a convenient internal connection for the purpose of entering and exiting the parking lots.

2.5 The Ring Road

Within the campus, circulation is primarily provided by the Ring Road, a two-lane one-direction (counter-clockwise) road. The Ring Road is the main on-campus vehicle traffic distributer, transit route, service / delivery vehicle road, and bicycle and pedestrian circulation route, and it provides access to the campus parking lots.

3.0 RING ROAD IMPROVEMENT STRATEGY

3.1 Ring Road Operational Issues

The current access and circulation patterns described in Section 2 have operational consequences that are centred along the Ring Road. The area inside the Ring Road continues to grow as an educational and social activity node and a major generator of pedestrian traffic, while the area outside the Ring Road provides the majority of the surface parking for the campus. The Ring Road itself connects the various campus roads (University Drive, McGill Road, West Campus Gate, Finnerty Road and Gabriola Road) that link to the municipal network, and can be used to connect to the on-campus parking lots.

There is therefore significant demand for all modes of traffic *along and across* the Ring Road. The multitude of functions served by the Ring Road and the competing demands along and across it result in several issues:

- The current two-lane geometry of the Ring Road promotes speeding and overtaking. Drivers seek to change lanes to avoid delays behind slower moving vehicles, buses and delivery vehicles. In turns, the higher speeds and lane changing manoeuvres cause conflicts with crossing pedestrians.

- The Ring Road is currently being used as a convenient road to access the on-campus parking lots. This concentrates vehicular traffic within the heart of the campus as drivers use the Ring Road to enter and exit the parking lots at peak arrival and departure times. Most of the parking-generated traffic on the Ring Road is functionally unnecessary (although efficient for car drivers) since the majority of parking-generated traffic can access the municipal network without using the Ring Road. However, the Ring Road is necessary to access the parking lots within the Ring Road, as well as Lot 1, which is currently not accessible from the municipal network.

- Many marked crosswalks are provided along the Ring Road, but many other high pedestrian crossing demand areas do not currently have marked crosswalks. There are curb ramps along the Ring Road, but not all are aligned with marked cross-walks.

The presence of many marked crosswalks combined with the lack of marked crosswalks at crossing desire lines results in the lack of anticipation of pedestrians when they cross at unmarked locations.

- The sidewalks along both sides of the Ring Road feature discontinuities that encourage unexpected crossing movements.

- There are no marked bicycle lanes around the Ring Road or on any of the campus roads.

The following section introduces Options to improve the functionality of the Ring Road.

3.2 Ring Road Improvement Options

To address the operational issues described above, three Options were considered for the future of the Ring Road:

Option 1: Current Geometry with Minor Upgrades. With Option 1, the current geometry of the Ring Road (two lanes providing one-way circulation) will be maintained. The minor upgrades that can be considered with Option 1 include:

- Additional marked crosswalks at pedestrian desire lines;
- Ensuring that curb ramps line-up with the marked crosswalks;
- Consider raised crosswalks to encourage slower traffic circulation and enhance pedestrian visibility;
- Provide continuous sidewalks along both sides of the Ring Road;
- Consider small curb extensions and lane width narrowings where feasible to enhance the major crosswalks.

Option 1, conceptually shown in FIGURE 3.1, is the most auto-oriented option. While Option 1 is relatively economical (lowest cost to implement) and represents the least change from current conditions.

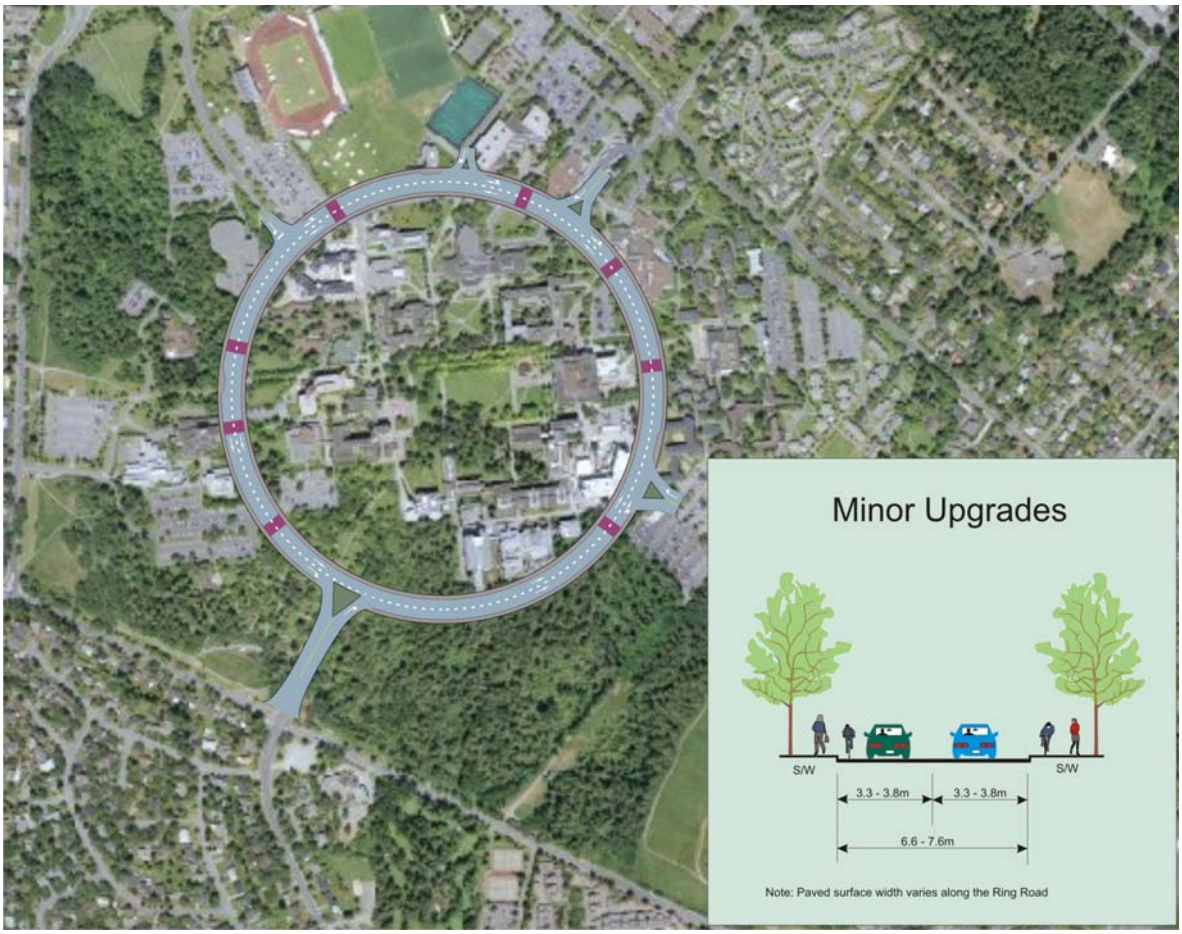


FIGURE 3.1 RING ROAD OPTION 1:
CURRENT GEOMETRY WITH MINOR UPGRADES

Note: marked crosswalk locations are conceptual and for illustration only. Actual marked crosswalk locations will require site-specific analysis

Option 1 does not address many of the operational issues that occur along the Ring Road: for example, the two-lane configuration will still encourage speeding and overtaking; and there will still be no marked bicycle lanes.

As well, the further addition of more marked crosswalks to meet current and future pedestrian desire lines will start to reduce the effectiveness of the marked crosswalks.

As the campus grows and new buildings open, the number of pedestrian desire lines and pedestrian volumes will only increase. With Option 1, there will be a continuous need to monitor the latest pedestrian desire lines and react with new marked crosswalks.

Option 2: Multi-User Road. With Option 2, the geometry of the Ring Road will be modified: one lane will be provided for auto-traffic (including private vehicles, transit buses, and service / delivery vehicles). Two marked bicycle lanes will be provided, one in each direction. This Option is shown in FIGURE 3.2.

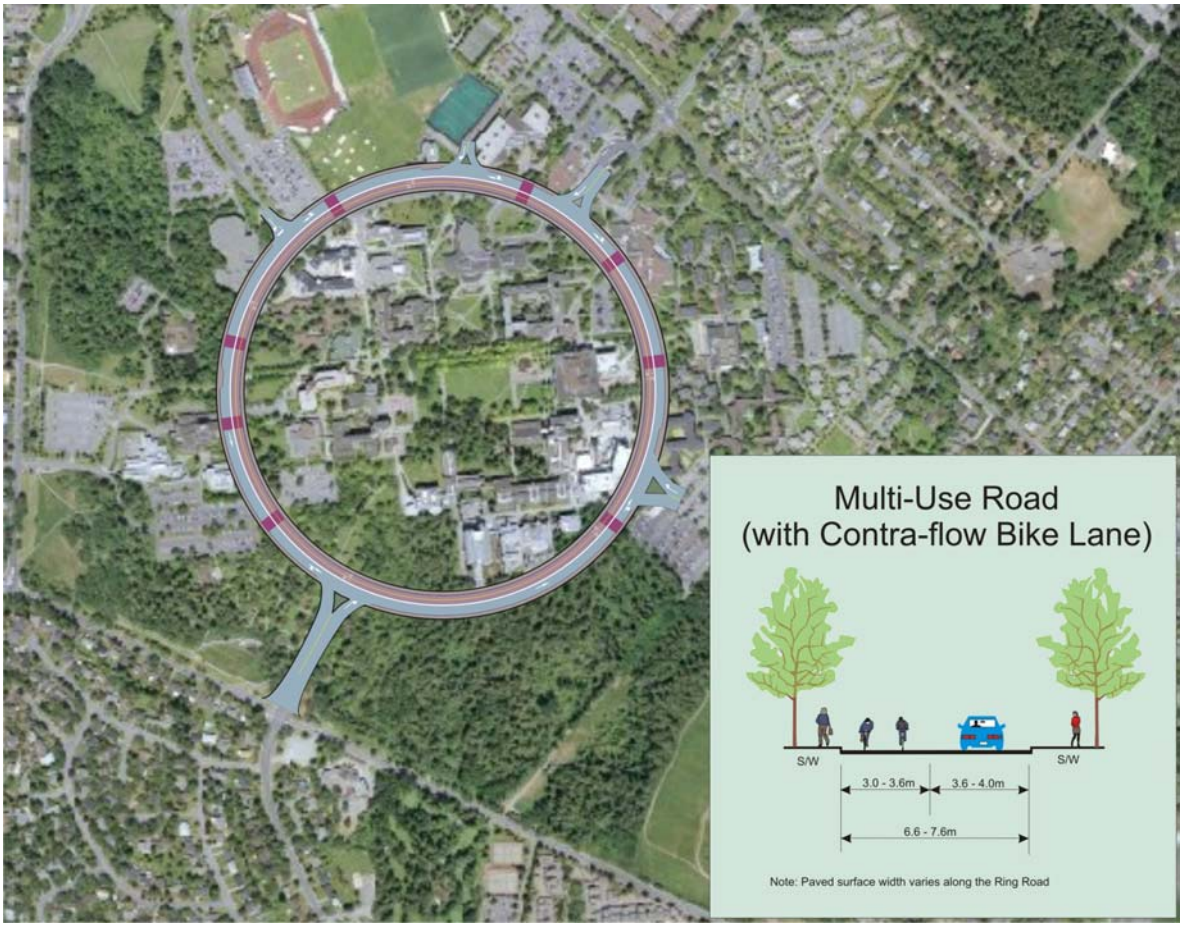


FIGURE 3.2 RING ROAD OPTION 2: MULTI-USER ROAD

Note: marked crosswalk locations are conceptual and for illustration only. Actual marked crosswalk locations will require site-specific analysis.

At the bus stop locations, buses would stop in the travel lane, with bus-bulges provided as needed to enhance bus stop operations and reduce vehicles / pedestrian conflicts, and to prevent overtaking of the bus.

Other enhancements that can be considered with Option 2 include:

- Ensure that curb ramps line up with the marked cross-walks.
- Consider a different pavement colour for the bicycle lanes. This will enhance the perception of a narrow road for autos, and encourage slower speeds.
- Provide continuous sidewalks on both sides of the Ring Road.
- Provide small curb extensions and marginally narrower lanes for autos and bicycles at major crosswalk locations.

Option 2 presents a more balanced multi-user transportation concept. It encourages non-auto modes, as well as transit, to a greater degree than the current geometry of the Ring Road. Option 2 provides designated space for bicycles; reduced space for private autos; greater prominence to transit buses; and promotes a lower speed, more campus-oriented road without the opportunities for overtaking and speeding.

Option 2 will encourage private auto traffic to seek alternatives to the Ring Road. With Option 2, the Ring Road is less likely to be used for accessing the campus parking lots. More traffic will likely choose to access the municipal road network without using the Ring Road. However, with Option 2 the Ring Road will remain available as a circulation route, and drivers can use it to access the facilities and parking lots inside the Ring Road.

By encouraging the use of modes other than the private auto, Option 2 is more consistent with the University's sustainability objectives than Option 1.

Option 3: Shared Street. This Option is sometimes referred to as the "Naked Street" concept. A Shared Street would eliminate designated space for various modes along the Ring Road; the available space will be shared between transit vehicles, pedestrians, cyclists, and authorized University vehicles (including delivery / service vehicles and others with permits).

In general, with Option 3 the Ring Road would be closed to private auto traffic. Until external access is provided to Parking Lot 1, an interim arrangement could provide a more conventional road with two-way private auto traffic on the southeast quadrant of the Ring Road to access Lot 1, as shown in FIGURE 3.3. Otherwise, all parking lot access would be from the municipal road network, and the parking lots within the Ring Road may only be accessible by special permit.

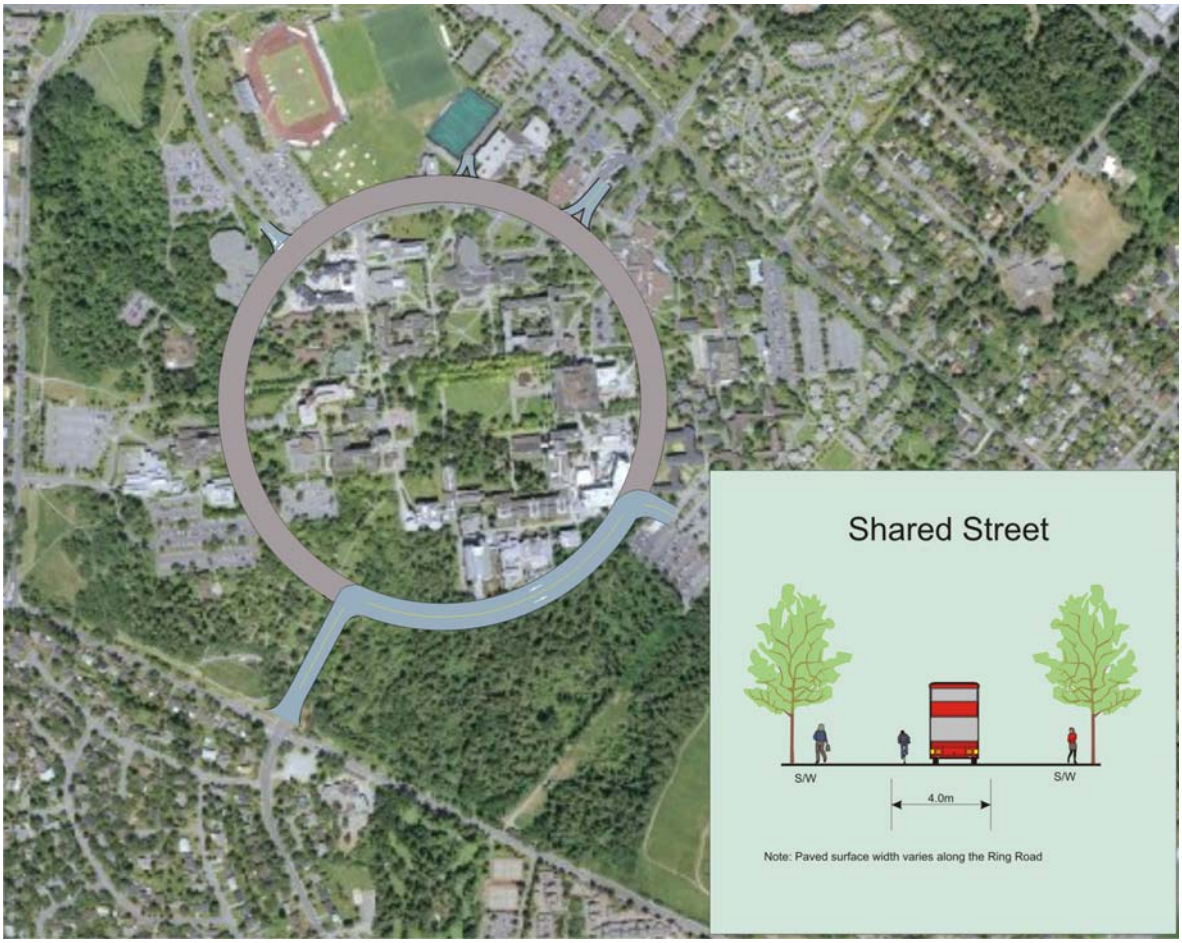


FIGURE 3.3 RING ROAD OPTION 3: SHARED STREET

Of the three options, Option 3 is the most supportive of non-auto modes. The Ring Road would primarily be space that encourages walking and cycling along with transit vehicles. Private autos would be generally excluded from the heart of the campus.

With Option 3, there would be no need for marked crosswalks or for marked bicycles lanes. The entire available road right-of-way would become available to pedestrians, bicycles, and transit vehicles, as well as permitted autos. This shared street arrangement is used in Europe, but is a new concept in North America.

3.3 Option Evaluation

Evaluation Criteria

The following criteria were used to rank the three Ring Road Options:

- Pedestrian Safety and Efficiency
- Bicycle Safety and Efficiency
- Transit Operations
- Private Auto Operations
- Consistency with University Sustainability Objectives
- Implementation Cost

The criteria represent all the main and relevant travel modes on campus, as well the University's objectives for continued encouragement of non-auto modes, and cost. While the evaluation included implementation cost on a relative basis, the capital and maintenance costs of implementing any of the Options will need to be determined starting at the preliminary design stage.

For each criterion, the Options were rated from 1 to 3 on a relative scale, with "1" representing the Option most favourable to that criterion, and "3" representing the Option that is least favourable to the criterion. An equal weighting was applied to each criterion. Different weighting plans can be developed and tested as desired.

Evaluation Results and Recommendation

The evaluation results are shown in TABLE 3.1. Option 2: Multi-User Road is the favoured option for three out of the six criteria, and the second-favoured option for the other three criteria. Overall, Option 2 is the favourite option for the future of the Ring Road. It is therefore **recommended** that Option 2: Multi-User Road be pursued as the future geometric and operational configuration for the Ring Road. Sections 3.4 and 3.5 below provide additional information to help start the detailed implementation process.

TABLE 3.1 RING ROAD OPTIONS: EVALUATION RESULTS

CRITERIA	Option 1: Current Geometry with Minor Upgrades	Option 2: Multi-User Road	Option 3: Shared Street	Comment
Pedestrian Safety and Efficiency	**3**	**1**	**2**	Pedestrians and cyclists are likely to be safest and most efficient with designated space provided in Option 2.
Bicycle Safety and Efficiency	**3**	**1**	**2**	
Transit Operations	**2**	**1**	**3**	With Option 2 there will be less traffic interfering with bus operations on the Ring Road.
Private Auto Operations	**1**	**2**	**3**	The existing condition (Option 1) is most favourable to private auto operations.
Consistency with University Sustainability Objectives	**3**	**2**	**1**	Option 3 will likely be most effective at promoting non-auto trips on campus.
Implementation Cost	**1**	**2**	**3**	Option 3 will require the most capital cost to implement.
TOTAL (Lower is better)	**13**	**9**	**14**	**Option 2 is preferred, based on an equal weighting for all criteria.**

3.4 Multi-User Road: Implications

The implications of the Multi-User Road concept on various traffic and parking operations were summarized at the planning level. The results are as follows:

- *Implications on Private Auto Traffic:* Fewer private vehicles are likely to use the Ring Road, as it will operate at a lower speed and without overtaking opportunities. It will be a less efficient road for the private auto.

- *Implications on Transit Buses:* Generally buses will operate more efficiently, since there will be less traffic to compete with the buses, and the buses will not need to conduct yield and merge operations.

- *Implications on Bicycle Traffic:* More bicycles will be attracted to use the Ring Road, due to the provision of two (2-way) bicycle lanes.

- *Implications on Pedestrian Traffic:* Crossing the road will be generally easier with a single lane of traffic. There will be significantly fewer vehicle / pedestrian conflicts, due to the single lane of traffic, slower operating speeds, and the lack of overtaking. There may be an increase in pedestrian / bicycle conflicts, due to the possible lack of anticipation of two-way bicycle traffic.

- *Implications on Service and Delivery Vehicles:* On the Ring Road, there will be fewer private auto vehicles, but the efficiency of the road will be reduced due to the single lane operation. The overall net impact on Service and Delivery vehicles is likely to be insignificant.

- *Implications on the Adjacent Municipal Road Network:* The traffic that currently uses the Ring Road is already using the adjacent municipal road network to access the campus. The introduction of the Multi-Use Road is likely to result in longer trips along the municipal road network (as traffic stops using the Ring Road as a short-cut), but no significant net increase in the volume of users along the municipal network.

- *Implication on Parking Lot Access:* More parking users are likely to enter and exit the parking lots directly from the roads that connect to the municipal system (McGill Road, Gabriola Road, Finnerty Road, University Drive, and Campus Crescent), and then immediately access the surrounding roads (McKenzie Avenue / Sinclair Road; Cedar Hill Cross Road; Gordon Head Road; and Cadboro Bay Road to the east) without using the Ring Road. The exception will be traffic to and from Lot 1, which will still need to use the Ring Road until external access from the municipal network is provided. The multi-modal road will still provide access to the parking lots within the Ring Road, including Lots E, B, and C.

As the planning and design work for the Multi-User Road concept proceeds, the above implications can be explored in more detail and quantified through the use of traffic simulation models such as Synchro or VISSIM.

3.5 Multi-User Road: Initial Geometric Guidelines

Based on current road design guidelines, the suggested geometric dimensions for Option 2: Multi-User Road are shown in TABLE 3.2.

TABLE 3.2 SUGGESTED MULTI-USER RING ROAD CONCEPT STANDARDS

General traffic lane #	Bike lane #	Transit lane #	Sidewalk	Crosswalk	Curb extensions
1 lane 3.6 to 4.0m wide	2 (contra-flow)[1] 1.5 to 1.8m wide [2,3]	0 (transit use general traffic lane)	Yes, with curb cuts for bicycle access	Color pavement, raised Minimum 2.5m wide	Maybe considered with lane narrowing, to be reviewed based on specific cross section widths at crosswalks

1. Oregon Bicycle and Pedestrian Plan Section E.3 indicate that contra-flow bike lanes on a one-way street are not usually recommended, but there are special circumstances when this design may be advantageous. For the ring road, a contra-flow bike lane provides a substantial savings in out-of-direction travel and a substantial number of cyclists are already using the street.
2. Oregon Bicycle and Pedestrian Plan: Contra-flow lane must be placed to motorists' left.
3. Oregon Bicycle and Pedestrian Plan: Minimum bike lane width is 1.5 metres from the face of a curb. TAC Bikeway Traffic Control Guidelines for Canada Section 7.2.2 indicates that the directional dividing line for full-time contra-flow bike lane is a wide solid yellow line (200mm).

These dimensions are provided for guidance only; preliminary and detailed design work will be required to confirm the most suitable actual dimensions for the Ring Road.

In addition to improving the Ring Road, there are other traffic issues related to all travel modes on campus that need to be considered and addressed. These are discussed in Section 4.

4.0 MULTI-MODAL TRAFFIC IMPROVEMENT STRATEGY

4.1 Traffic Operations

A. Volume Surveys: 24 Hours and Intersections

The University commissioned Bunt and Associates to complete a report titled *2006 Campus Traffic Survey* which reviewed the auto volumes at select locations within the University campus. The volume counts consisted of two-way 24-hour automatic tube counts at three major University campus entrances (University Drive, McGill Road, and West Campus Gate) and manual peak period two-way counts at various key locations. These volumes are shown in FIGURE 4.1.

Further analysis of the hourly distribution of traffic using the data from the *2006 Campus Traffic Survey* was completed by Opus Hamilton. The traffic patterns along the University Drive, McGill Road, and West Campus Gate locations where analyzed, and the results for an average weekday are shown in FIGURE 4.2. The findings indicate the following:

- All three roads exhibit a pronounced inbound traffic peak during the morning between 0800 and 0900 hours.

- Of the three roads, University Drive and McGill Road have the highest peak period entering volumes, with over 500 vehicles per hour.

- All three roads have an afternoon outbound traffic peak between 1600 and 1700 hours. The afternoon peak along University Avenue is the most pronounced, with volumes of over 500 vehicles per hour.

- The distribution over the day reflects the work times and class times schedule.

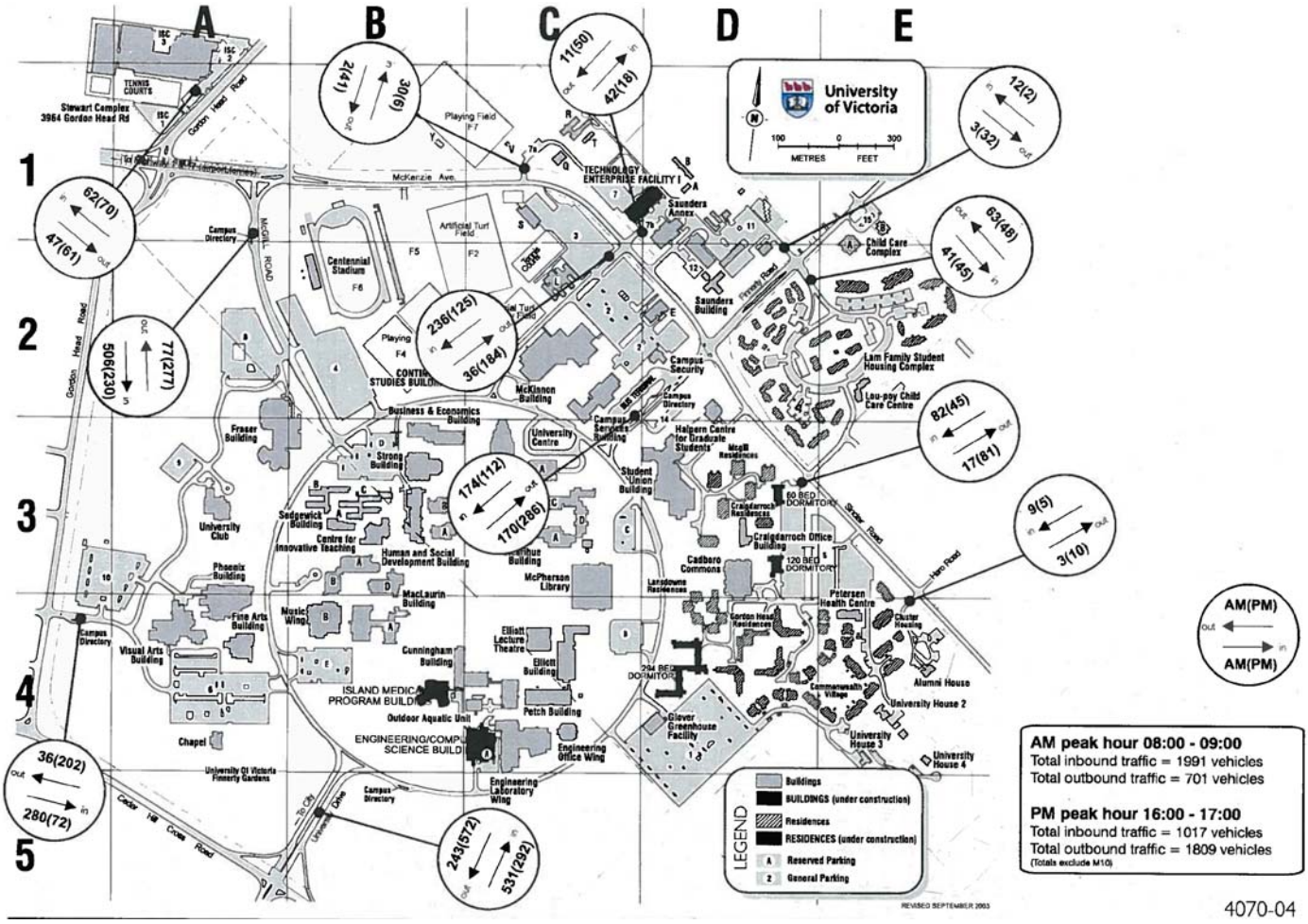
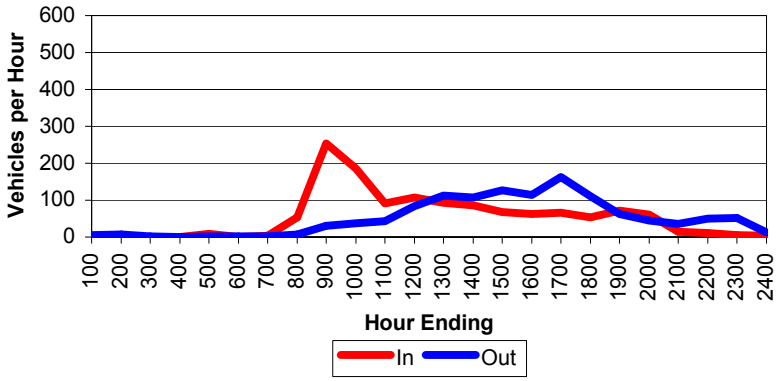
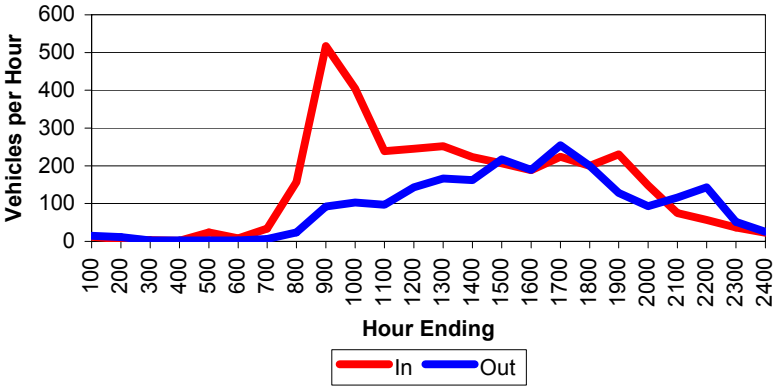


FIGURE 4.1 2006 TWO-WAY PEAK PERIOD VEHICLE VOLUMES

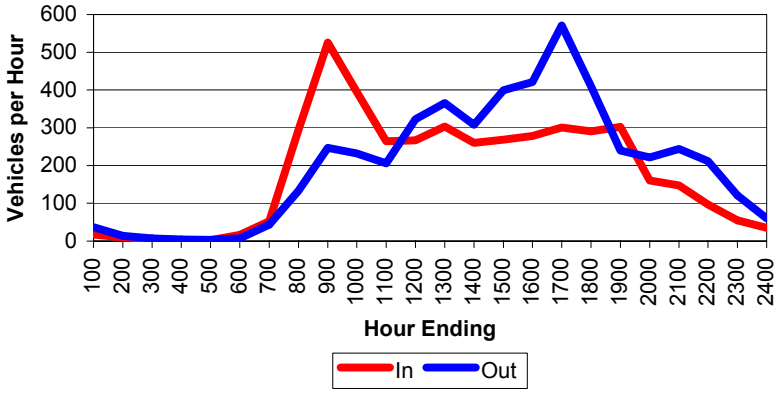
(Source: *2006 Campus Traffic Survey*, Exhibit 2)



West Campus Gt. Weekday Hourly Volumes (October 2006)



McGill Rd. Weekday Hourly Volumes (October 2006)



University Dr. Weekday Hourly Volumes (October 2006)

FIGURE 4.2 TWO-WAY 24-HOUR VEHICLE VOLUME DISTRIBUTIONS

(data from *2006 Campus Traffic Survey*)

B. On-Site Observations

Site observations at the campus were performed on several weekdays in December 2007 and January, February and March 2008 to capture the analyze traffic conditions. The observations consisted of both general qualitative traffic volume impressions and site-specific observations. Noteworthy observations pertaining to traffic are summarized as follows:

- Regular conflicts were observed between vehicle, pedestrian and bicycle traffic along the Ring Road. Pedestrians and cyclists crossed the road at any convenient location, regardless of the presence or absence of a marked crosswalk. Often, pedestrians and cyclists started crossing without stopping to ensure that vehicular traffic on the Ring Road would stop. The availability of two lanes along the Ring Road encouraged speeding and overtaking and added to the likelihood of conflicts with pedestrians and cyclists.

- Along West Campus Gate, McGill Road, University Drive, Gabriola Road and Finnerty Road, some intermittent queuing and congestion was observed during peak University arrival and departure times. The observed level of congestion and queuing is not unusual or unexpected for a major campus, and the current arrangement provides several alternatives and system redundancies to spread out the peak traffic loads. As the campus population grows in the future, detailed operational reviews of the major intersections that serve the campus may be needed to ensure that the traffic control is optimized.

- Most vehicles travel along the Ring Road for relatively short distances (a quadrant or up to half the ring). Vehicles would typically enter Ring Road from a street or parking lot, then exit at another street or parking lot before completing half the Ring Road circuit. As a result, traffic volumes turning right onto or off of the Ring Road at major intersections tend to be higher than the volumes that continue straight along Ring Road.

- Some delays were observed along the Ring Road near the Student Union Building, with some queuing due to vehicles yielding to pedestrians at the nearby marked crosswalks.

C. Recommendation: Traffic Operations

It is **recommended** that after the implementation of Ring Road Option 2: Multi-User Road, or within the next five years (whichever is sooner), the University consider conducting detailed intersection traffic operational and safety reviews at the main intersections that connect the campus to the surrounding municipal network. These intersections would include McGill Road at McKenzie Avenue; Finnerty Road and Gabriola Road at McKenzie Avenue / Sinclair Road; and University Drive at Cedar Hill Cross Road.

The purpose of the detailed intersection traffic operational and safety reviews would be to ensure that the geometrics, lane assignments and traffic control are optimized to provide the best possible level of safety and efficiency for all users of the intersections. This is particularly important in the context of the growth that is expected to occur at the University (Section 2.1 of this report). The intersection operational and safety reviews are best conducted in partnership with the District of Saanich (intersections on McKenzie / Sinclair) and the District of Oak Bay (Cedar Hill Cross Road intersection).

4.2 Bus Operations

A. Bus Routes and Frequencies

Public bus service to the University is currently provided by BC Transit. A total of 12 routes (seven full-time and five limited service) serve the University. The bus exchange is located off Finnerty Road. The exchange details are shown in FIGURE 4.3, and the routes and the scheduled headways during weekday peak periods are shown in TABLE 4.1. All but Route Numbers 11 and 76 travel on the Ring Road.

Typical headways for five of the full-time bus routes are 15 minutes or less, which is considered to be frequent service. The other two routes provide 20 to 30 minute headways (moderate service). The campus transit exchange is the second busiest in the system after downtown.

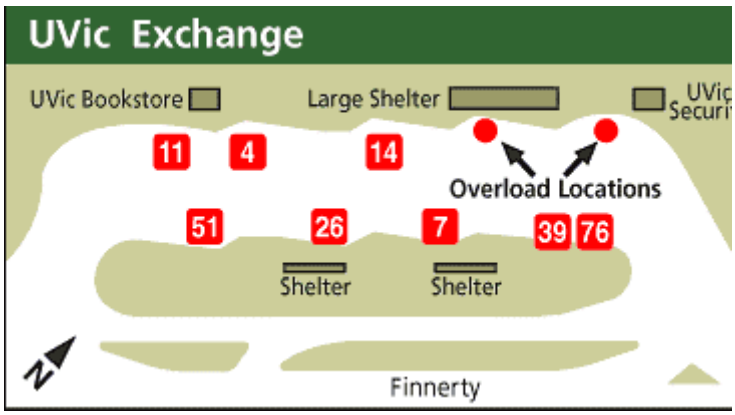


FIGURE 4.3 UVIC TRANSIT EXCHANGE AND PARKING LOCATION
(From: www.transitbc.ca)

TABLE 4.1 BC TRANSIT BUS ROUTES SERVING THE UNIVERSITY

ROUTE NO.	ROUTE	HEADWAY (minutes)		
		Morning	Midday	Afternoon
4	U.Vic/Downtown via Hillside	10	12	10
7	U.Vic/Gonzales/Downtown	12	15	15
11	Tillicum Mall/U.Vic	10	15	10
14	Vic General/UVic via Richmond	5	9	6
17	Cedar Hill School Special (when school in session only)	special*	n/a	n/a
18	Cedar Hill School Special (when school in session only)	special*	n/a	n/a
26	Dockyard/U.Vic	10	12	10
29	U.Vic (weekdays when school in session only)	special*	n/a	n/a
33	U.Vic via Richmond (weekdays only)	15	n/a	n/a
39	Royal Roads-U.Vic/Camosun College-U.Vic	30	30	30
51	Langford/U.Vic	30	n/a	20
76	Swartz Bay/U.Vic (Friday out and Sunday in only)	n/a	special*	special*

* denotes a single bus service during the peak period

B. On-Site Observations

The Opus team observed bus operations during several site visits in the winter and spring of 2007/08. Noteworthy observations pertaining to buses are summarized as follows:

- In the morning, buses entering the campus were typically more than 75 percent full, with some at capacity with standing-room only. For the buses that enter the campus via McGill Road or University Road, some passengers got off along the Ring Road bus stops before the bus arrived at the transit exchange.

- In the afternoon, buses are typically more then 50 percent full when leaving the transit exchange, with some close to or at capacity. Buses with routes along Ring Road also pick up many passengers at the bus stops.

- Within the transit exchange, parked and waiting buses, arriving and departing passengers, waiting passengers, and buses entering and exiting the exchange resulted in an active, vibrant and sometimes congested environment, particularly during peak periods. Outside of the transit exchange, buses did not appear to encounter significant operational difficulties related to the road geometrics.

- Upon entering the campus in the morning peak period and leaving the campus in the afternoon peak period, buses encountered delays similar to general traffic at the main roads and intersections connecting the campus to the surrounding municipal road network.

- Along the Ring Road, drivers of private autos were frequently observed changing lanes to overtake buses.

C. Issues Related to Bus Operations

The stakeholder consultation conducted for this study indicated that in general, stakeholders are satisfied with the current bus service provided to the University of Victoria campus. However, several issues and areas of concerns related to transit service were revealed, and these provide opportunities to consider improvement opportunities:

- During the peak periods and peak direction of operation, namely inbound in the morning and outbound in the afternoon, there is concern about congestion on the buses and the number of pass-bys (buses not stopping because they are too full).

- Before the morning peak period and after the afternoon peak period, (early morning and late in the evening), there is concern about the limited transit service availability. University staff members who start work early, and students, staff members and campus visitors who have on-campus business in the evening, are provided limited or no transit service.

- The current operational model of circulating BC Transit buses on the Ring Road spreads out transit service throughout the campus, and bus stops along the Ring Road were observed to be well-used. However, there may also be advantages for the BC Transit buses to focus service at the transit exchange, and avoid circulating on the Ring Road. As the campus grows and more buildings are added, there will be increased demand to add bus-stops along the Ring Road. This will decrease the efficiency of the BC Transit buses. As an alternative, a small, frequent, internal shuttle service can operate around the Ring Road, connecting the campus to the transit exchange.

- BC Transit indicated that the transit exchange is reaching capacity, and that the space allocation for buses may need to be reviewed. The island shelters are also sometimes overloaded with waiting passengers. The geometrics and current operational model of the exchange result in some turning movement difficulties and limited sight distances. While these issues are not unique to this transit exchange, as the University continues to grow, the current challenges at the exchange may be amplified.

- Some communities west and north of Victoria have relatively infrequent or no convenient bus service to the campus.

D. Recommendations: Bus Operations

The following **recommendations** are for the joint consideration of the University of Victoria and BC Transit:

- Within the next two years, conduct a detailed review of the transit exchange geometry and operations, taking into account increasing transit service and the growth of the University.

- Within the next two years, review the service levels during peak periods, and consider higher frequencies to reduce congestion and pass-bys. This should include a review of class start times to promote integration between typical bus arrival times and class schedules.

- Within the next three years, consider enhancing early morning and late evening service to better serve the off-peak campus users.

- In conjunction with the improvements to the Ring Road (Section 3 of this report), consider alternatives to having the BC Transit buses circulating on the Ring Road. Consider limiting BC Transit service to the transit exchange, and possibly introducing an internal frequent small shuttle service on the Ring Road.

- In the next five years, consider improving the transit connections to the University from the relatively more distant communities west and north of the campus.

4.3 Pedestrian Operations

A. 2006 Survey Findings

In the *2006 Campus Traffic Survey*, pedestrian volumes entering the campus by corridor were surveyed between 0700 and 2200 hours. The results are shown in FIGURE 4.4. Pedestrians entered the campus most frequently from the University Drive, West Campus Gate, Field 2, and Finnerty Road corridors. Each of these corridors had 700 or more pedestrians during the 15-hour survey period.

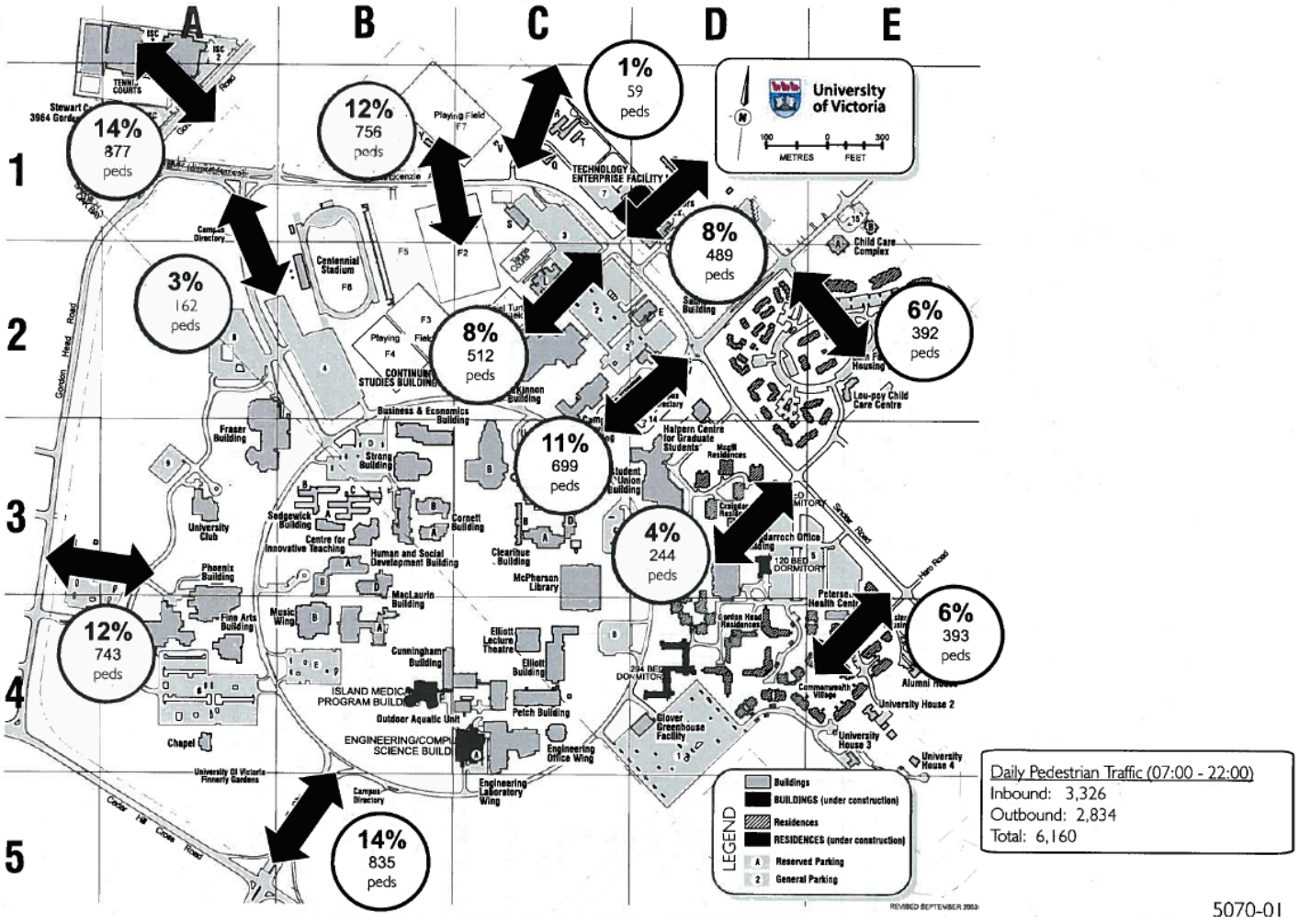


FIGURE 4.4 2006 DAILY PEDESTRIAN CORRIDOR VOLUMES
(Source: *2006 Campus Traffic Survey*, Exhibit 5)

B. On-Site Observations

On-site observations of pedestrian counts and behaviours were performed on several weekdays in the winter and spring of 2007/08. Observations are summarized as follows:

- Pedestrians were observed throughout the campus, with the highest concentration near the Student Union Building. The typical pedestrian is a young adult university student, with some older adults present. No children pedestrians were seen during observations, except near the Finnerty Road and McKenzie Road/Sinclair Road intersection, which is in close proximity to the family student housing complex and the child care complex.

- In general, pedestrian volume patterns were similar to the *2006 Campus Traffic Survey* results.

- A total of 11 marked crosswalks are provided along the Ring Road, with several others provided throughout the campus on other roads. One of the crosswalks provides intermittent flashing amber light that is not activated by pedestrians. Along pedestrian desire lines where marked crosswalks are present, pedestrians were observed to mainly cross at or near the crosswalk. Otherwise, it was observed that pedestrians crossed roadways at any place, and generally did not seem confined or obliged to cross at the marked crosswalks.

- The lack of continuous sidewalks on both sides of the Ring Road causes an inconvenience and unexpected or unnecessary crossing movements.

- With the exception of the marked crosswalk across McGill Road north of the Ring Road linking Lot 4 and the Fraser Building, all marked crosswalks appeared to have good sightlines. The McGill Road crosswalk had sightline issues due to an earth mound (as discussed in the Safety Audit portion of this report).

- At times, crossing pedestrians appeared to exercise caution when stepping out onto a roadway by ensuring that there is a gap in the traffic before crossing. At other times, pedestrians started crossing the Ring Road with the expectation that vehicular traffic will stop for them.

- Pedestrians generally stayed on sidewalks, paved pathways, or well-worn paths across grassed areas. Pedestrians were also observed to walk through parking lots should one be along the desired route.

- Similar to roadways, pedestrians in parking lots (either walking to/from their parked vehicle or walking through the parking lot) generally walked off to the aisle sides and did not impede vehicle passage.

- Pedestrian-oriented way-finding signs on campus are limited.

C. Recommendations: Pedestrian Operations

It is **recommended** that the University consider the following improvements to pedestrian operations within the campus:

- As part of the improvements to the Ring Road (discussed in Section 3), ensure that pedestrian facilities are continuous around the Ring Road. The recommended Ring Road Option 2: Multi-User Road will also promote a more pedestrian-friendly and slower speed environment within the campus.

- As part of the improvements to the Ring Road, ensure that curb ramps are provided where needed and in particular at the marked crosswalk locations, to facilitate movements for wheelchair users and strollers.

- Conduct a study of way-finding sign requirements and implement its recommendations (this is already underway).

4.4 Bicycle Operations

A. Operations and Observations

The climate in Victoria allows for cycling almost all year long. The campus is generally flat and through its Bicycle Users Committee promotes the use of bicycles by people of all skill levels.

The University of Victoria campus currently provides bicycle parking facilities, but no marked bicycle lanes. Stakeholders commented that while the existing parking facilities are good, there is a need for additional parking facilities, and in particular more secure bicycle parking. Stakeholders also noted the lack of marked bicycle lanes on-campus, and some operational difficulties along the marked bicycle lanes on the surrounding municipal road network.

The one-way configuration of the Ring Road makes bicycle circulation less convenient and less efficient, effectively forcing bicycles to use pedestrian facilities around the Ring Road to avoid riding against traffic.

During the on-site observations conducted by Opus staff in the winter and spring of 2007/08, bicycles were observed to travel both on the road and on pedestrian sidewalks and pathways. When travelling on the roads, cyclists generally followed the rules of the road, including riding on the far-right side, cycling in the correct direction, and using hand signals where appropriate. However, some cyclists were observed cycling on pedestrian paths, including along sidewalks in the opposite direction of vehicle travel.

In general, the cyclists rode with caution and avoided pedestrians. However, several incidents were noted where cyclists emerged at speed from side roads and crossed the Ring Road almost without slowing. The behaviour causes conflicts with vehicular traffic on the Ring Road.

B. Recommendations: Bicycle Operations

It is **recommended** that the University consider the following initiatives to further promote and encourage bicycle use on campus:

- As part of the recommended Option 2 improvements to the Ring Road (discussed in Section 3), provide two marked lanes for bicycle travel, one in each direction, along the Multi-User Road. Consider using a different pavement colour for the bicycle lanes on the Ring Road to further improve the conspicuity of the bicycle facilities.

- Within the next two years, review the feasibility of providing marked bicycle lanes on the campus roads connecting the municipal network to the Ring Road, namely McGill Road, Gabriola Road, Finnerty Road, University Drive, and West Campus Gate.

- Within the next two years, review in detail the bicycle parking facilities on campus, with a view to achieving the following objectives:

    - At peak bicycle parking times, no more than 85 to 90 percent of the bicycle parking facilities should be occupied.
    - The supply of bicycle parking spaces should keep pace with the growth in the campus population.
    - The proportion of secure bicycle parking, for example the number of bicycle lockers that are available to rent, should be increased when possible.

- Ensure that all new buildings provide modern bicycle parking facilities and associated change / shower / storage facilities.

- Within the next three years, work with the District of Saanich and the District of Oak Bay to review the marked bicycle lanes on the municipal roads surrounding the campus, to ensure that bicycle connectivity, efficiency and safety are optimized.

- It is **recommended** that the University consider the preparation of a campus Bicycle Master Plan to cohesively address many of the issues identified above.

4.5 Pick-up and Drop-off Operations

A. Observations

In general, pick-up and drop-off activities were observed to occur mainly within parking lots and on-street loading zones or metered parking areas. The most common areas observed were:

- Lot C (close to the McPherson Library);

- Lot 14 (near the Student Union Building entrance);

- Metered parking area along the Ring Road near the Student Union Building; and;

- Lot 4 (close to the Ring Road access).

Pick-up and drop-off activities were also observed to occur throughout the campus, including the Ring Road. Most pick-ups occurred quickly and did not obstruct vehicle operations. In general, the observed pick-up and drop-off operations were consistent with a typical vibrant campus environment.

B. Recommendation: Pick-Up and Drop-Off Operations

It is **recommended** that safe and efficient pick-up and drop-off areas, as needed, be integrated within the design of the new buildings being planned for the campus. Having pre-planned and designated pick-up and drop-off zones as part of the building design will reduce the need for on-street stops that may disrupt traffic operations.

In planning and designing pick-up and drop-off areas, the needs of (1) general campus users and (2) persons with disabilities should be considered separately. For persons with disabilities, designated pick-up / drop off areas close to individual buildings should be planned for to minimize travel distances. For general campus users, consolidated pick-up / drop-off areas in central campus locations (for example, near the bus loop) should be planned for as facilities are re-developed.

4.6 Safety, CPTED, and Accessibility Reviews

As part of this study, overviews of road safety, crime prevention through environmental design (CPTED) and accessibility were conducted on the University of Victoria campus. Appendix C presents the results in detail. The findings and observations can be used by the University to implement location-specific improvements, and larger area-wide safety-oriented initiatives. The findings also provide helpful observations that can be used by the University to improve campus security and accessibility at existing locations and when planning new facilities. The key **recommendations** include:

Finnerty Road and Ring Road Intersection

- Reduce the channelized right-turn radii.
- Provide additional and/or oversized STOP sign for southbound right-turn approach.
- Channelize pedestrians.

West Campus Way and University Club/Lot 9 Accesses

- Clear shrubbery to improve sight distance.

Ring Road and McGill Road Intersection

- Move marked crosswalk to north leg of intersection.
- Provide sidewalk along Ring Road on the northeast quadrant.
- Provide signage denoting the intersection.

Campus-Wide Road Safety Issues

- Consider smaller radius for right-turn channelized lanes
- Provide consistent pedestrian signing at marked crosswalks
- Improve consistency of street and guide signing

CPTED

- Improve natural surveillance at the following locations:

    - The areas just past McGill Road, continuing counter-clockwise around the Ring Road;
    - Locations near bike racks;
    - Gabriola Road; and
    - Remote sections of parking lots.

- Improve pedestrian-level lighting, particularly in parking lots which rely just on vehicle designed lighting.

- Ensure that the future development and design of new transportation facilities (for all modes, including transportation connections to new buildings) include a CPTED review.

Accessibility and Universal Access

- Parking lots should have pedestrian areas that match or complement pedestrian desire lines.

- Dropped curbs should be lined up with and present for all pedestrian crossings and crosswalks.

- Street furniture should be positioned so as not to block or inhibit certain manoeuvres on sidewalks.

- Street furniture should also contain colour contrasting lines to ensure visibility to the visually impaired.

- Handicapped parking spaces should be positioned in areas that are nearest the destination of the general users of the parking lot, combined with safe areas for being able to manoeuvre in and out of vehicles.

- Alternate route signage should be provided to avoid the steep hill leading down parking lot 9 and University Club.

- Conduct Accessibility and Universal Access reviews as part of the development and design of new on-campus transportation facilities.

4.7 Other Issues

A. Recommendations for Bi-annual Traffic Survey

The following are **recommendations** for additional information that could be surveyed during the University's bi-annual traffic survey.

- License plate surveys of the entrances and exits roads to determine how much of the traffic on the Ring-Road is non-university generated. This could be used to predict the impact of the multi-user road and shared street Ring-Road options on the external road network.

- License plate surveys combined with vehicle occupancy surveys of the entrances and exits roads to determine how many car-pools drop a passenger off at the university and then continue on to another destination.

- Surveys of local areas including residential streets, and off-street parking lots such as malls, which are used by students, staff and faculty for informal park 'n' ride, using transit to connect their journey to the campus.

- Data monitoring of the flow of vehicle volumes around the Ring-Road.

B. Recommendations for Special Events

For special events held at the campus but not hosted by the University, for example the Greater Victoria Performing Arts Festival, arrangements for specific parking needs can be discussed in advance with the University's transportation and parking coordinator. It is also possible to apply for the one-day, discounted transit *Travel Green Day Passes* for special events.

It is **recommended** that when the host organisation or group makes a booking with the university that there are procedures in place for events that are hosting over 100 people. This will lead to a Travel Plan having to be prepared by the host organisation or group through filling out a form and working with parking services.

Initiatives could include:

- Being able to pre-pay for parking when booking tickets to the event, and parking vouchers to be displayed on dashboard to be included with tickets when emailed or posted out. This approach is currently available to people who purchase tickets to events at the University auditorium and could be extended by other organizers of events on campus.

- Having information on the travel options available for travelling to the campus available for including on tickets and promotion information. This can be taken and altered accordingly from the Enhanced Travel Choices Information to be used for staff, students and faculty as discussed in Section 8.0 of this report.

For events where parents and guardians may be dropping children off and then collecting them at the end of the event, a dedicated drop-off and pick-up area should be well sign posted and communicated to parents and guardians before the event.

PART TWO

PARKING

5.0 PARKING SUPPLY AND DEMAND CHARACTERISTICS

5.1 Parking Supply Characteristics

Number of Spaces

A summary of the 2008 University of Victoria campus parking supply, including the number of spaces per parking lot, was provided by the University Parking Services Department.

In total, 4,236 parking spaces, consisting of 4,148 automobile spaces and 88 motorcycle parking spaces, are provided in 30 different parking facilities, as detailed in TABLE 5.1. The eight largest parking lots (marked in green in TABLE 5.1), providing more than 200 spaces each, account for 70 percent of the total parking supply.

The majority of the campus parking supply is provided within at-grade surface parking lots, and most of the major parking lots are located between the Ring Road and the surrounding municipal road network.

Parking Lot Locations

The parking lot locations are shown in FIGURE 5.1. Over the years, the University has consciously pursued a policy of reducing parking availability inside the Ring Road, to create a denser academic and social core for the University inside the Ring. FIGURE 5.1 shows that only a few reserved parking lots remain within the Ring Road, and the majority of the parking supply is located outside the Ring. The four lots located within the Ring Road primarily have a reserved space designation and include the only underground parking structure on campus below the University Centre.

TABLE 5.1 FEBRUARY 2008 ON-CAMPUS PARKING CAPACITY BY LOT

LOT	NUMBER OF STALLS							
	General	Student Residents	Reserved*	Meter	Disabled	Carpool	Motor-cycle	**TOTAL**
Lot A (Engineering Lab. Wing)				9	3			**12**
Lot B (Elliott)			67	5	2		27	**101**
Lot C (Clearihue)			62	5	3			**70**
Lot E (Maclaurin)			124	30	2		10	**166**
Parkade (UVic Centre)	40		29		5		10	**84**
Human & Social Dev. Lot				13	2			**15**
Lot 1 (Henderson)	495	73	85		4		8	**665**
Lot 2 (McKinnon)	251		95	41	5	1	8	**401**
Lot 3 (Tennis Courts)	231							**231**
Lot 4 (Stadium)	414		22		5		5	**446**
Lot 5-U (Cadboro Cmmns.)	209		11	4	5		10	**239**
Lot 5-M (Cadboro Cmmns.)		172		1	1			**174**
Lot 5-L (Health Services)	95	23	2	2				**122**
Lot 6 (Fine Arts)	375		25	8	5		8	**421**
Lot 7 (McKenzie Ave.)	92				1			**93**
Lot 7A ("R" Hut)	9		4					**13**
Lot 7B (Saunders Annex)	6		4		1			**11**
Lot 8 (Fraser)	244		20	7	1			**272**
Lot 9 (University Club)	30		13	19	2			**64**
Lot 10 (Gordon Head)	312						2	**314**
Lot 11 (Saunders Rear)	74							**74**
Lot 12 (Saunders Front)			18					**18**
Lot 14 (Finnerty)				16	4			**20**
Lot 15 (Childcare)	18		2	2	1			**23**
Ring Rd Meters (SUB)				8	1			**9**
Ring Rd. Mtrs (Campus Serv.)					2			**2**
Ring Rd. Mtrs (McKinnon)				4				**4**
Gabriola Rd. Mtrs (Cont. Studies)				1	1			**2**
UVic Centre Mtrs (Loop)				7	1			**8**
Ian Stewart Complex	139		12	9	2			**162**
TOTAL	**3,034**	**268**	**595**	**191**	**59**	**1**	**88**	**4,236**

* Reserved for staff, faculty, and commercial visitor parking

As can be seen from FIGURE 5.1, the supply of parking is concentrated to the north and west of the Ring Road. Lots 2, 3, 4, 6, 8, 9, and 10 are all located to the north or west of the Ring Road, within the boundary formed by the surrounding municipal network. Lots 1 and 5 are the only major sources of parking supply to the east and south.

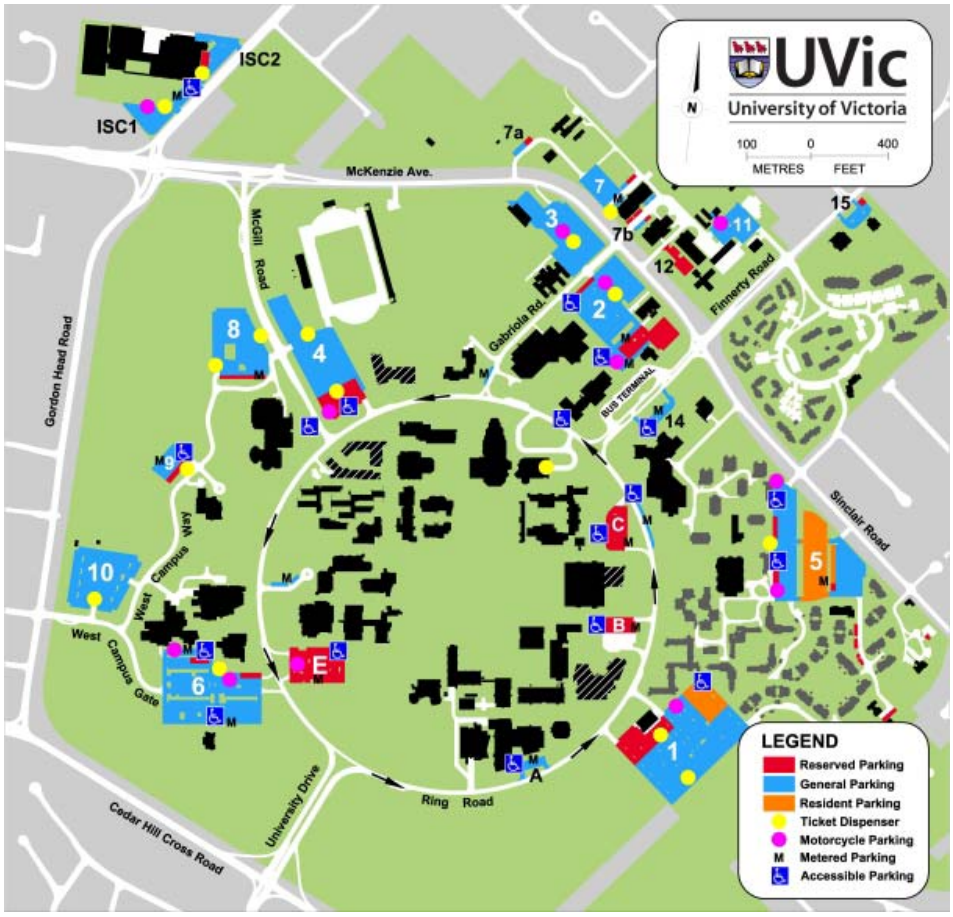


FIGURE 5.1 PARKING LOT LOCATIONS WITHIN THE CAMPUS CONTEXT
Blue, Red and Orange Areas are for General, Reserved and Resident parking respectively. Source: uvic.ca

Parking Space Categories

The on-campus parking spaces are currently classified into seven categories:

- General
- Student Resident
- Reserved
- Meter
- Disabled
- Carpool
- Motorcycle

The categories are colour-coded on FIGURE 5.1. The two largest categories are General (73% of the total auto parking spaces), and Reserved (14%). Most Reserved spaces become available to the public during evenings and weekends. The University Parking Services Department has the flexibility to reclassify parking spaces as needed (for example, reclassify Reserved parking spaces as General spaces) to meet the changing demands of the campus.

Walking Distances

The walking distances from the key pedestrian generator nodes on campus are shown in FIGURE 5.2, including the Campus Services Building, the Student Union Building, and the majority of lecture buildings surrounded by the Ring Road.

Using an assumed walking speed of 60 metres per minute with a target walking time (parking space to destination) of approximately 10 minutes, the typical maximum distance acceptable to walk between a parked vehicle and the pedestrian generator is 600 metres. FIGURE 5.2 indicates that the parking lots are generally located within 600 metres from the core of buildings surrounded by the Ring Road. This indicates that the parking lot locations are convenient, and that as long as there are no major disincentives to parking on the University lots, the likelihood of vehicles parking off-campus would be low.

Campus – Generated On-Street Parking

Opus staff observed campus-generated on-street parking by conducting drive-throughs throughout the area surrounding the campus. The findings are summarized below:

- The closest off-campus free parking is along Cedar Hill Cross Road at about 400 metres from the Ring Road; all other parking is at least 600 metres away. With the exception of Cedar Hill Cross Road, campus-generated on-street parking was not observed.

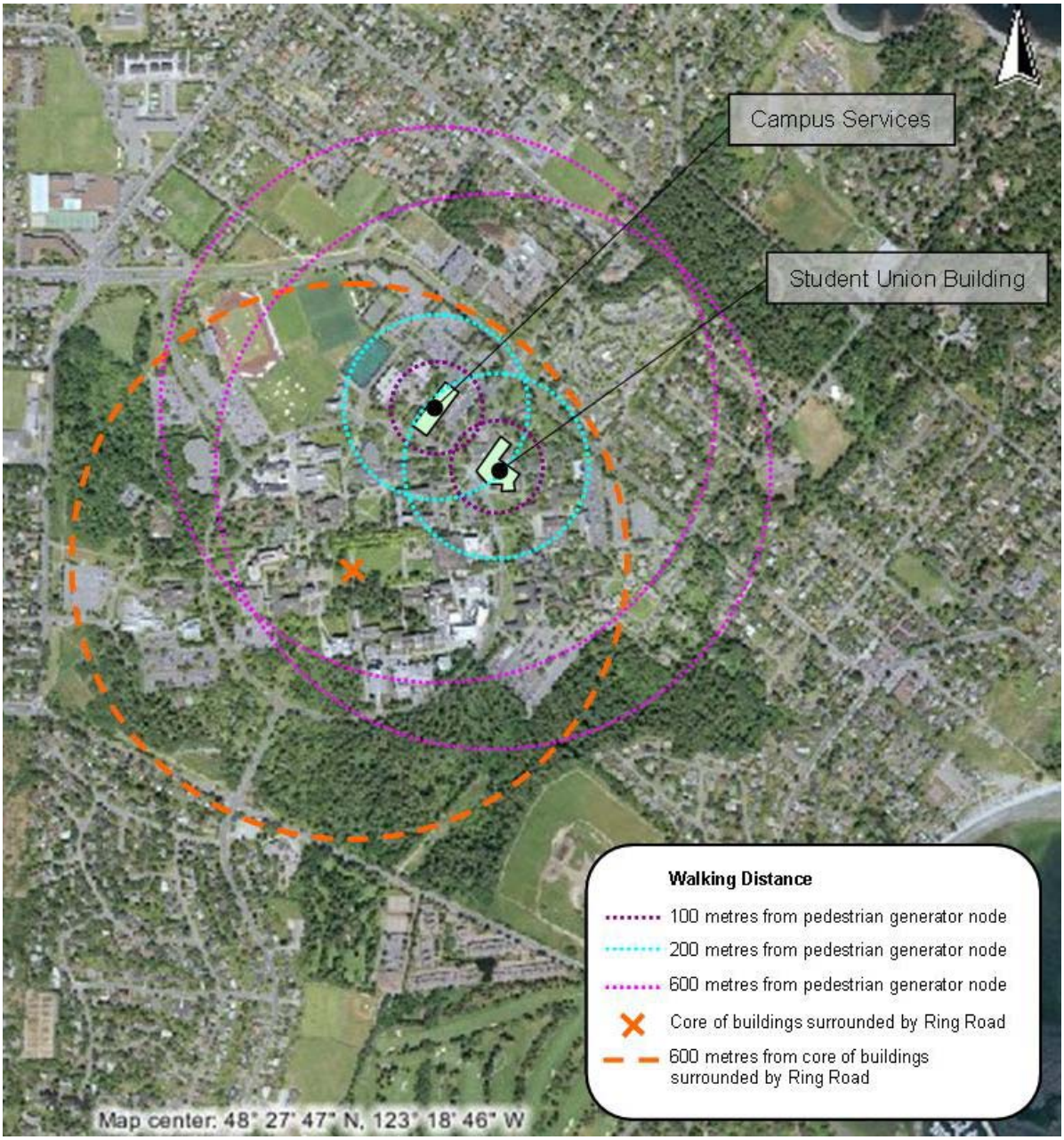


FIGURE 5.2 WALKING DISTANCES FOR MAJOR UNIVERSITY PEDESTRIAN GENERATORS

- On-street parking along Cedar Hill Cross Road east of University Drive was typically full during University hours, and was used by people destined for the University. Parking there is limited to three hours and is controlled and enforced by the District of Oak Bay, whose interest is to keep the parking on the south side of the street open for users of the park and recreation facility in that area.

- Most surrounding neighbourhoods within a kilometre of the Ring Road had on-street parking restrictions limited to nearby residents. However, there were a few streets that were unrestricted. There were few vehicles parked along these streets; they may have been either difficult for drivers to find or inconvenient to walk to the University from there. This confirms the findings based on pedestrian walking distance.

5.2 Parking Costs and Revenue

Parking Costs

Based on information from the University and confirmed during site visits, the 2008 parking costs were reviewed. Weekday hourly parking costs at the General lots are $1.00 per hour to a maximum of $6.00 per day. A daily parking user who pays the daily maximum rate of $6.00 for a General parking space for 5 days a week, and 32 weeks (the approximate duration of an academic year from September to April) would therefore pay $960 during the course of the year.

Annual parking passes are available for full or partial terms starting each year on September 1. The pass rates depend on the type of parking and location, and are summarized in TABLE 5.2. The University Centre Parkade has a higher rate due to its location. Other rates for the duration of the academic year are $609 for Reserved parking and $348.50 for General parking.

TABLE 5.2 ON-CAMPUS PARKING COSTS, 2007/2008

PARKING TYPE AND LOCATION	COST FOR FULL-YEAR PARKING
University Centre Parkade (available to everyone)	$1,392.00
General Reserved Parking (available to faculty and staff)	$609.00
General Parking (available to everyone)	$348.50
Motorcycles and Scooters	$106.50
Flexible Reserved*	$450.00
Flexible General*	$260.00
ESTIMATED 32 WEEK COST USING DAILY RATE (assuming $6.00 per day for 32 weeks, 5 days/week)	**$960.00**

* Flexible Permits are for full-time employees only, and provide 12 uses per calendar month.

The annual parking passes therefore represent a significant discount compared to the daily parking rate (which translates to a cost of $960 for the academic year).

On weekdays between 1800 to 2400 hours, and on Saturdays, parking in the General lots costs a $2.00 flat fee (except at the Ian Stewart Complex lots and the University Centre Parkade, where duration-based pay parking is in effect at all times). Metered parking is $1.00 per hour up to two hours.

The cost of parking was compared to other universities in western Canada, and the comparison results are summarized in TABLE 5.3.

The rates at the University of Victoria are generally lower than universities in larger cities (such as UBC, SFU, and Alberta), but are comparable or higher than those in smaller municipalities. Compared to the other universities, the University of Victoria parking costs appear to be generally reasonable.

TABLE 5.3 CAMPUS PARKING COSTS COMPARISON WITH OTHER UNIVERSITIES

PARKING CATEGORY	UNIVERSITY						
	UVic	UBC	UBCO	SFU	RRU	UNBC	Alberta
Annual Student Parking	$349	$903 to $1029	$132	$365 to $777	$115	$385	$732 to$1393
Annual Staff Parking	$348 to $609	$804	$132	$364 to $777	$115	$385	$732 to $1393
Monthly Student Parking	$50*	$84 to $99	$20	N/A	$35	$32	$61 to $116
Monthly Staff Parking	$50* to $87*	$84 to $99	$20	N/A	$35	$32	$61 to $116
Monthly Reserved Parking	$87*	N/A	N/A	N/A	N/A	$98	$61 to $116
Annual Motorcycle/ Scooter Parking	$106	$246	$132	$83	$60 to $100	$385	$110
Daily Staff Parking	$6.00 to $12.00	$6.00	$2.00	$5.50 to $10.75	$8.00	$2.00	$1.50 to $2.70
Daily General Parking	$6.00 to $12.00	$4.50 to $12.00	$2.00	$5.50 to $10.75	$8.00	$2.00	$10
Visitor Parking per Hour	$1.00	$3.00	$0.50	$2.25	$1.00-$1.25	$0.25	$1.50 to $2.70
Annual Disabled	N/A	N/A	N/A	N/A	$55	N/A	N/A

* UVic does not offer monthly passes; these values are for comparison purposes, and represent the annual pass cost divided by 7 to represent the typical monthly cost during the academic year.

Parking Revenue

The University provided a summary of the revenue expected to be obtained from parking sources in the 2007/08 academic year. The budgeted revenue is as follows:

- Parking Meter and Dispenser Revenue: $970,000
- Parking Permit Sale Revenue: $1,800,000
- Parking Fines: $190,000

TOTAL: $2,960,000

This revenue contributes to the budget of the Parking Services Department, which is responsible for the parking operations, maintenance, and enforcement, and also provides substantial funding towards the TDM program.

In recent years, the proportion of parking revenue from dispensers has increased relative to the proportion from advance permit sales. This is a generally positive trend in terms of sustainability, since advance permit sales represent a bulk discount on the dispenser cost of parking, and once a permit is purchased, there is little incentive to consider alternatives to driving.

If the cost of pre-purchasing a permit increases further in the future, the University can likely expect to sell fewer permits, and the share of revenue from dispensers will likely increase as drivers buy only the parking that they need.

5.3 Parking Lot Occupancy

The Occupancy / Demand Relationship

Drivers measure the sufficiency of parking supply based on two criteria:

- How quickly a parking space can be found; and,
- The distance of the available parking space from the destination.

Parking occupancy measures how busy a parking lot is. The closer the occupancy is to 100 percent, the more likely drivers will perceive the parking supply to be insufficient.

In practical terms, when the parking occupancy in a large parking lot reaches 85 percent or higher, users perceive the parking lot to be effectively full. Drivers will need to circulate for a relatively long time in order to find the remaining vacant spaces in a parking lot that is 85 percent occupied or higher.

For planning purposes, parking management measures (such as increasing the supply or reducing the demand) need to be considered when a substantial amount of parking is registering occupancy rates of 85 percent or more for significant portions of the day.

On a University campus, parking demand is consistent with the academic schedule and calendar, with the highest demand in the daytime period between September and April, and significantly less demand at night and between May and August.

Overall Occupancy Results

The parking occupancy data was obtained from the University of Victoria for the years 2005 through 2007. Detailed analysis was conducted on the 2007 data, representing the most current campus conditions. The data consisted of surveys performed by the University in the months of February, March, October, and November 2007.

The data review indicated that the parking occupancy generally stayed consistent over the survey months, with October / November period recording marginally higher occupancies than the February / March period.

The survey time periods were divided up into: mid-morning (approximately 0900 to 1100 hours), midday (1100 to 1300 hours), mid-afternoon (1300 to 1500 hours) and afternoon (1500 to 1700 hours). The results by parking space category are shown in TABLE 5.4.

TABLE 5.4 2007 OVERALL PARKING OCCUPANCY BY PARKING SPACE CATEGORY

PARKING SPACE CATEGORY	PERIOD			
	Mid-Morning	Midday	Mid-Afternoon	Afternoon
General	71%	80%	72%	48%
Reserved	56%	60%	56%	55%
Meter	59%	70%	64%	59%
Disabled	34%	41%	45%	36%
Other	46%	44%	33%	28%
TOTAL	67%	75%	68%	49%

Highest occupancy values highlighted in Green. Note that General parking spaces represent 73% of the total auto parking spaces.

Overall, parking occupancy reaches a mid-day peak of 75 percent. During this period, the General parking spaces are 80 percent occupied and the Reserved parking spaces are 60 percent occupied. General parking spaces represent 73 percent of the total auto parking supply, and Reserved spaces represent 14 percent.

During the mid-morning and mid-afternoon, the General parking spaces are at 71 and 72 percent occupancies respectively, less than 10 percent below the mid-day peak period.

During weekday site visits conducted by Opus during January, February and March 2008, the following additional observations were noted:

- Although available General spaces could always be found, by mid-morning most of the empty spaces were in the end of the parking lots away from the centre of the University. Drivers entering these lots at the time would likely perceive the lot as “nearly full”.

- Except for the metered parking, nearly all vehicles parked for at least three hours or more, with some vehicles parked for the entire survey day. Metered parking generally had a turnover rate of two hours or less.

Occupancy by Parking Lot

As discussed above, TABLE 5.4 indicated that the General parking spaces are 80 percent occupied during the mid-day period, and that the Total parking supply is 75 percent occupied during this period. Mid-morning and mid-afternoon occupancies are marginally lower, by less than 10 percent.

There are overall values for all parking lots combined. The overall occupancy results therefore suggest that the busier parking lots would have occupancies higher than 80 percent.

To gain further insight into the current availability of parking, the 2007 mid-day occupancy was analyzed at the 10 largest parking lots. The 10 largest parking lots provide 79 percent of the total parking supply and 76 percent of the parking spaces within these lots are categorized as General. The 10 largest parking lots are the main initial destinations for the majority of drivers seeking a parking space. The results are presented in FIGURE 5.3.

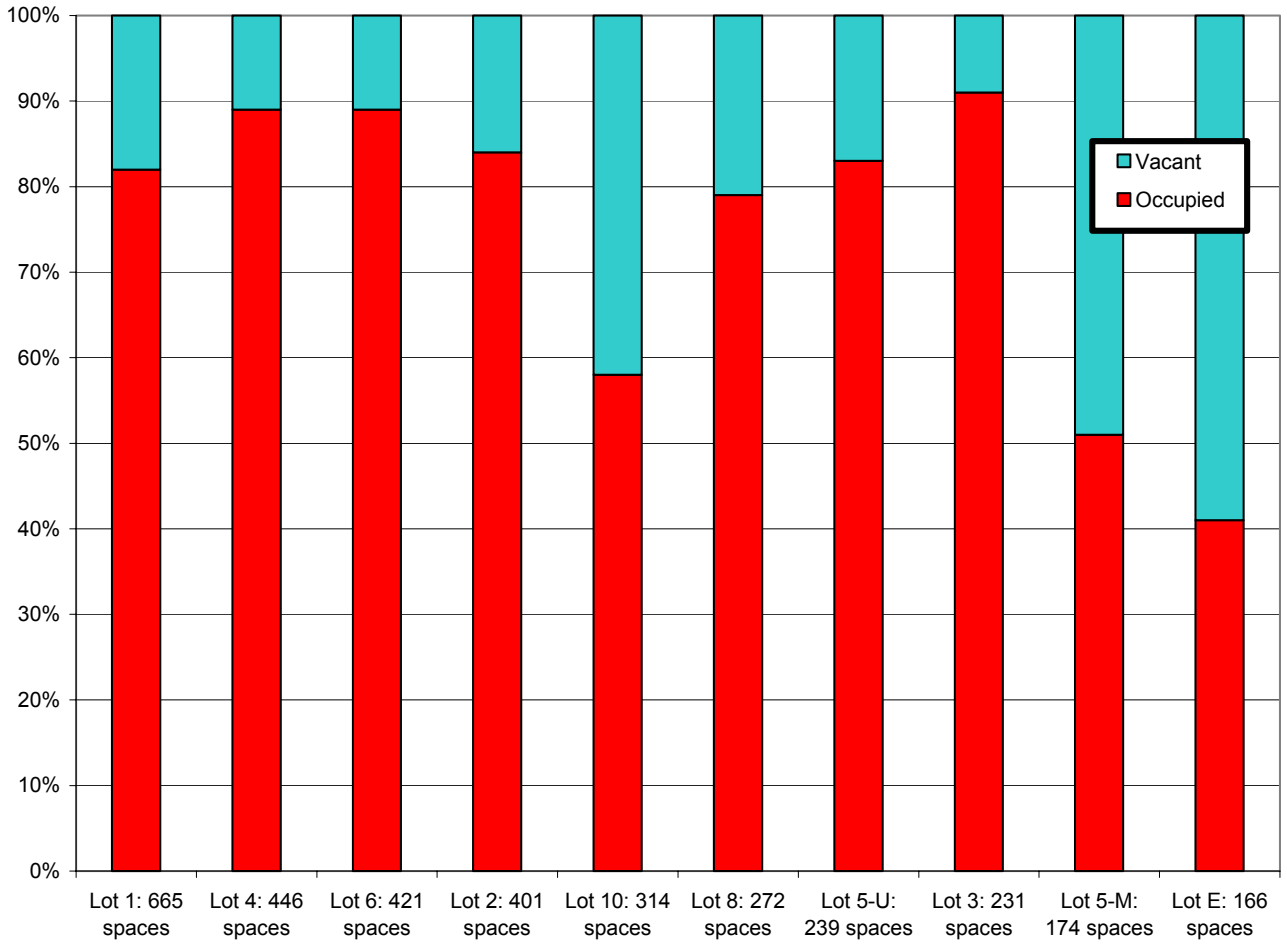


FIGURE 5.3 2007 MID-DAY PARKING LOT OCCUPANCY AT THE 10 LARGEST PARKING LOTS

The results reveal that six of the 10 largest parking lots on campus, namely lots 1, 2, 3, 4, 5U, 6, are between 80 and 90 percent full during the mid-day period, and Lot 8 is just under 80 percent full. In particular, Lots 3, 4, and 6 which together provide 1,098 spaces or 26 percent of the campus total, are close to or exceeding 90 percent full during the mid-day period. The mid-morning and mid-afternoon occupancies for the 10 largest lots were found to be within a few percentages of the mid-day peak.

Lots 10, 5M, and E were found to have significantly lower occupancies compared to the other seven large parking lots. Lot 10 is in a relatively remote location, and is likely a "last resort" option when users perceive Lot 6 to be full. All the spaces in Lot 5M are designated for Student Residents and are therefore not available for General parking. Lot E is inside the Ring and provides Reserved and Meter parking only, with General parking available only after 4:30pm to accommodate the parking needs of evening events.

Excluding Lots 10, 5M, and E, the weighted average occupancy for the other seven largest parking lots during the mid-day period is 85 percent: effectively full conditions.

Occupancy Conclusions

The results of the parking occupancy analysis indicate that while there is some reserve parking supply on the University of Victoria campus during peak times compared to current demand, the University is quickly approaching "full parking" conditions. The largest and most popular parking lots are approaching or exceeding "effectively full" conditions during the mid-day period, and occupancies during the mid-morning and mid-afternoon periods are not much lower.

The remaining available supply exists in the more remote parking lots, such as Lot 10, which is approaching 60 percent occupancy during peak periods. As well, parking lots where the parking spaces are Reserved or designated for Student Residents tend to have lower occupancies.

It is therefore **recommended** that planning for the future expansion of the available on-campus parking should commence immediately. The amount of parking that should be planned for is discussed starting in the Section below.

5.4 Parking Supply and Demand Ratios

The current ratio of parking supply and demand to campus population is presented in TABLE 5.5. The current ratio is 0.18 parking spaces supplied for each member of the campus community; and 0.13 parking space occupied during the peak period for each member of the campus community.

TABLE 5.5 RATIO OF PARKING SUPPLY AND DEMAND TO CAMPUS POPULATION

PARKING AND POPULATION				TOTAL
Current Parking Supply				4,236
2007 Peak Parking Demand (75% of Supply, from Table 5.4)				3,177
2008 Campus Population Component	Undergraduate Students	Graduate Students	Faculty and Staff	
	17,000	2,500	4,100	23,600
UVic RATIO: Parking Supply / Population				0.18
UVic RATIO: Peak Parking Demand / Population				0.13

The ratios for parking supply and peak parking demand at the University of Victoria were compared to data provided in the industry standard reference manual titled *Parking Generation* (3rd edition, published in 2004 by the Institute of Transportation Engineers). The ITE manual collects information from a variety of surveys conducted in North America. For the University / College land use, the ITE compiled data from 11 campuses in Canada and the United States. The comparison results are presented in TABLE 5.6, and are categorized by Urban or Suburban universities.

TABLE 5.6 COMPARISON OF PARKING RATIOS WITH ITE DATA

MEASURE	RATIO
PARKING SUPPLY RATIO	
UVic Ratio: Parking Supply / Population	0.18
ITE Supply Ratio for Suburban Universities	0.33
ITE Supply Ratio for Urban Universities	0.22
PEAK PARKING DEMAND RATIO	
UVic Ratio: Peak Parking Demand / Population	0.13
ITE Demand Ratio for Suburban Universities	0.30
ITE Demand Ratio for Urban Universities	0.17

In Canada, McGill University in Montreal and the University of Toronto are examples of urban campuses, where the university buildings and facilities are integrated into urbanized city contexts. In contrast, the University of Northern British Columbia (UNBC) in Prince George and Simon Fraser University (SFU) in Burnaby are examples of suburban universities.

The University of Victoria may be classified as a suburban campus with some urban characteristics, since it is located in an area of relatively low density development, but it is not as physically isolated from the surrounding community as UNBC and SFU.

Compared to urban universities, the results indicate that the University of Victoria has been efficiently functioning by providing 0.04 less spaces per person (0.18 compared to 0.22) than the average parking supply rate at urban universities. This represents an 18 percent reduction in supply.

The level of parking supply efficiency is even more pronounced when compared to suburban universities. The University of Victoria has been providing 0.15 less parking spaces per person (0.18 compared to 0.33) than the average parking supply rate at suburban universities. This represents a 45 percent reduction in supply.

The University of Victoria's peak parking demand is also 0.04 less spaces per person (0.13 compared to 0.17) than the average peak parking demand at urban universities. This is a 24 percent reduction in parking demand, and increases to a 56 percent reduction in parking demand when compared to suburban universities.

This comparison suggests that the "early winners" in terms of transportation demand management initiatives have proven to be successful at the University of Victoria. In order to achieve further reductions in the future demand for parking at the University, more aggressive and enhanced transportation demand management initiatives beyond the current TDM programs will likely be required. While there is always variability in the effectiveness of various TDM initiatives, a future target of a 20 percent reduction in parking demand (compared to current conditions with existing TDM programs) should be achievable if a comprehensive set of integrated enhanced TDM measures are introduced in an orderly manner.

6.0 PARKING MODEL VARIABLES

6.1 Parking Model Introduction

To forecast the future parking requirements at the University of Victoria, a parking model was constructed to analyze future conditions. The variables in the model are:

- The University's population in terms of undergraduate students, graduate students, faculty and staff.
- The rate of growth of the University's population.
- The ratio of parking supply to the University's population.
- The ratio of parking demand to the University's population.
- The impact of enhanced Transportation Demand Management initiatives on parking demand.
- The costs and revenues associated with providing parking.

These model elements are discussed in the following sections.

6.2 University Population and Growth Estimates

The current University of Victoria campus population is approximately 17,000 undergraduate students, 2,500 graduate students, and 4,100 faculty and staff, for a total campus population of about 23,600.

The University is targeting increases of about 2 percent per year in the number of undergraduate students, and 7 percent per year in the number of graduate students.

These growth rates, if sustained for 20 years, will result in 25,200 undergraduate students and 9,700 graduate students in the year 2028. The proportionally increased number of faculty and staff will be 7,300, and the total campus population would be 42,200, a 79 percent increase compared to 2008.

These are growth targets; actual future student numbers will depend on a variety of highly variable local, regional, national and international factors. It is particularly difficult to forecast growth rates in the more distant future. It is therefore important to constantly update the data about the University population, and to track and project trends on a continuous basis.

For the purpose of forecasting future parking requirements, Opus developed Low, Medium and Long Term growth rates, as outlined in TABLE 6.1.

TABLE 6.1 UNIVERSITY POPULATION GROWTH ESTIMATES FOR THE PARKING MODEL

POPULATION COMPONENT	COMPOUND ANNUAL GROWTH RATE ESTIMATE		
	LOW	MEDIUM	HIGH
Undergraduate Students	1%	2%	3%
Graduate Students	5%	7%	9%
Faculty and Staff*	1.8%	3%	4.2%
TOTAL POPULATION	**1.8%**	**3%**	**4.2%**

*Growth rate estimates for Faculty and Staff are consistent with current ratio of Faculty and Staff to Total Students.

6.3 Supply and Demand Ratios

From the information presented in Section 5 of this report, the University if Victoria's current parking supply and peak demand ratios are summarized in TABLE 6.2.

TABLE 6.2 UNIVERSITY SUPPLY AND DEMAND RATIOS FOR THE PARKING MODEL

MEASURE	VALUE
2007 Parking Supply to University Population Ratio	0.18
Peak Parking Demand to University Population Ratio	0.13
Optimal Supply Ratio (1.15 of the Peak Parking Demand to University Population Ratio)	0.15

The optimal supply ratio, presented in TABLE 6.2 as 0.15 spaces per University population, represents a situation where the parking supply would be 15 percent higher than the peak demand of 0.13 spaces per population. In other words, if the optimal supply is provided, the peak parking demand would be 85 percent of the supply throughout the campus. This is a reasonable planning target to set for a major parking generator like a University campus.

6.4 Impact of Enhanced TDM Initiatives

The ratios presented in TABLE 6.2 represent current parking demand conditions with the existing levels of transportation demand management (TDM) initiatives. If enhanced TDM initiatives are introduced at the University of Victoria, there is potential for a further reduction in parking demand.

The full list of enhanced Transportation Demand Management initiatives that can be considered for implementation at the University of Victoria is discussed in detail in Section 8 of this report.

The effectiveness of the enhanced TDM measures will vary according to many variables, including education, publicity, changes in social norms and expectations, and overall economic conditions. Research into TDM initiatives suggests that a program of well-supported and sustained enhanced TDM initiatives can achieve a 20 percent reduction in demand.

Not all of the suggested enhanced TDM measures may be successfully implemented. Of the implemented measures, some will be more effective than others. The 20 percent reduction in parking demand (compared to existing conditions) with the introduction of enhanced TDM is therefore both an expectation and a target.

For the purposes of the parking model development, it was assumed that enhanced TDM measures will be introduced gradually over time, and therefore their effectiveness will be gradual and cumulative.

It was therefore assumed that the enhanced TDM measures will achieve an ultimate reduction in parking demand of 20 percent at the end of 20 years. This translates to an annual compound rate of 0.9 percent per year in reduced parking demand with the introduction of enhanced TDM measures.

6.5 Parking Costs and Revenues

Cost of Providing Parking

The 2008 estimates for providing parking spaces are summarized in TABLE 6.3. These costs vary widely depending on the individual specifications of the site and the design characteristics of the facility being considered. The cost of raw material (concrete and steel) has a great impact on these estimates. In general there are significant upward inflationary pressures on the cost of new parking facilities, and these cost estimates can therefore be expected to increase in future years.

TABLE 6.3 2008 COST OF PROVIDING PARKING

TYPE OF PARKING	COST PER SPACE
Surface Parking	$10,000
Structure Parking	$40,000
Underground Parking	$45,000

At the University of Victoria, the combination of the growth plans for the campus population, including the addition of six new buildings in 2008 and 2009, with the geographically limited site, means that less land will be available for the provision of parking in the future.

At-grade parking lots are the least efficient (and least expensive) method of providing parking. At-grade parking lots are also one of the least efficient forms of land use, since the land is used for storage of autos during the day and sits vacant for many hours of the year. At-grade parking lots provide no contribution to academic or social growth or productivity, while consuming valuable land.

As the University grows and densifies, more efficient (and more expensive) facilities, such as multi-level parkades, will need to be considered, if a need for the provision of additional parking is established.

The above discussion is consistent with Principle 9, Section 4 of the 2003 Campus Plan, which indicates that the University recognizes the need to minimize surface parking and pursue alternatives. Policy direction #10 refers to the phasing out of vehicle parking within the Ring Road over time and replacing it outside of the Ring Road in a combination of strategies, including parking structures.

Revenue from Parking

In Section 5.2 of this report, it was indicated that current annual parking revenues at the University of Victoria are $2.96 Million. This represents an average revenue of $700 per parking space per year. These revenues are derived from the current parking costs (also outlined in Section 5.2) that users pay for the privilege of parking at the campus.

The costs charged to park at the University are controlled by the University Board of Governors. In general, the costs charged for the use of parking need to be perceived by the parking users as providing reasonable value. The costs also need to be consistent with the University's local geographical context.

Higher costs to park do not necessarily translate into higher revenues. Higher parking costs may result in users switching travel modes and choosing not to park on campus, or switching from pre-paid to pay-per-use. For example, higher pre-paid permit costs have resulted in a revenue shift such that an increasing proportion of parking revenue is obtained from daily (dispenser) parking.

As the cost of parking increases fewer users may choose to pre-purchase parking permits, and more users may choose to pay the higher per-use rates. From a sustainability perspective, these are attractive trends, since pre-paid permit parking represents a volume discount that discourages the consideration of non-auto alternatives on a per-trip basis. Higher parking costs may be one of the tools used to discourage single-auto use and encourage a shift to more sustainable travel options, while possibly being revenue neutral.

7.0 FUTURE PARKING REQUIREMENTS

7.1 Campus Population Growth Scenarios

The current campus population is approximately 23,600 (students, faculty and staff). The parking model growth scenarios for the population of the campus, using the low, moderate and high growth rates described in Section 6.2, are presented in FIGURE 7.1.

The year in which specific populations may occur is less important than the range of campus populations that needs to be planned for in the coming 20 years. With low growth, a campus population of 34,000 can be expected in the long term. With medium growth, the long-term population is expected to be in the 42,600 range. With sustained high growth, the campus population could reach 53,750.

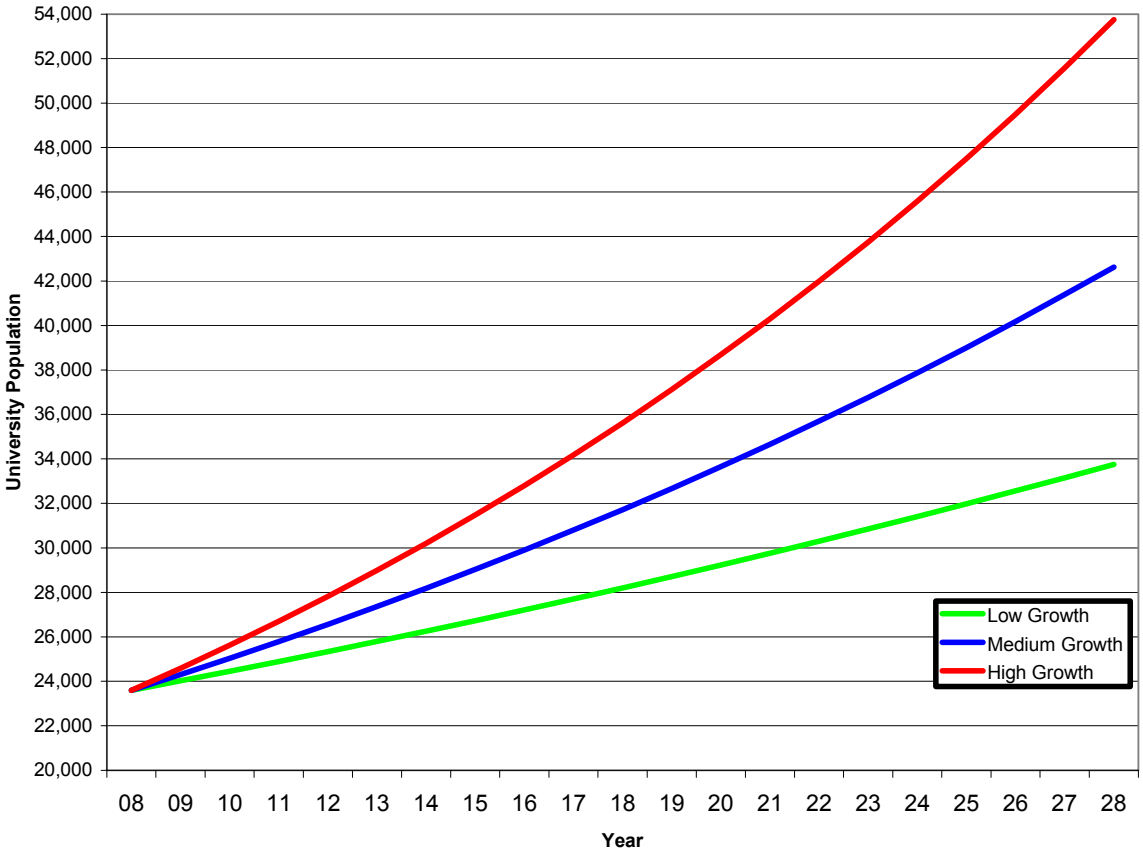


FIGURE 7.1 CAMPUS POPULATION GROWTH SCENARIOS

The discussion on parking requirements presented below links various levels of parking demand and supply to the campus population. FIGURE 7.1 can be referred to estimate the likely year in which these population levels could be reached, under the different growth scenarios.

7.2 Future Parking Requirements with the Current Parking Supply Ratio

The current parking supply of 4,236 spaces is provided at a ratio of 0.18 spaces per University population. The parking model was applied to determine the future parking requirements if this ratio was maintained. The results are shown in FIGURE 7.2. The future long-term parking requirements with a low growth scenario would be around 6,050 spaces. With medium growth, the long term requirements would be 7,850 spaces. And if high growth materializes and is sustained, the long term requirements would be for approximately 9,650 spaces.

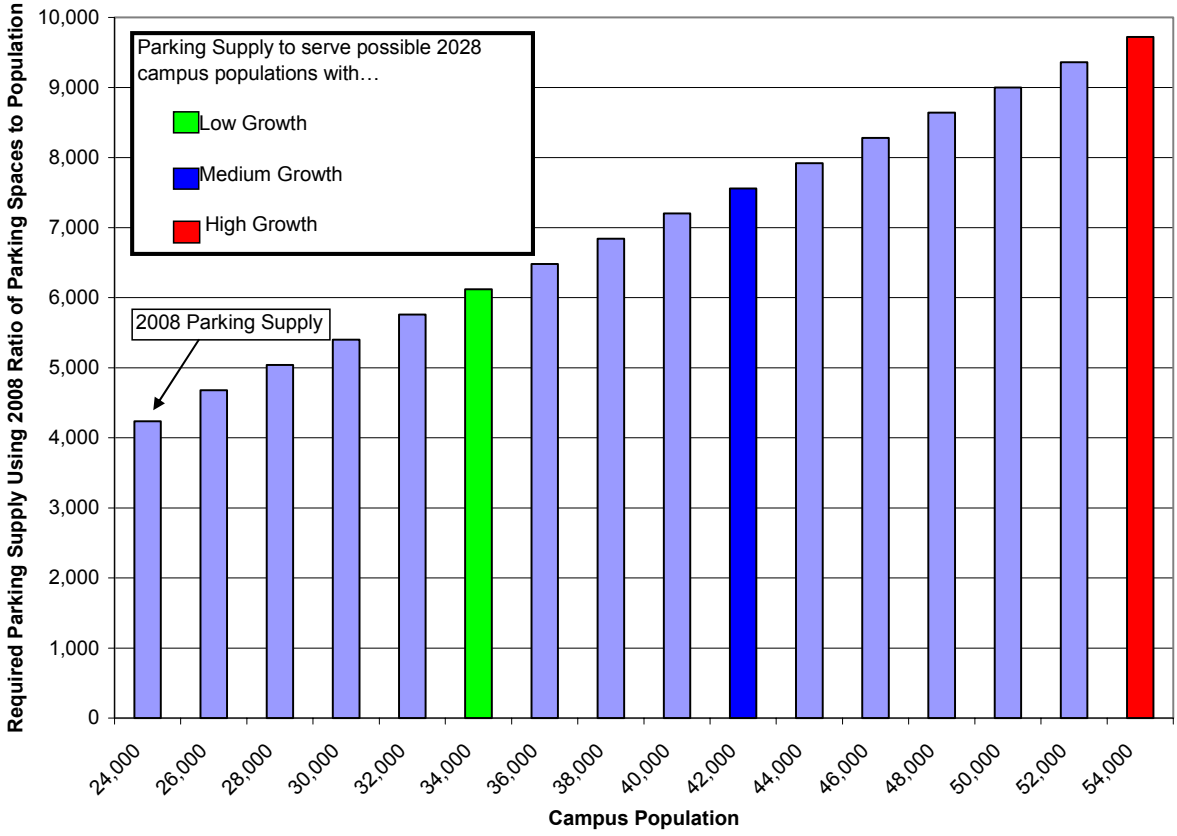


FIGURE 7.2 FUTURE PARKING REQUIREMENTS USING THE CURRENT PARKING SUPPLY RATIO

7.3 Future Parking Requirements with the Current Demand Characteristics

The current peak parking demand at the University is 0.13 spaces per population. If this level of peak demand is maintained, the optimal supply level would be 0.15 spaces per population (a 15 percent increase over the peak demand). The parking model was applied to forecast the future parking requirements with these demand characteristics, and the results are shown in FIGURE 7.3. The results indicate that with a low growth scenario, an optimal long-term parking supply of 5,100 should be planned for. With medium and high growth, the optimal long-term planning levels of parking supply are 6,300 and 8,100 respectively. These values compare to the current parking supply value of 4,236 spaces.

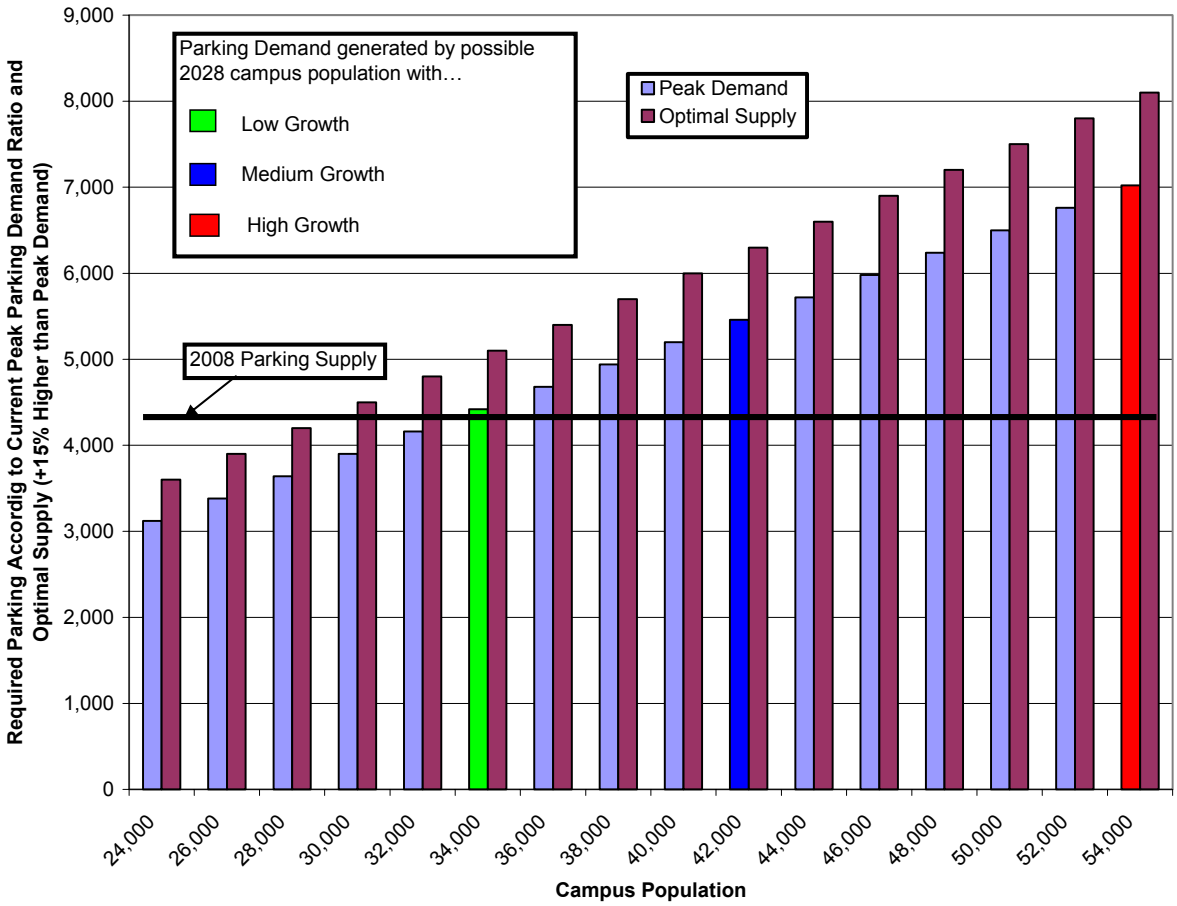


FIGURE 7.3 FUTURE PARKING REQUIREMENTS USING THE CURRENT PARKING DEMAND RATIO (AND RELEVANT OPTIMAL SUPPLY OF +15%)

7.4 Future Parking Requirements with Enhanced TDM Measures

The parking model was used to test the impact of enhanced TDM measures on the optimal parking supply levels shown in FIGURE 7.3. As described in Section 6.4, a set of integrated enhanced TDM measures can be expected to have a long term impact of reducing overall parking demand by 20 percent, compared to the current demand ratio (which takes into account current TDM measures). The impact of enhanced TDM measures translating to a 20 percent reduction in the long-term optimal supply levels should be considered. The results are shown in FIGURE 7.4.

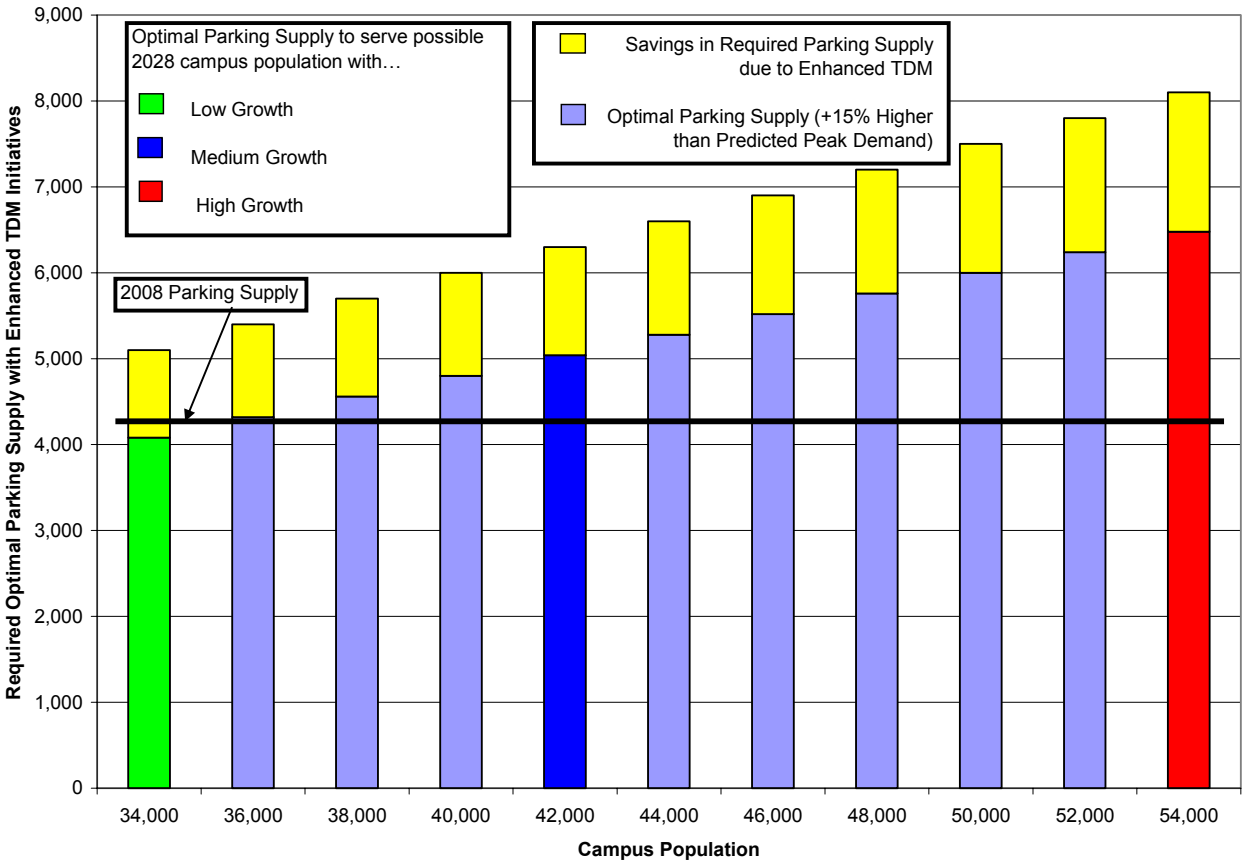


FIGURE 7.4 OPTIMAL PARKING SUPPLY REQUIREMENTS WITH ENHANCED TDM INITIATIVE

Since the cumulative impact of the TDM measures will be experienced in the long term, this analysis started at the 34,000 campus population level, representing the 20 year possible population level with a low growth rate. The enhanced TDM initiatives that can be considered are discussed in Section 8 of this report.

With enhanced TDM initiatives, the future long-term optimal parking requirements with a low growth scenario would be around 4,080 spaces. With medium growth, the long term optimal supply requirements would be 5,040 spaces. If high growth materializes and is sustained, the long term optimal supply requirements would be for approximately 6,480 spaces.

As shown in FIGURE 7.4, with enhanced TDM and a low long-term growth rate, the optimal parking supply level would be marginally lower than today's total parking supply (4,236 spaces). In other words, the enhanced TDM measures would negate the increased demand generated by the low growth rate scenario.

Since TDM measures do require time to be introduced, to become entrenched and to influence travel behaviour, it would remain strategically prudent to plan for a future parking supply that is greater than what is currently available today.

7.5 Recommended Future Parking Supply Strategy

The parking supply requirements generated by the parking model and the different variables that were tested are summarized in TABLE 7.1.

TABLE 7.1 PARKING SUPPLY REQUIREMENTS SUMMARY

GROWTH SCENARIO	ESTIMATED CAMPUS POPULATION IN THE YEAR 2028	PARKING SUPPLY ACCORDING TO…		
		Current Supply Ratio: 0.18 per population	Optimal Ratio: Current Peak Demand +15%: 0.15 per population	Optimal Ratio with Enhanced TDM: 20% reduction
Low	34,000	6,050	5,100	4,080
Medium	42,600	7,850	6,300	5,040
High	53,750	9,650	8,100	6,480

The range of future parking supply that the University should plan for in the coming twenty years is shown in Green. It is **recommended** that the University should plan for a total parking supply of between 5,040 and 6,480 spaces by the year 2028. This represents a net increase of between 800 and 2,240 compared to current parking supply conditions.

The recommended range of total parking supply is both robust and allows for flexible implementation. The range is robust because it provides sufficient parking supply for a variety of future growth scenarios that may materialize at the University. The **recommended** flexible implementation plan is as follows:

- With a completion target between the years 2013 and 2018 (5 to 10 year horizon), plan for a total parking supply of approximately 5,040 spaces, a net increase of approximately 800 spaces. The value of 5,040 is expected to be sufficient if the medium growth rate materializes and is sustained for the long-term; and if the enhanced transportation demand management measures are introduced and achieve a 20 percent reduction in demand.

- Monitor the growth in the campus population, travel behaviour, and parking demand, on a year-to-year basis. If the University's growth is consistent with the medium growth scenario, and the effectiveness of the enhanced TDM measures is as expected, no further increase in the parking supply beyond the 5,040 spaces would be required for the foreseeable future.

- If the University's growth is faster than the estimated medium rate, or if the effectiveness of the enhanced TDM measures is lower than expected, planning for a total parking supply of up to 6,480 spaces by the year 2028 can proceed, once the initial expansion to 5,040 spaces is completed. The value of 6,480 would need to be confirmed as the actual growth pattern and travel behaviour changes become evident.

This two-step approach, with the first major increase in parking supply scheduled for a 5 to 10 year horizon and the second major increase, if needed, scheduled for a 20 year horizon, will allow the University flexibility to fine-tune the parking requirements and to measure and respond to the growth rate and the travel patterns as they materialize.

In the short-term, between 2008 and 2013 as the planning proceeds for increasing the total supply to 5,040 spaces, the following parking management actions should be considered:

- Classify more parking spaces as General, and fewer parking spaces as Reserved and Student Resident.

- Enhance way-finding signs to encourage drivers to use the more remote parking lots where parking spaces are typically available. For example, Lot 10 may be better utilized with enhanced signage directing drivers to it.

- Implement the enhanced Transportation Demand Management measures (discussed in Section 8) that encourage shifts in travel behaviour away from the singe occupant vehicle.

7.6 Possible Future Parkade Location

As discussed previously in Section 6.5, the addition of further surface parking on campus is considered undesirable. Future major expansions in the parking supply, for example to provide the recommended additional 800 spaces by the years 2013 to 2018, would require the construction of an on-campus parkade.

Site options for a possible future parkade were considered by the Opus team. The sites of current surface lots 1, 2 and 3, 4, and 6, as shown in FIGURE 7.5, were considered the most feasible for evaluation and analysis. It is emphasized that if a parkade is built on the site of an existing parking lot, the parkade capacity has to replace the existing lot capacity and add the net additional required parking supply.

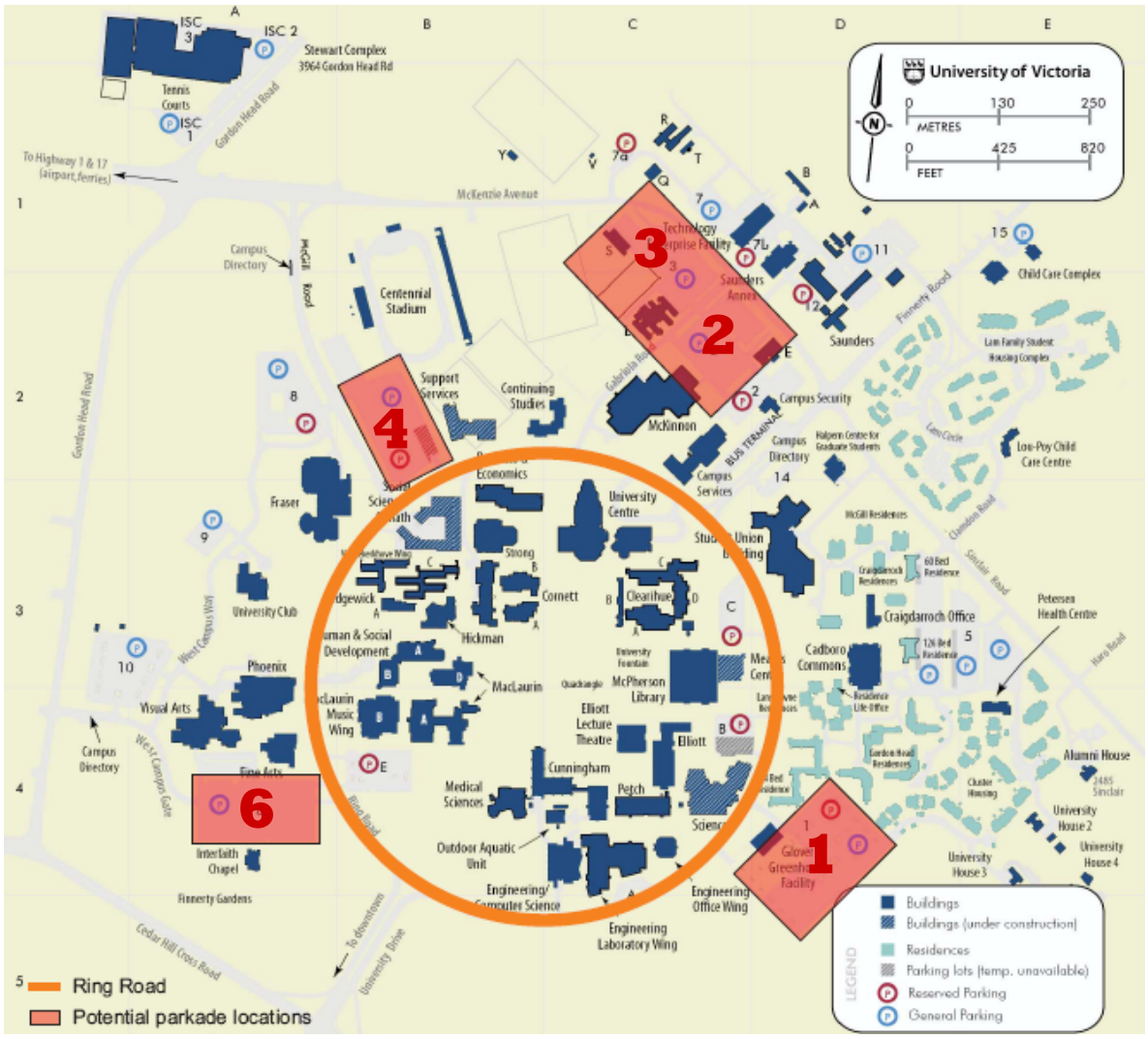


FIGURE 7.5 POSSIBLE FUTURE PARKADE SITE OPTIONS

The following criteria were used to rank these potential sites:

- Existing lot occupancy i.e. does it currently have high demand.
- Access to external road network to reduce need to use the Ring Road for access.
- Proximity to campus buildings / facilities to reduce walking distances for pedestrians.

- Support for a village centre concept as a transportation hub. The area near Lots 2 / 3, close to the transit exchange, the library and the student union building, is considered an ideal location for the development of a village centre that will serve as a transportation hub. The Campus Plan section on Student and Staff Services – Village Centre, and policy direction LB#24: Transportation Hub, emphasize that the village centre will continue to operate as the primary public transportation hub of the University.

- Least impact on traffic, pedestrians and aesthetics of surrounding University land uses, particularly residential neighbourhoods.

The evaluation results for the potential parkade sites are shown in TABLE 7.2. A ranking of HIGH, MEDIUM and LOW was used to rank the potential locations, with:

- HIGH = best meets criteria
- MEDIUM = mostly meets criteria
- LOW = meets criteria least

TABLE 7.2 EVALUATION OF POTENTIAL PARKADE SITES

CRITERIA	POTENTIAL LOCATION – EXISTING LOT			
	Lots 2 / 3	Lot 4	Lot 6	Lot 1
Existing lot occupancy	HIGH	HIGH	HIGH	MEDIUM
Access to external road network	HIGH	HIGH	HIGH	LOW
Proximity to campus buildings / facilities	HIGH	HIGH	LOW	LOW
Integration with village centre concept	HIGH	LOW	LOW	LOW
Least impact on surrounding University land uses	MEDIUM	MEDIUM	LOW	HIGH
RANKING	**FIRST**	**SECOND**	**THIRD**	**FOURTH**

The evaluation findings are as follows:

- Lots 2 / 3 and 4 have higher lot occupancies, and a parkade would best meet the campus demand at these locations.

- Use of the Ring Road is currently required to access Lot 1. Its location on the campus relative to the surrounding road network and campus buildings limits other access alternatives.

- Lots 2 / 3 and 4 are most centrally located relative to the concentration of active buildings within the Ring Road.

- Due to its more remote location, Lot 1 would have the least impact on the surrounding area. Lots 2 / 3 and 4 are located close to the most active areas of the campus and would have some impact. Although Lot 6 is generally remote, its location and access to the surrounding area could have major impacts on increasing the entering and exiting traffic on Gordon Head Road, as well as its location next to the Interfaith Chapel and Finnerty Gardens.

Based on the evaluation, Lots 2 / 3 would be the most favourable sites for a possible future parkade location. The site of Lots 2 / 3 has the additional advantage that a parkade may be integrated into the village centre concept on campus. This in turn may allow for the planning of residential and commercial activities, from which funding may be used to subsidise the capital and / or maintenance costs of the parkade. By integrating the parkade within a village centre that includes residential and commercial activity, the parkade will be better used in the May to August period when campus activity is lowest, as well as overnight.

Off-Campus Parking Option

An alternative to providing additional on-campus parking supply is to secure the required additional number of parking spaces at off-campus parking areas augmented by a shuttle service. The provision of off-campus parking may provide a short-term alternative to investing in on-campus parking facilities. However, in general park-and-shuttle services are considered undesirable for the following reasons:

- A mode transfer (car to shuttle inbound; shuttle to car outbound) introduces delays and uncertainty to the trip time. Trips that involve a mode transfer are perceived to be much less desirable.

- Additional travel, circulation, and delays could be generated as campus visitors first drive to the campus, and upon not finding an on-campus parking space exit the campus and head towards the off-campus parking area.

- Remote off-campus parking areas are more difficult to secure and to enforce.

- In the case of land not owned by the University, unless a secure long-term lease for the use of the off-campus parking area is arranged, the University's parking management strategy would be disrupted if the off-campus land owner decides to terminate the arrangement to make better use of the land.

The **recommendation** of this study is therefore to plan for an on-campus parkade in or near the area where Lots 2 and 3 are currently located.

7.7 Parkade Costs, Revenue and Financing

Construction Costs

The construction cost for providing additional parking spaces was previously discussed in Section 6.5. The cost in 2008 dollars of providing a range of additional parking spaces in a parkade structure, at a cost of $40,000 per space, is shown in FIGURE 7.6.

The range of values shown in this FIGURE is consistent with the recommendation to consider providing net additional 800 spaces within the 2013 to 2018 timeframe.

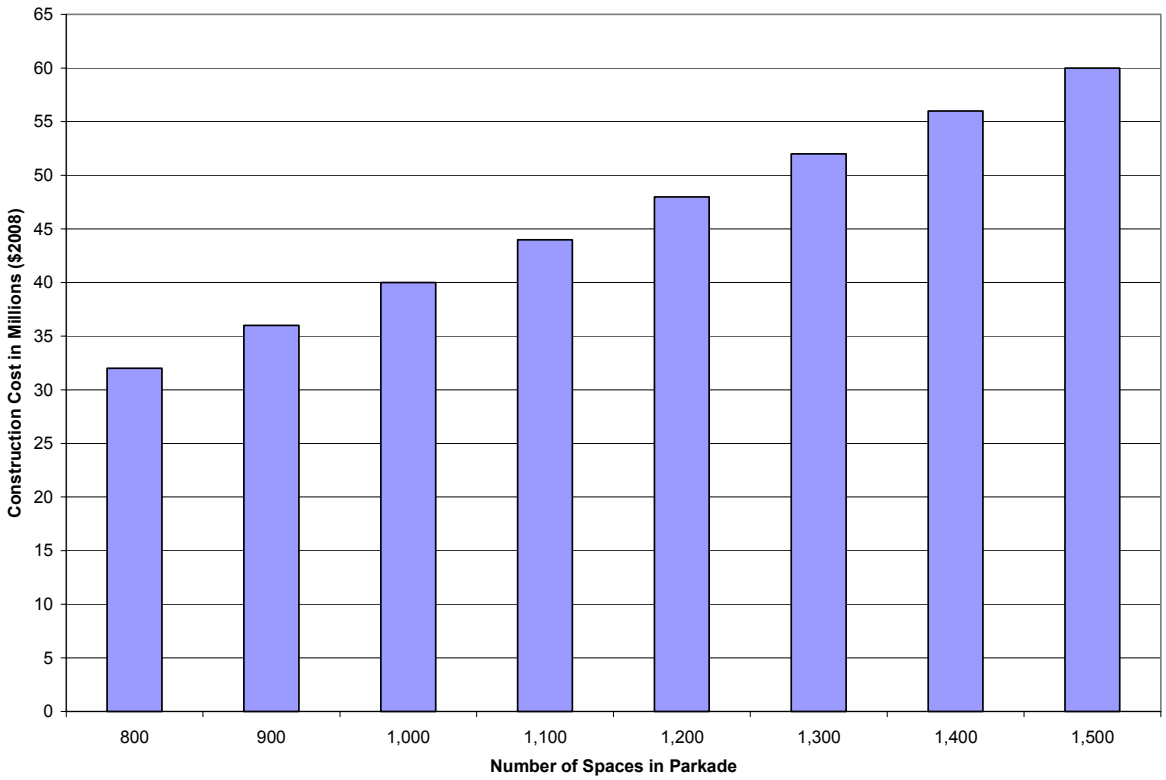


FIGURE 7.6 PARKADE CONSTRUCTION COSTS

Lots 2 and 3 together provide about 630 spaces; if all these spaces are to be accommodated within the parkade, the total parkade capacity could be as high as 1,430 spaces.

As shown, the cost of a parkade in 2008 dollars will vary from $32 Million (800 spaces) to $57 Million (1,430 spaces).

Maintenance Costs

In addition to the construction costs shown in FIGURE 7.6, the parkade maintenance costs are estimated at $1,000 per space per year, in 2008 dollars.

Parking Revenue

In Section 5.2 of this report, the following parking revenue budget for the 2007/2008 fiscal year was presented:

- Parking Meter and Dispenser Revenue: $970,000
- Parking Permit Sale Revenue: $1,800,000
- Parking Fines: $190,000

TOTAL: $2,960,000

With the existing 4,236 parking spaces, this revenue is equivalent to $700 in revenue per space per year.

The provision of a parkade offers a potential opportunity for higher parking rates being charged on a larger proportion of parking spaces, since users may be willing to pay higher rates to park in a conveniently located covered structure, particularly if it is perceived to be secure.

However, the higher rates may discourage some users from parking, and encourage either the use of other less costly parking locations, or a change of travel mode. Even with higher rates for a parking space in a future parkade, there may not be a net increase in the per-space revenue presented above.

Land Value

The provision of a parkade may allow land that is currently used for surface parking to be developed into higher value use. The amount of land that may become available due to the provision of the parkade is dependent on the floor template design of the parkade (number of parking spaces per floor).

The value of the land that becomes available on the University of Victoria can be measured in different ways:

- Societal. For example, land that is converted from a parking lot to a community garden open to Campus visitors has a high societal value (an example is the Rose Garden at UBC).

- Educational. Parking lot land that is converted to an academic building to support the educational mission of the University has significant value, and contributes to the growth and reputation of the University. As the University grows, the pressure mounts to build more academic facilities that add educational value to the campus far higher than the value of at-grade parking lots.

- Market-Based Development. Land gains significant financial value if it converted from parking lot use to market-based revenue generating developments. For example, a mixed use residential / office / retail development on land that was previously an at-grade parking lot represents a dramatic escalation of the value of the land.

It is also noted that the parkade itself can be designed with a revenue generating component in the form of ground-level retail. This would be particularly successful if the parkade is designed as part of the main campus transportation hub and integrated into a village centre concept with surrounding complementary land uses.

In summary, an important consideration in the construction of a parkade is the potentially significant gain in the value of the land that was previously used as surface parking. The gain in land value and the new opportunities presented with a higher form of land use may partially or fully compensate for the parkade construction costs shown in FIGURE 7.6.

Financing Options

The construction of a possible parkade can be financed using three basic models:

- Loan Financing

The traditional model is for the University to secure a long-term loan to finance the construction, and to repay the loan using the revenue stream generated from parking-related sources. This model usually results in high interest payments. A loan for $32 Million amortized over 20 years at a 5 percent interest rate will require $18.5 Million in interest payments.

- DBFO (Design, Build, Finance, Operate)

Under the DBFO model, the University can select (through a competitive process) a third party to assume the responsibility for designing, building, financing, operating, and maintaining the parkade. The third party therefore assumes the financing costs in return for the ability to make a profit from the parking operations. Performance standard agreements would be needed to ensure that the parkade is managed and operated in a manner that satisfies the University.

- Partnership

In the partnership model, the University can partner with a third party to share the cost of parkade construction, operation and maintenance in return for a share of the profits. A variation on the DBFO model, a Partnership entails sharing of the risks and rewards, rather than transferring the risk and the reward. However, the Partnership model does require more hands-on involvement from the University in the running of the parkade, compared to the DBFO.

The decision on which financing option to select depends on a variety of factors, including:

- The University's ability and willingness to secure and service loans;
- The availability of interested DBFO third parties;
- The availability of interested Partners;
- The University's willingness to transfer or share risks, rewards, and operational responsibilities with other parties.

Next Steps

If the University agrees with the recommendation to provide a parkade that would achieve a net increase of 800 parking spaces at a cost of $32 Million (in 2008 dollars, for an 800 space parkade), the next steps should consist of:

1. Creating a University Parkade Project Steering Committee including representatives from all on-campus stakeholders.

2. The Steering Committee should confirm that Lots 2 / 3 are the preferred parkade location, or otherwise commission a more detailed evaluation of the available parkade location options.

3. The Steering Committee should prepare the Terms of Reference for a Parkade Conceptual Design Study. The Terms of Reference should define the scope of the parkade and the design philosophy, including integration with a Village Centre concept.

4. The Steering Committee should then commission the Parkade Conceptual Design Study, with the main objectives of developing and evaluating options for the parkade, including cost estimates, and obtaining and incorporating stakeholder feedback on the options.

5. At the same time, the Steering Committee should explore in detail the financing alternatives available to construct the parkade, and select the financing model that is most suitable for the University.

The subsequent steps would then include detailed design, securing project financing, and construction.

PART THREE

ENHANCED TRANSPORTATION DEMAND MANAGEMENT

8.0 TRANSPORTATION DEMAND MANAGEMENT

8.1 Introduction

The traditional objective of a TDM program for a campus based environment are to reduce or stabilise parking demands particularly by private vehicles. Additional objectives include increased travel options for staff, faculty, students and visitors to the University so that there is less need, reliance and dependence on owning and using a private vehicle so increasing equality and making the university more inclusive. The University currently has an impressive TDM program in place, but there are more enhanced policies and strategies that can be considered for implementation.

There is growing recognition of the impact of vehicle emissions on society and the environment, including increased rates of asthma due to poor air quality, increased rates of obesity due to lack of regular exercise, and increased evidence of climate change due to global warning.

In March 2008, university Presidents from across British Columbia signed a Climate Change Statement of Action committing their institutions to a leadership role in reducing emissions of greenhouse gases. These actions will also help the universities achieve the ambitious targets for reductions and carbon neutrality set out by the Province of British Columbia.

The environmental, social, and economic benefits of TDM programs include reduced vehicle emissions, increasing personal exercise and transit ridership, as well as personal mode choice. The University of Victoria has displayed interest in overall sustainability and alternative transportation as illustrated by the early adoption of the UPASS program in 1998/99 and continued support and funding for the UVic Travel Choices program.

Research into TDM has found evidence that institutions that implement forwarding thinking, innovative and sometimes controversial policies and strategies attract the most forwarding thinking and innovative staff, faculty and students who respect such changes, and want to be part of an institution that has adopted them.

However, as transportation and commuting are necessary, any measures to reduce the ease of driving a private vehicle to campus as a sole-occupant, needs to be balanced with measures to increase the ease of travelling to campus by alternative modes, be it car-pooling, transit, cycling or walking.

8.2 Enhanced TDM Policies and Strategies

Section 4 of the Campus Plan on Travel and Parking highlights the University's goal to reduce motor vehicle traffic to the campus and to encourage increased use of public transit, cycling and walking. It includes context for the balance that is necessary to serve the needs of people who drive to campus and require convenient and safe parking.

In the past 10 years the University of Victoria has introduced a robust program of TDM measures. The various TDM initiatives currently active on campus are listed in APPENDIX E. Campus traffic surveys and analysis undertaken in 1996, 2000, 2004 and 2006 indicate that there was a significant reduction in automobile driver trips between the 1996 and 2006 surveys (from 58 percent to 44 percent) while transit passengers have increased from 11 percent to 27 percent. This is likely attributed to the introduction of both the UPASS and Employee Bus Pass Programs. However, modal split has generally remained relatively constant between the 2004 and 2006 surveys. This may indicate that the existing TDM measures have reached the limit of their effectiveness in terms of affecting travel behaviour.

Therefore the introduction of additional enhanced TDM measures are advisable to encourage a further change in the modal split, especially with the University anticipating growth and increased demand on parking and transportation infrastructure over the coming 20 years.

Based on research relating to policies and strategies at other universities, current research by TDM professionals, and knowledge of the University campus, location and existing program, the following enhanced TDM Policies and Strategies listed in TABLE 8.1 and TABLE 8.2 are **recommended**. TABLE 8.1 details enhanced TDM measures that the University has jurisdiction over to implement, whilst TABLE 8.2 details those that external agencies, municipalities or organisations have jurisdiction over. Sections 8.3 and 8.4 discuss in detail the TDM measures summarized in TABLE 8.1 and 8.2 respectively.

8.3 Enhanced TDM Initiatives: University Jurisdiction

TABLE 8.1 introduces the enhanced TDM measures that are within the jurisdiction of the University. Each proposed TDM measure under the jurisdiction of UVic is categorised and ordered by:

- Whether it is a high, medium or low priority;
- Whether the measure should be implemented in the short, medium or long term or before, with or after another measure;
- What the cost of implementing or managing is in terms of high, medium or low cost; and,
- Whether the TDM measure is new or an enhanced version of a current measure already in practice.

As discussed in the Parking section of this report, the implementation of the enhanced TDM measures is expected to achieve a reduction in parking of 20 percent, compared to current peak parking demand conditions. This reduction will occur cumulatively and over time, as the enhanced TDM measures are sequentially introduced. The expected reduction is an estimate based on experience elsewhere; the actual reduction is expected to fluctuate, and should be monitored through the University's regular traffic and parking surveys.

TABLE 8.1 TDM MEASURES UNDER THE UNIVERSITY'S JURISDICTION

<table>
<tr><th>TDM MEASURE</th><th>PRIORITY</th><th>COST</th><th>TIMELINE</th><th>CURRENT OR NEW</th></tr>
<tr><td>A. Emergency Ride Home</td><td rowspan="15">HIGH</td><td>LOW</td><td rowspan="6">SHORT-TERM</td><td rowspan="7">NEW</td></tr>
<tr><td>B. Enhanced Student Travel Choice Information</td><td rowspan="3">LOW
On-going updating needed</td></tr>
<tr><td>C. Enhanced Faculty and Staff Travel Choice Information</td></tr>
<tr><td>D. Reduced Parking Pass Discount</td><td rowspan="8">LOW</td></tr>
<tr><td>E. Restrict Parking Permits for 1st / 2nd Year Undergrads; Specifically On-Campus Housing Users</td></tr>
<tr><td>F. Restrict Parking Permits Within a Three Kilometre Radius</td></tr>
<tr><td>G. Spread-Out Morning Class Start Times</td><td>SHORT-TERM
Aligned with bus timetable</td></tr>
<tr><td>H. Flexible Staff Start Times</td><td rowspan="2">SHORT-TERM</td><td rowspan="3">CURRENT</td></tr>
<tr><td>I. Annual Parking Price Increase</td></tr>
<tr><td>J. Car Pool Reserved Spaces in Desirable Locations</td><td>SHORT-TERM
High profile immediately before car-pooling database</td></tr>
<tr><td>K. Default Car-Pooling Database</td><td rowspan="3">MEDIUM</td><td>SHORT-TERM
In-line with increased priority car-pool spaces</td><td rowspan="2">NEW</td></tr>
<tr><td>L. U-Pass for Staff and Faculty</td><td rowspan="3">SHORT-TERM</td></tr>
<tr><td>M. End-of-Trip Cycling Facilities</td><td>CURRENT</td></tr>
<tr><td>N. Car-Free Days</td><td>MEDIUM</td><td>LOW</td><td>NEW</td></tr>
<tr><td>O. Car-Share Cars</td><td>MEDIUM</td><td>MEDIUM</td><td>CURRENT</td></tr>
</table>

TABLE 8.2 TDM MEASURES UNDER THE JURISDICTION OF OTHER AGENCIES

TDM MEASURE	PRIORITY	JURISDICTION	TIMELINE
A. Cycle Routes	HIGH	OAK BAY / SAANICH	SHORT-TERM
B. Transit Routes	HIGH	BC TRANSIT	SHORT-TERM
C. Synchronize Shift Times and Course Times and Transit Schedule	HIGH	BC TRANSIT	SHORT-TERM
D. Increase On-Street Parking Restrictions in Neighbouring Areas	HIGH	OAK BAY / SAANICH	SHORT-TERM
E. Update Municipal Parking Regulations for On-Campus Buildings	MEDIUM	OAK BAY / SAANICH	SHORT-TERM
F. Participate on Regional Transportation Planning and Parking Initiatives	MEDIUM	CRD, BC Transit, other regional road and transportation agencies	MEDIUM-TERM
G. ICBC Insurance for Co-op Cars	MEDIUM	ICBC	MEDIUM-TERM

Prior to implementation, the University should identify and consult with the appropriate campus stakeholders to develop appropriate and acceptable implementation plans that will enjoy stakeholder support.

An important part of developing implementation plans is to consult with the affected members of the campus community, and to identify eligibility, exceptions and limitations. For example, people with disabilities may be exempt from the restrictions on parking permits that are discussed below.

As well many TDM initiatives can be introduced as mandatory for future members of the campus community and optional for existing members of the campus community. While this implementation strategy may delay the positive impact of the TDM measure, it may also ensure that the TDM measure is adopted and accepted rather than rejected.

The proposed measures are discussed in the following sections.

A. Emergency Ride Home (ERH)

The convenience and speed of getting home in an emergency situation, such as needing to collect a sick child from school, is a barrier for alternative modes. The University could therefore offer to pay for a taxi in case of emergency. Regulations of this could include a maximum of 5 ERH per person per academic year; forecast bad weather does not qualify; and that taxi receipts or claim forms will need to be signed off by a manager. Some institutions who offer ERH have accounts with local taxi firms, where others require the person to pay the taxi fare and then submit a receipt for reimbursement with a written explanation or details of the emergency signed off by their manager.

UBC's ERH is operated by TREK (UBC's TDM department) and is available for commuters who regularly carpool, vanpool, bike, walk or take transit with a cab ride home when an emergency arises. TREK reimburses the users for 90% of the cost. Users submit the receipt with an application form available on the UBC website for reimbursement. If adopted, the University would need to decide on the criteria for what defines an emergency, reimbursement rates (for example 90% or 100%), and the process for paying for the taxi.

Implementation: To be in place before other measures.

B. Enhanced Student Travel Choice Information in prospectus, registration and welcome package for new / returning students.

Wherever possible, potential new and returning students should be reminded of the University's inclusive range of transportation options. This will make the University attractive to students who value a range of transportation choices, and also students who do not want to have to own a car or drive to campus.

Being reminded of the transportation options available at every feasible opportunity such as in prospectuses, during registration and in welcome packages, even those students who may have automatically thought of bringing their car and driving to the University may decide to consider other modes.

Marketing and dissemination of travel choice information will be especially important if 1st and 2nd year undergraduates are not allowed to purchase parking permits, and also for those students who will be living on campus if parking permits are not issued to those living within a three kilometre radius. Information should be updated regularly.

Implementation: To be in place before possible restrictions on purchasing parking permits are imposed on 1st and 2nd year undergraduates, and those who live within a three kilometre radius.

C. Enhanced Faculty and Staff Travel Choice Information

Information on travel choices to the University should be proactively marketed and disseminated to new staff in the "Welcome packages" that are provided to them by the Human Resources department, ideally before they are given the option to purchase a pay-roll deducted parking permit which is currently available. Information should be updated regularly.

Implementation: To be introduced before possible restrictions on purchasing parking permits are imposed on those who live within a three kilometre radius.

D. Reduced Parking Pass Discount

The current parking cost structure was introduced in Section 5.2 of this report. Through this cost structure, the University unintentionally supports the concept that the more you use parking, the cheaper it becomes through the availability of passes as opposed to paying for daily parking. The pricing structure should be reviewed, to reinforce the actual cost of driving (through parking) while recognizing parking charges as a variable rather than fixed (through passes) cost.

Implementation: To be introduced after the Enhanced Travel Choices Information is made available, and at a similar time to U-Pass for faculty and staff and the Car-Pool database.

E. Restrict Parking Permits for 1st and 2nd Year Undergraduates and Specifically On-Campus Housing Users.

This enhanced TDM measure can be eventually applied broadly to all new students entering the University, but may initially be introduced specifically for new students who live in on-campus housing. Driving habits initially learned during the 1st and 2nd year can be difficult to break. Restricting 1st and 2nd students from purchasing parking permits does not ban them from parking at the University; rather the restriction reduced the convenience of having a permit, and requires the students to purchase daily or hourly parking.

By reducing the convenience of driving and parking, 1st and 2nd year students, and specifically those living in on-campus housing, are less likely to form a car dependant habit, resulting in more informed transportation choices aligned with the sustainable traffic and parking management strategy. Undergraduates will be more likely to choose to live in areas that are accessible to the campus by transit, bicycle or walking. It is recognized that there is a low rental vacancy rate in the area surrounding the campus, and choices may be limited.

It is common practice amongst universities in the United Kingdom such as Brunel, Warwick and Lancaster, to restrict 1st year students from purchasing parking permits. Some universities also restrict 1st year students from parking on campus altogether. Discussions with the appropriate University of Victoria departments and staff should take place to gain buy-in due to the potential perception that this TDM strategy may affect student registration.

Implementation: Either at the same time or after as the Enhanced Travel Choices Information for students, and at the same time as possible restrictions on purchasing parking permits are imposed on those who live within a three kilometre radius of the campus. Consider introducing this measure initially for new students who live in on-campus housing.

F. Restrict Parking Permits Within a Three Kilometre Radius

With this enhanced TDM measure, parking permits will not be available for students, staff and faculty who live within a three kilometre radius of the campus. This will include students who live on campus, in dorms, cluster housing, and in family housing. Similar to measure E described above, this measure can initially be introduced as a restriction on purchasing parking permits for users of on-campus housing. Whereas measure E is intended for new students, measure F is intended for all members of the campus community who live on-campus or close to the campus.

Three kilometres is believed to be a close enough distance that walking and cycling are feasible options. This radius is also generally well served by the University bus routes. Car pooling opportunities should also be plentiful within this radius.

For those living on or near campus who are 21 years old or older and have a full ICBC driver's license, there is the option to be a member of the Victoria Car Share Co-op. The age limit of 21 years old or older is a limitation especially for undergraduates in dorms. It is recommended that the university work with ICBC on arranging insurance cover for those students or for those who live on campus who are under 21 years of age, (for example in family housing or dorms), to allow them to drive car co-op vehicles.

Implementation: Either at the same time or after as the Enhanced Travel Choice Information is introduced for students, staff and faculty, and at the same time as restrictions are introduced on 1st and 2nd year undergraduates purchasing parking permits. Consider introducing this measure initially for members of the campus community who live in on-campus housing.

G. Spread-Out Morning Class Start Times

The start times of classes in the morning peak should be modified to shift travel times away from the current peak which centres on 08:30 starts and ease demand on transit. This enhanced TDM measure would lessen the congestion on-board the buses, and reduce the likelihood of bus pass-bys.

UBC starts some classes at 08:00, whilst Brunel University in the UK aims to have the majority of the 09.00 classes for 1st year undergraduate who traditionally live on campus and hence are able to walk to class. Later classes are for 2nd year undergraduates and above. Depending on timetabling it may be possible to have staggered start times of 08.45 and 09.15, although impacts to room allocation and timetabling would have to be assessed. This enhanced TDM measure would be consistent with the CRD's aim of spreading out peak travel times.

Implementation: Either at the same time or before imposing restrictions on purchasing parking passes for those that live within a three kilometre radius of the campus.

H. Flexible Staff Start Times

The University should continue to allow flexible working hours and working days for staff whose duties allow flexibility. This practice, which is currently in place, will continue to ease demand on transit and ease congestion based around a 08:30 start. This TDM initiative is consistent with the CRD's aim of spreading out peak travel demand. The University should work with BC Transit to ensure that early and late class start times and flexible shift schedules are served by transit.

Implementation: Continue to allow flexible start times, work hours and work days for those staff who have duties that allow flexibility. Work with BC Transit to ensure that early and late class and work schedules are served by transit.

I. Annual Parking Price Increases

In keeping with annual inflationary price rises, the cost of parking on campus should be increased annually as has happened under a three year budget plan that is updated on an annual basis. For example, parking rates in September for 2008 / 2009 are scheduled to increase approximately 8 percent. The public should be aware of such price increases in order that students, staff, faculty and visitors are fully informed of future costs associated with driving to the University when making long-term decisions on their personal and household transportation options.

If increases in parking prices are routine, and therefore not surprising, they are less likely to be contested or for the University to receive complaints regarding such increases. This parking price rise increase should continue.

Implementation: Continue to raise parking prices on an annual basis. Rate increases could be announced at the same time as incentives for alternative modes.

J. Car-Pool Reserved Spaces in Desirable Locations

A program is in place in which a proportion of the parking spaces in desirable locations are reserved for car poolers. Both the number and proportion of car-pool reserved spaces should be regularly reviewed and increased.

Implementation: Continue to have car-pool reserved parking spaces in the most desirable locations, and increases in both the number and proportion should be announced at the same time as incentives for non-single occupant choices, particularly the proposed Default Car-Pool Database.

K. Default Car-Pooling Database

The majority of car-pool databases for institutions require potential car-pool participants to proactively sign-up and enter their relevant travel details. Many people do not sign up to car-pooling websites and databases because they wrongly believe that no-one at their place of employment lives in their area. By not signing up, they are supporting non-participation in such programs.

The University already has much of the required data regarding students, staff and faculty which could be entered by default into a database to find car-pool matches. The University should introduce a policy of regularly and automatically using this data to update their car-pool database and advise students, staff and faculty of potential car-pool matches for their commute, unless the individual student, staff or faculty pro-actively requests to not be included.

While there may be issues related to concerns about privacy and data protection these are can be easily researched and addressed, for exampled by using zones or postal codes instead of addresses in the matching database. Procedures should be in place to ensure those who wish not to be included are removed from the database.

Implementation: The default car-pool database should be announced at the same time as incentives for non single occupancy journeys, particularly the increase in car-pool reserved parking spaces.

L. U-Pass for Staff and Faculty

In line with the U-Pass for students, a default transit pass can also be provided to all staff and faculty members. The rules and regulations should be developed after detailed review, but should for example be linked to a photographic identification card so that passes can not be transferred, and that the majority, if not all, funding should be required though at-source deductions from staff and faculty salaries. It is important to anticipate potential resistance of staff and faculty to a wage or salary reduction for a compulsory transit pass. Staff, faculty and union input should be included in the decision making process with the aim of having their buy-in from the start. As a possible solution, this enhanced TDM measure can be introduced for all new staff and faculty, while existing staff and faculty can choose to opt-in. At present the university has a staff bus pass. Whilst in place, eligibility for the staff bus pass should be regularly revisited.

Implementation: This enhanced TDM measure should only be introduced after an extensive stakeholder consultation process, and the development of an implementation plan that achieves stakeholder buy-in.

M. End-of-Trip Cycling Facilities

The University currently has extensive bicycle parking facilities. Good practice for cycling facilities should encourage regular monitoring and surveys that ensure that desirable locations for cyclists to park bicycles are met where possible. Both long-term and short-term bicycle parking should be offered where possible.

Bicycle parking facilities should be convenient, offer protection from rain, and meet Crime Prevention Through Environmental Design (CPTED) or equivalent standards. Showers and locker facilities should be available in convenient locations for all staff, faculty and students. As many of these measures are in place, the University is encouraged to maintain these practices and to do more in this area to enhance end-of-trip facilities for cyclists. It is particularly important that all new buildings (including the possible parkade) consider bicycle facilities and CPTED as an integral part of the building design.

Implementation: On-going assessment of end-of-trip needs of cyclists, and upgrading of facilities. Integration of bicycle parking needs and CPTED principles at all new buildings.

N. Car-Free Days

The introduction of car-free days and other such special-events which promote and celebrate different travel choices to campus should be supported, to encourage participants to use alternative modes or car pool and become familiar with non-auto travel choices. Such schemes should be supported by relevant marketing campaigns, and where applicable consider the use of incentives or competitions to reinforce the positive merits of behavioural change.

Implementation: Market national and Provincial events and promote the celebration of different travel choices.

O. Car-Share Cars

The University should continue to provide car-share cars on campus for members of the co-op to use. This can be achieved by working closely with the Victoria Car Share Co-op. The University should continue to market and advertise the presence of these cars and promote their convenience, including their desirable parking locations. The University should also work with the Victoria Car Share Co-op and ICBC to find a solution to the fact that drivers under the age of 21-years are not allowed to drive the cars due to insurance restrictions.

Implementation: Continue to market and promote car-share cars and provide parking in desirable locations. Work with ICBC to find a solution to allow drivers under 21-years of age to drive the vehicles.

8.4 Enhanced TDM Initiatives: Other Jurisdictions

TABLE 8.2 introduces the enhanced TDM measures that are under the jurisdiction of agencies other than the University. The proposed TDM measures under the jurisdiction of external agencies, municipalities or organisations are ordered by:

- Whether it is a high, medium or low priority;
- Which jurisdiction; and,
- Whether the measure should be implemented in the short, medium or long term or before, with or after another measure.

These initiatives will require the University to work with external stakeholders prior to implementation. The proposed measures are discussed in the following sections.

A. Cycle Routes

The limited network of cycle routes and dedicated cycle lanes and infrastructure in the areas around and leading to the University is cited by some as a hindrance to cycling. The University should continue to work with the Districts of Saanich and Oak Bay to increase the amount of planning dedicated to the needs of cyclists. Both Oak Bay and Saanich agreed that increased facilities for cyclists were needed in the area.

B. Transit Routes

At present, many people are discouraged from using transit due to the high number of pass-bys by full buses, particularly in peak times. To reduce the pass-bys and reduce journey times, transit routes that have a high demand should offer a variety of service types. For example from origins (bus stops) early in the route, there should be an express bus that does not stop and goes direct to the University. This occurs much of the time already with routes that fill quickly although these allow people to disembark. The express buses would not stop mid-route. New buses should be entered into service mid route, thus reducing the possibility of a pass-by because the bus reached capacity at the first stops.

C. Synchronize Shift Times and Course Times with Transit Schedule

This enhanced TDM measure was also mentioned in Section 8.3 from the on-campus perspective of providing flexibility in class times and work shift schedules. There is concern that staff (such as janitorial staff) and students attending early or late classes may be negatively effected by enhanced TDM initiatives because their shift start and finish times do not coincide with transit schedules.

The University should work with BC Transit to ensure that early and late classes and shift start / finish times coincide with transit schedules. Whilst morning and afternoon classes are routinely considered by BC Transit, the provision of off-peak transit service such as in the evening relates to the priorities that BC Transit makes for service provision to the overall community demand levels at different periods of the day.

D. Increase On-Street Parking Restrictions in Neighbouring Areas

As parking charges increase on campus and supply decreases, drivers will be willing to walk further in order to park their vehicles for free; for example in neighbouring residential areas. The University should work with staff from Districts of Saanich and Oak Bay to ensure that appropriate resident-only parking restrictions during weekdays are in place, and are supported by sufficient enforcement.

E. Update Municipal Parking Regulations for On-Campus Buildings

At present the municipalities of Saanich and Oak Bay have differing minimum parking rates for the University outlined in their respective municipal zoning bylaws. The University should work with both municipalities to produce common parking regulations that better define the needs of the University when new buildings are provided.

The new parking requirements should move away from the philosophy that requires a minimum number of parking spaces to be provided whenever new development occurs, and instead should introduce maximum parking requirements based on the measured parking demand ratios (as documented in this study and updated in future surveys). Both municipalities stated that they would be willing to enter into discussions when interviewed during the external stakeholder consultation.

F. Participate on Regional Transportation Planning and Parking Initiatives

The University of Victoria should participate as a stakeholder on relevant regional transportation planning initiatives that relate to planned improvements to the multi-modal surface transportation network, and regional parking issues, particularly when these initiatives and issues affect the campus. The University should maintain strong working relationships with transportation planning staff at the Capital Regional District, BC Transit, the British Columbia Ministry of Transportation and Infrastructure and the municipalities in the Greater Victoria area. This will help to ensure that the University's preference for transportation solutions that are supportive of the University's sustainability goals is clear when regional planning and parking initiatives are being discussed.

G. ICBC Vehicle Insurance for Co-op Cars

As drivers who are less than 21-years of age are not insured to drive car co-op vehicles, it is recommended that the University enter into discussions with ICBC to try and reach a solution on how those younger than 21-years of age could be insured to drive car co-op vehicles.

APPENDIX A

REVIEW OF PREVIOUS STUDIES

APPENDIX A - REVIEW OF PREVIOUS STUDIES

The following documents were provided by the University and reviewed as background information:

- Boulevard Transportation Group Letter Report for UVic Crosswalk
- 2006 Campus Traffic Survey for UVic Traffic
- Boulevard's University of Victoria Transportation Demand Management (TDM) Study
- UVic's Campus Plan 2003

A-1 Summary of Boulevard Transportation Group Letter Report for UVic Crosswalk

Title: Ring Road Crosswalk at the Support Services Building
Date: January 23, 2008
Boulevard File No: 834

The focus of the report was on the relocation of the marked crosswalk crossing Ring Road near Parking Lot no. 4 access to better accommodate anticipated pedestrian desire lines with the completion of the new Support Services Building. There were also concerns related to the potential conflicts between vehicles using the Lot 4 access and buses exiting the existing bus stop. Also mentioned were safety issues with the marked crosswalk across McGill Road north of the Ring Road due to driver expectancy and visibility.

The report suggested two layout options, both with the existing marked crosswalk moved further east, and one with Parking Lot no. 4 access relocated to a new second access/egress to McGill Road. The report also suggested moving the existing north leg crosswalk at the Ring Road and McGill Road intersection to be closer to the intersection itself.

A-2 Summary of 2006 Campus Traffic Survey for UVic Traffic

Title: 2006 Campus Traffic Survey, University of Victoria, Victoria, B.C.
Date: May 11, 2007
Bunt File No: 5070-01

The 2006 Campus Traffic Survey reviewed vehicle volumes, bus and automobile occupancy, bicycle and pedestrian volumes, and modal split from October 2006 survey data. The data was analyzed and summarized, as well as compared to similar data from 1996, 2000, and 2004.

Significant findings from the report are as follows:

- Overall daily vehicle traffic to and from the University has generally remained consistent between 2004 and 2006. Less overall vehicle traffic was recorded during the peak periods. The University Drive access is the busiest, followed by McGill Road.
- Automobile occupancy surveys indicate that vehicle occupancy varies depending on location, as the trip purposes are different. The overall average occupancy of 1.28 people per automobile is generally similar to previous survey years. Single occupancy vehicles accounted for about 75 percent of all automobiles surveyed.
- 3.2 percent less people arrive via a bus in 2006 compared with 2004, but 12.8 percent more leave in 2006 than in 2004, for a combined net passenger increase of 4.0 percent. Bunt suggested that the reduction in inbound passengers may be attributable to increased on-campus housing or arrivals may be more evenly distributed through the morning. The increase in outbound passengers may be attributable to poor weather or mode switching.
- The number of pedestrians throughout the day in 2006 increased by 29 percent compared to 2004 survey results. Bunt attributed this increase to regular cyclists switching to walking or the additional student housing provided on the campus since 2004. The highest pedestrian volume corridors entering/exiting the campus were recorded along University Drive and by the Stewart Complex, followed by along West Campus Gate and near the artificial turf field.

- The number of cyclists throughout the day in 2006 was 14.2 percent less than in 2004, and was attributed to poor weather during the surveys.
- The modal split (categorized as automobile drivers, automobile passengers, transit passengers, pedestrians, cyclists, and others) has generally remained constant since the previous 2004 survey. However, there has been a significant reduction in automobile driver trips since 1996 (from 58 percent to 44 percent) while transit passengers have increased from 11 percent to 27 percent. This may be attributable to the introduction of the U-Pass in 1998.

A-3 Summary of Boulevard's University of Victoria Transportation Demand Management (TDM) Study

Title: Campus Plan 2003, University of Victoria, Victoria, B.C.
Date: September, 2003

The study was sponsored by Facilities Management and managed by the Sustainability Coordinator with two guiding committees:

- the UVic TDM Steering Committee and
- the UVic TDM Stakeholder Advisory Committee.

The aim is to support the 9 Principles of the 2003 Campus Plan

Four key recommendations form the backbone of UVic's TDM strategy. These will create the largest change in travel behaviour and give the University greater freedom to introduce further measures to influence a significant modal shift. Additional recommendations included in the report are listed below by specific mode.

1. Move to a market-based parking fee structure.

Consultation with staff, faculty and students suggests that, in general, the campus community supports the Campus Plan and is willing to pay for the true cost of parking fees on the condition that any increased revenues be "re-invested" into improving choices for alternative modes.

2. Increase transit service.

Not surprisingly, there is a strong correlation between transit service and increased use, a fact confirmed by BC Transit on their University routes. There is a general consensus that providing more and better transit service, both at UVic and elsewhere in the region where students, staff and faculty live, is critical to increasing transit's modal share. Service must be increased to reduce over-crowding and eliminate pass-ups at peak times on busy routes. Both the University and BC Transit want to increase use and service and will need to negotiate a partnership to improve service that meets their mutual objectives.

3. Increase cycling facilities and cycling education.

The key reason why more people don't cycle to UVic is a lack of safe, direct bicycle routes to campus. Although implementation of bicycle routes is the responsibility of Saanich, Victoria, Oak Bay and other municipalities, UVic can work with these municipalities to identify and implement needed routes. As some focus group participants suggested, UVic may also consider coordinating and assisting with the implementation of bicycle routes leading to campus, as a means of accelerating implementation of these routes.

4. Combine synergies of parking and transportation demand management goals.

No TDM strategy will have any significant effect without ongoing advocacy, high profile promotion and sustainable transportation planning integrated into the fabric of the University's operations. The creation of a dedicated TDM Coordinator position, in combination with the integration of TDM principles into existing parking management practices, will ensure that the University integrates sustainable transportation principles into its broader campus planning objectives.

The actual report is split into two sections: background and options. For the background documents, there is much reference to the Bunt traffic surveys of 1992, 1996 and 2000.

The full list of recommendations presented in this report are as follows:

1 PARKING

1.1 Combine Synergies of Parking and TDM Goals
1.2 Increase Parking Fees
1.3 Reform Parking Policy – Integrate TDM Objectives
1.4 Streamline Parking Data Collection and Enforcement Strategies
1.5 Prioritise Convenient Parking Spaces
1.6 Control Use of Complimentary Parking Passes
1.7 Negotiate with Saanich to Implement a Parking Spillover "Hotline"
1.8 Improve Parking and Transportation Information
1.9 Peak Period Transportation and Parking Management
1.10 Introduce "High Tech" Payment System
1.11 Introduce Fees for Night Parking

2 TRANSIT

2.1 Increase Service
2.2 UPass for Staff and Faculty
2.3 Improve Passenger Amenities
2.4 Improve Information
2.5 Special Event Buses
2.6 Integrate Transit Route Information with Housing Services

3 BICYCLE

3.1 Install Covered Parking
3.2 Provide Secure Parking
3.3 Increase After-trip Facilities – Showers and Lockers
3.4 Laundry and Dry Cleaning Service
3.5 Bike Routes to Campus
3.6 Re-Introduce the "Public Bike" System, Support a Student-Run "Bike Kitchen"

4 RIDESHARING

4.1 Ridematching Service
4.2 Preferential Parking
4.3 Reduced Parking Prices for Carpools and Vanpools

4.4 Reduce Barriers to Qualification

5 PEDESTRIAN

5.1 Safer Crossings on Ring Road
5.2 Traffic Calming on Ring Road
5.3 Pedestrian Routes to Campus

6 PROMOTION AND EDUCATION OF TDM

7 SUPPORTING OPTIONS

7.1 Guaranteed Ride Home Service
7.2 Maximize Fleet Vehicle Utilization
7.3 Establish /Support a Car- Cooperative
7.4 Integrate Merchants Discounts into Green Commuting
7.5 Stagger Class Start Times
7.6 Reconfigure Ring Road and Parking Accesses
7.7 Trip Reduction Strategies
7.8 Increase Housing Opportunities In Surrounding Neighbourhoods

A-4 Summary UVic's Campus Plan 2003

Title: Campus Plan 2003, University of Victoria, Victoria, B.C.
Date: May, 2003

The 2003 Campus Plan builds on the Strategic Plan 2002 which is a "*vision for the future*" from a series of objectives.

The Campus Plan policy is:

"*To reduce motor vehicle traffic to the campus and to encourage increased use of the public transit, cycling and walking*"

Particular relevance to: - transit use
- accessibility for those with a disability

The Campus Plan is made up of "Nine Foundation Principles", of which five could also be interpreted to influence transportation planning on campus:

- Principle 5 – The University will manage development carefully, respecting "smart growth" principles and practices as they may be adapted to the university context.
- Principle 6 – The University commits to incorporate sustainable practices in the planning, construction and operation of buildings and facilities.
- Principle 7 – The University will continue to plan and design in a way that enhances social interaction at a human scale. The objective of this study is to develop a list of options which will assist UVic in achieving its goal to reduce motor vehicle traffic to the campus and to encourage increased use of public transit, cycling and walking.
- Principle 8 – The University is committed to open and universal access to its facilities while reducing dependence on single-occupant vehicles.
- Principle 9 – The University recognizes the need to minimize surface parking and pursue alternatives.

3.3.1 UVic hired a sustainability coordinator in 2000 (page 9)

3.3.2 Mixed use building encouraged (LB#9 page 28)
"Mixed-use buildings are encouraged. Flexibility will be maintained within all preferred building areas to include non-academic uses, including student and staff services, administration as well as private laboratories and offices."

3.3.4 Housing and accommodation numbers for the campus (page 29)
"There are 1,757 bed-units located on the campus, representing approximately 13% of the undergraduate and graduate student body based on a Full-Time Equivalent (FTE) enrolment. UVic's strategic plan calls for a guaranteed offer of accommodation in residence to all first year students by 2004. Currently, an additional 596 bed-units are being constructed near existing dormitories and cluster housing."

LB#24 Village centre will act as primary public transportation hub (page 30):
"*The Village Centre will continue to operate as the primary public transportation hub of the University*."

LB#25 Pedestrian friendly environment through:
- Traffic calming

- Landscaping
- Pedestrian only areas (page 31):

"Further study will be given to developing an attractive, cohesive, pedestrian friendly environment in the Village Centre through measures such as traffic calming, landscaping and pedestrian-only areas"

4.1 & 4.2 Travel & Parking goals and principles

"To reduce motor vehicle traffic to the campus and to encourage increased use of public transit, cycling and walking."
"Principle 8: The University is committed to open and universal access to its facilities while reducing dependence on single-occupant vehicles (SOVs)."
"Principle 9: The University recognizes the need to minimize surface parking and pursue alternatives."

4.3.2 TP#5 – options for the ring-road (page 39)

"• Keeping it open to all traffic (current condition). This would require more attention to pedestrian crossings for improved safety;
• Open to bicycles and transit, delivery, and service vehicles, but restricted to automobile traffic except for disabled members of the University community and access to University Centre; and
• Open only to bicycles, transit vehicles, internal bus shuttles, and University service vehicles. A combination of satellite parking and a shuttle system would serve all auto users."

4.3.3 (Page 40)

- TP#10 Policy Direction – Parking Strategy:

"Phase out vehicle parking (Lots A–E) within Ring Road over time, with the exception of disabled parking spaces. Replace this parking (approximately 500 spaces) outside Ring Road in a combination of strategies, including:
• A second deck of parking over existing surface lots with the first level placed one-half level below grade;
• Multi-storey parkades, a significantly more costly option, near the McKenzie, Sinclair and Gordon Head Road entrances; and
• Satellite parking, combined with either public transit or a dedicated campus shuttle bus."

- TP#13 Bicycle Storage:

"Provide safe and weather-protected storage areas for bicycles, located near showers and clothes-changing facilities."

- TP#14 Parking Plan:
"Undertake a parking plan, including a management strategy for existing parking lots to improve their efficiency, examining such measures as valet type parking, instituting a lottery system for residents, remote parking for resident students and assigning a lot for use by commuting students only."

5.4 Travel & Parking
(Page 47 & 48)

- Action #25 TDM: "*Complete and implement a plan based on the TDM Study. Prepare an annual progress report."*

- Action #27 Ring Road: "*Undertake a study of traffic options for Ring Road."*

- Action #28 Parking Lots: "*Phase out vehicle parking (Lots A–E) within Ring Road and relocate these outside Ring Road as safety-conscious, well designed decked parking and/or parkades near entrances."*

- Action #29 Parking Plan: *"Prepare a long term parking plan, including a management strategy to improve the efficiency of existing parking lots. Review Lots 1 and 4 for parking decks."*

- Action #30 Bicycle Storage: "*Provide additional weather-protected storage areas."*

APPENDIX B

TRANSPORTATION DEMAND MANAGEMENT PRACTICES AT OTHER CAMPUSES

APPENDIX B – TRANSPORTATION DEMAND MANAGEMENT PRACTICES AT OTHER CAMPUSES

B-1 Methodology

Recent successful initiatives related to parking, traffic, and safety management at universities were reviewed. Each example was selected to provide a framework to this study of where TDM is employed at campus-based institutions while allowing the comparison of initiatives and common themes to be identified. Wherever possible examples of best practice should be employed and in particular the experience of others in the planning, development and introduction of these initiatives may be valuable if considered applicable at the University of Victoria.

Emphasis was placed on identifying those institutions of similar size, urban location, and climate. North American examples were used wherever possible to ensure a level of cultural coherency. In addition to the North American universities, which make up eight of the nine sites reviewed, Brunel University in the United Kingdom was included to provide an example from outside of North America and one which has successful TDM initiatives employed. The findings were obtained using published papers, information available online, and correspondence with the universities' staff.

B-2 Themes

From the information shown in 6.3 below the following overall themes can be identified. Specific scheme characteristics differ according to each site but a number of generic conclusions can be drawn:

- A wide range of TDM initiatives are employed at each site, providing users with transportation choice.
- All sites demonstrate a reluctance to provide additional parking or increase the parking footprint.
- TDM is taken very seriously by all institutions with the initiatives managed by a specific member of staff or team whose sole function is to implement the TDM program.

- The sites are supported by good quality transit services with the schemes offering discounted or free travel for university staff, faculty and/or students.
- In a number of examples transit is linked to off site parking through the provision of university run or partnership park and ride programs.
- Transit is complemented by a culture of walking and cycling. Cycle paths are supported by suitable infrastructure including lockers, adequate security, showering facilities.
- Ridesharing, carpooling and vanpooling are fully endorsed and encouraged. Parking permits are provided to users for when carpooling is not suitable (up to ten one-day permits are provided)
- A guaranteed or emergency ride home is provided in a number of examples.
- Zipcar schemes are run at a number of sites allowing people using alternative transportation modes access to a vehicle on an infrequent basis.
- Carpooling and vanpoolers benefit from preferential parking.
- Parking charges are graded with a corresponding increase the closer to the centre of the campus it is provided.
- Parking charges are viewed as only one solution and provision is limited where possible. Free parking is hardly ever provided.

B-3 Results

Based on research, case studies of the following universities applicable to the study were found, and are summarised below:

- Brunel University
- University of British Columbia
- Virginia Tech
- University of North Carolina
- Harvard University
- Cornell University
- Stanford University
- University of Wisconsin-Madison
- University of Michigan

Brunel University *West London, (Uxbridge), UK*

Students: 11,430 (EU)/2,052 (Overseas) – TOTAL = 13,482 (2006/07)
Faculty: 1,771 (Academic)/1,048 (Non-academic) – TOTAL = 2,819 (end 2006)

Type: Campus-based University, built on one site.
Geographical Size: Approximately 170 acres

Transportation Programs at Brunel University

For the Uxbridge campus a travel plan was implemented. The University is seeking to reduce car dependency, other than by those who have no other means of travel. Those students living within 2 miles of the campus (measured in a straight line) – including halls of residence – are not eligible for a parking permit, unless registered disabled.

Information Provided on Alternative Modes

- The campus is well provided by local buses, with 11 bus routes running to the University, including 9 buses per hour from Cleveland Road, linking the heart of the campus with Uxbridge and the local supermarkets.
- The campus is 1 mile from Uxbridge town centre and the Metropolitan/Piccadilly line of the London Underground.
- In 2007/08 improvements are planned for local bus facilities.
- Full time students are entitled to a reduction in fares on public transport, organized through the Student Centre.
- Main line passenger rail services run locally with two stations located within 4 miles of the campus with connecting buses running directly to campus.
- The campus is on a recommended cycle route and cycle storage facilities provided on site.

Parking at Brunel University

- Anybody bringing a vehicle on to campus must abide by the University Traffic and Parking Regulations. For students the vehicle should be registered and a permit obtained from the Student Centre. All other registrations are

completed by the Main Office. Vehicle permits must be clearly displayed in the front windscreen of the vehicle at all times while on campus.

- Pay & Display Parking: Pay and Display parking is available in small area for $1 (50p) per hour. Charges apply Monday to Friday from 8am to 6pm. Annual permits not valid in the pay and display area.
- Permitted parking: On campus parking is available between 8am and 5pm Monday to Friday. Parking only acceptable in approved parking bays and student and staff parking areas are segregated. Barriers restrict access to the site and having a permit does not guarantee a space (the University states that at peak times permit holders may not be able to locate a space). Parking restrictions are in force on the roads immediately around the campus and a request is made for people not to park in local residential areas. Permit holders are directed to use the nearest public car parks in Chime, if required.
- Annual Permits: Cost of the annual permit is 90 GBP. Disabled badge holders are free. The permit grants access to student and unmarked parking bays. PHD students, with contracted teaching responsibilities, may be entitled to apply for an employee permit costing 120 GBP annually. The Head of School must authorise the permit application. Students can apply mid-year for a permit and the charges are based on a pro-rata arrangement but there is no reduction in cost for part-time students or long distance learners. Permit refunds are allowed and are calculated by the term.
- Out of Hours Access: Out of Hours parking (excluding Monday to Friday 8am to 5pm) is free of charge.
- Mopeds/Scooters/Motorcycles: They must be registered with the University but there is no charge to the user. Parking is only prohibited in designated areas.
- Temporary Permits: Students holding an annual permit can apply for up to 4 temporary one day permits. Students without the annual permit are not eligible for temporary permits. Does not state the rationale behind providing temporary permits to students already holding annual permits.
- Access: An ID card is used to gain access at the barrier and there is a replacement charge for lost cards.
- Student visitors are not issued visitor permits and are advised to use the Pay & Display car parks.
- Moving in/out: Students are permitted vehicle access on the day of arrival only. Parking is limited to one hour and temporary permits are issued at the

gate. A similar process is in force for students leaving at the end of the term/year.

- Loading/Unloading: Access for unloading may be granted for up to 15 minutes without a permit but is at the discretion of Security.

There is no further information in terms of any issues relating to the implementation or management of the travel plan or the location of alternative mode facilities, such cycle storage, although the campus map indicates where the bus stops are located.

University of British Columbia *Vancouver Campus, BC, Canada*

Students: 35,860 (Undergraduate)/6,878 (Graduate) - TOTAL = 42,738 (2006)
Faculty: 4,504 (Faculty, research and associated)/8,144 (Management & Professional, clerical and other) – TOTAL = 12,648*** (end 2006). *** Note: these figures include UBC Okanagan. There is no split for the Vancouver campus.

Geography: Located on the western tip of Point Gray Peninsula, with the main campus bounded by Chancellor Boulevard to the northwest, Marine Drive to the southwest, Wesbrook Mall to the northeast, and West 16th Avenue to the southeast. There are also South and East campuses.

Transportation Programs at UBC

The following are sustainable transportation options at UBC all overarched by the TREK 2010 policy:

- **CanCart Loaners** – The free to borrow use of a personal utility cart for people choosing to walk or cycle so as not to have to use a vehicle for moving heavy or a large number of items. Students can access the CanCart by visiting the TREK Program Centre with their student card, staff ID or driver's license. Carts can be signed out for up to 3 days.
- **Carpooling** – Persons interested in carpooling can sign up to the program at www.carpool.ca and instructions are provided to register for trips to/from the University

- **Jack Bell Rideshare** - www.Ride-Share.com - is a charitable non-profit organization that operates Canada's largest formal vanpool program. Persons can pay a monthly fee to be transported from home to UBC. Charges are based on the number of kilometres travelled. Ideal for people poorly served by transit and/or travelling a long distance to UBC. Jack Bell also offers an online rideshare (carpool) database so carpoolers can be matched.
- **Community Shuttles** – A shuttle service (carrying up to 24 passengers) providing access around campus, designed for those with impairments, people travelling longer distances on campus, people carrying large/heavy objects and people walking at night. A bike rack is provided. They are fully integrated with other TransLink services. A one-zone fare applies - $2.50 adult/$1.75 concession. Passengers can use their U-pass, employer pass, monthly pass, FareSaver ticket, transfer of pay exact coin fare to board. A campus shuttle map is provided on the UBC website.
- **Cycling Programs** – Bike racks are located outside every major building on campus and most roads are reserved for non-motorized traffic.
    - The Bike Co-op – run by students to make UBC a better place for cyclists. Membership is $20 for students ($30 for staff). A member is entitled to the use of 50-100 public bikes. Members must volunteer at least 3 hours in order to get a key to the fleet. Users leave the bike, lock it up at their destination and leave it for the next person to use. Members also receive a 10% discount off new parts and the program provides bike clinics and comprehensive bike repair courses for $20. www.ams.ubc.ca/clubs/bikecoop/
    - The Bike Kitchen – a not for profit bike repair and retail shop part of the AMS Bike Co-op. Users can pay $7.50 per hour to use the shops repair facilities or pay $15 per hour to receive instructions from a bike mechanic to repair their own bike.
    - Bicycle locker rentals - $23 per month with a $15 deposit. The user selects their locker, fills out an application form and is given a key.
    - Secure bike parking facilities – upon registration users and members of the public are able to park their bike with a secure chainlink enclosure for free. Registration forms on the website. Locations are also contained on the UBC website.
    - A Bike Rack map is available on the UBC website.
    - Shower locations are specified and tips on preventing bicycle theft.

- **Emergency Ride Home (ERH).** Available for commuters who regularly carpool, vanpool, bike, walk or take transit with a cab ride home when an emergency arises. TREK reimburses the users for 90% of the cost. User submits the receipt with an application form available on the UBC website for reimbursement.
- **The Employer Pass Program (EPP)** offers discounted, non-transferable transit passes to all UBC employees, including UBC staff and faculty. EPP offers approximately a 15% discount compared to the cost of purchasing a standard monthly transit pass. There are two types of passes with variable fare rates dependant on zoning and destination:
    - Conventional transit pass – valid on all buses, SkyTrain and SeaBus
    - West Coast Express pass – valid on the West Coast Express as well as conventional transit
    - Users are given a photo transit card, renewable once a year.
    - EPP enrolment form available on the UBC website.
- **Shared Vehicle Program (SVP)** – A car sharing pilot project for UBC departments. An opportunity for vehicle-owning departments to defray costs and maximise the use of existing vehicles. Participants must be an employee of the University.
    - Registration fee $5
    - Monthly fee - $20/month for no-vehicle departments. Vehicle owning departments pay 20% of their vehicle usage revenues for the month.
    - Usage cost: $2.50 per hour or $1.25 per half hour to a max of $30.00/day.
    - $0.28 per km driven
    - A fuel fluctuation adjustment (FFA) for gas prices – approx $0.04 per km)
- **U-Pass –** The U-Pass has been extremely well received by students and has been efficient in modal shift to transit.
- **Zipcar** – Is now available at UBC. There are two vehicles on campus for student's use 24/7. Sign up can be completed on line via the UBC website.
- **Also a number of other choices are discussed, including:**
    - Carsharing
    - Living on campus
    - Telecommuting
    - Walking

Parking at UBC

UBC Parking Services is an ancillary business of the UBC and the largest university parking operation in Canada. Its core purposes include:

- Balance supply and demand of parking on campus
- Ensure facilities, services and equipment are accessible and easy to use

Parking allowances include:

- Permit parking – in 2003/04 a total of 13,000 permits sold to staff, faculty and students
    - Faculty permits allow the holder to park in a parkade or surface faculty/staff lots around campus.
    - Student permits allow parking in designated parkade or surface lots
    - Special permits are sold for individual reserved parking spaces
    - Special needs permits are available for people requiring specially designated spaces, based on specific locations. Included are disabled, delivery and loading zone users
- Economy lots – a total of 3,000 surface parking spaces located on the perimeter of campus. Used by faculty/staff and students without permits.
- Casual Parkade/Meters – mainly for visitors to UBC requiring short-term parking.
- Visitor Parking – is provided by roadside meters, parkades and surface lots. An online map is available.
    - Rates: Meters = $1.50 per half hour, Parkades = $1.50 per half hour up to a max of $12.00 per day. Entry after 5.00 pm and at weekends a flat rate of $4.00 is charged (paid on entry). B-lots are pay and display surface lots at a flat rate of $4.50 per day (up to 2am). Motorcycles permits are available at a flat rate of $20.50 (+ taxes) per month – monthly payments are possible or pre-pay up to 4 years.
- Student Parking – a FlexPass scheme is in force for students. The FlexPass also can be used for carpooling. The pass must be placed in the lower left-hand corner of the front windscreen. It works in conjunction with an access package. A FlexSaver package is designed for students who wish to drive to campus on a part-time basis. Management of the account is available online.

- Rates: 2010 Package (ie up to 2010), Gold, Silver, Bronze and FlexSaver packages
  - 2010 = $99 per month
  - Gold = $672 (8 months), $357 (per term)
  - Silver = $630 (8 months), $336 (per term), $89.25 (per month)
  - Bronze = $588 (8 months), $315 (per term), $84 (per month)
  - FlexSaver = 5 days ($30), 10 days ($60), 15 days + 1 bonus day ($90), 20 days + 2 bonus days ($120), 25 days + 3 bonus ($150).
  - Motorcycles permits are available at a flat rate of $20.50 (+ taxes) per month – monthly payments are possible or pre-pay up to 4 years.

- Faculty/Staff Parking – Use FlexPass.
  - Rates:
    - Ongoing = $67 (month)
    - 1 year = $804 (cash, credit, debit), $67 (month via payroll)
    - Term = $292 (cash, credit, debit), $73 (month via payroll)
    - Weekly = $21 (cash, credit, debit)
    - Motorcycles permits are available at a flat rate of $20.50 (+ taxes) per month – monthly payments are possible or pre-pay up to 4 years.

Virginia Tech *Blacksburg, VA, United States*

Students: 26,000 (2006)
Faculty/Staff: 6,000.

Virginia Tech is located in a small town in southwest Virginia, surrounded by a rural county. While there is no regional transit authority, Blacksburg does have a local bus system. Approximately 97% of the bus ridership is from the university community. Virginia Tech estimates that of the 97% ridership, 95% are students who ride fare free. Almost all faculty and staff drive to campus despite the free bus passes that are provided to them.

Due to the region's cost of housing, faculty and students tend to live closer to campus, while lower-paid staff live further out. It is challenging to provide

adequate alternative transportation options for these employees, but the university will attempt to offer new alternatives.

Transportation Programs at Virginia Tech

Virginia Tech first implemented TDM strategies in 1999. At the time, the university was not facing problems with congestion, but wanted to avoid the construction of new parking that would be necessary with planned growth. Their program, Commuter Alternatives Program (CAP) and its options are still not utilized heavily, but have received more attention in the last couple years as fuel prices have climbed.

Virginia Tech offers faculty, staff, and students special carpool permits, at about two-thirds of the cost, that allow established carpools to park on campus in designated lots. Participants can split the cost of the parking permit among carpool riders. Carpool parking permits cost $70 yearly for faculty and staff and $54 yearly for students. To help establish carpools, staff utilizes a university database to link people to others that live nearby.

A pilot vanpool program will be launched shortly. This program will utilize Virginia Tech's own fleet vehicles. Participants will be able to purchase discounted fuel from the university and will receive special designated parking. All vanpool costs will be payroll deductible, pre-tax from employees' earnings.

The university offers a guaranteed ride home option for people who take alternative transportation to campus. It was found that this feature helps alleviate participants' worries about being stuck in case of various family emergencies, but that it is used very rarely. The CAP also offers participants 10 day-use parking permits per person for days when a carpool, vanpool, or cycling is not convenient for them. Virginia Tech does not have a Zipcar program on campus.

Virginia Tech employs one full-time staff person to manage and market its CAP program. The position undertakes a wide variety of alternative transportation responsibilities within the Facilities Department at Virginia Tech. Pursuing greater coordination with regional authorities, monitoring pedestrian and bicycle amenities across campus, managing an alternative transportation education program, and representing the university at events are a few of the responsibilities of the position.

Parking at Virginia Tech

Parking at Virginia Tech costs $106 a year for faculty or staff to park in one of the campus's perimeter lots. Students currently pay $81 a year for the same commuter permit. There are no restrictions for resident students to park on campus.

University of North Carolina *Chapel Hill, NC*

Students: 27,500
Faculty/Staff: 16,000

The University of North Carolina at Chapel Hill is located in a suburban setting, in the state capital region, home to several universities. There is extensive, fare-free bus service offered in the city of Chapel Hill and throughout surrounding cities. The service has comprehensive coverage across the city, linking popular housing complexes to the university campus and to the regional bus system. UNC is planning growth for its educational program, but will not create additional parking in the near term.

Transportation Programs at University of Northern Carolina

UNC also has a TDM program called the Commuter Alternatives Program (CAP). It offers a wide array of options for faculty, staff, and students to travel to and from campus. The CAP is an integral part of the UNC Master Plan which aims, among other things, to reduce single occupancy vehicle travel by increasing on-campus housing, creating park and ride lots, and enhancing local and regional transit. Elements of this TDM program have proven popular, but it has been found that whenever a parking permit is surrendered by someone joining CAP, there are many people anxious to take over the parking permit and start driving to campus. The university has, however, avoided the costly construction of new lots and parking garages that are often necessary outcomes of growth.

The university coordinates nine park and ride lots in Chapel Hill. Anyone may park in five lots on a first-come, first-served basis. However, four lots are reserved for the exclusive use of people enrolled in the CAP program. Frequent bus routes connect the lots to the university campus.

A vanpool program, comprised of nine vehicles, transporting approximately 130 people, is offered as an alternative to driving to campus. The average cost is $20 per month per participant, but the driver rides free. Unlike the program at Virginia Tech, there is no additional discount on fuel or an emergency ride home option

The university's TDM coordinator directs those interested in ridesharing options to websites with online databases of people looking to carpool, like sharetheridenc.com.

UNC has a Zipcar program that is gaining popularity. Four cars are located across the campus. While the cars are available for anyone 21 and older, this transportation option does nothing to reduce single occupancy vehicles from traveling to campus. The program helps serve people who need to travel off campus for a short trip.

One unique feature of UNC's CAP is that members receive merchant discounts at over twenty area shops and restaurants. University staff is working to expand this to make the program more attractive and visible to the university community. The CAP program also has occasional drawings and prize giveaways.

UNC has a full time transportation demand management coordinator. The professional position is staffed in the university's Department of Public Safety.

Parking at University of Northern Carolina

48% of faculty and staff do not have campus parking privileges. UNC's policy is to leave decisions up to individual departments. Each department is allotted a certain number of parking permits; who gets each permit is up to them.

Parking permit rates, for faculty and staff, are based on salaries. There is a wide variance in parking rates based on the lot location and the employee's salary. The

least expensive parking fee for the 2006-2007 school year for an employee who makes less than $25,000 is $281. At the same salary level, a more premium lot would cost $905. A faculty member earning over $100,000 can expect to pay $514 to $1,659 depending on the location. A significant fee increase is planned for the 2007-2008 school year.

Commuter students, who live more than two miles away from campus, may enter a lottery to purchase a yearly commuter parking permit, at $210 - $365, depending on the lot location. After their freshman year, resident students may enter a lottery for an on-campus parking permit. UNC makes 2,514 parking spaces available to resident students. The university and its student government decide the allocation process for the spaces. The student lots cost between $210 - $365 annually.

Harvard University *Cambridge/Allston, MA*

Students: 17,000
Faculty/Staff: 15,000

Harvard University is located on two campuses in Cambridge and Boston. Most university departments have their offices on the Cambridge side of the Charles River. Across the river is the university's business school and expansion room for many programs, including the sciences, while a few miles away in Boston are the medical departments and hospitals. Being located in a dense, urban area affords Harvard students, faculty, and staff the opportunity to take a wide variety of public transportation options to campus. Most parts of campus are linked to the regional subway and all locations may be reached via bus.

Transportation Programs at Harvard University

Harvard launched its CommuterChoice program in 2000 in a bid to reduce the number of single occupancy vehicles traveling to campus. Besides offering faculty and staff a 50% discount on monthly transit passes, 5,800 take advantage of that option, Harvard coordinates ride matching to encourage car and vanpooling. A website offers information to enable commuters to locate people willing to share their ride. University staff is available to assist commuters looking for a match.

Discounted, preferential permit parking is available for people who rideshare five days a week to Harvard. Vanpools current receive parking, free of charge. All carpool spaces are creatively marked to draw attention to the program. Since Harvard does not have the capability to enforce irregular use of its parking facilities, parking permit discounts are only available to commuters who travel to campus five days a week.

One of the main challenges with ridesharing programs, besides coordinating flexible schedules, is they require some enforcement. Another challenge relates to vanpools. It has been difficult to make vanpools useful to Harvard's faculty and staff since people have different work schedules and come from different locations. An emergency ride home option, though used only rarely, is included in the CommuterChoice program for those who commute via rideshare. The CommuterChoice program stresses the overall convenience of using alternative transportation to get to Harvard. Harvard has found that while the ecological and financial benefits of not driving a car to campus are important, making a commute convenient makes the greatest difference.

Zipcars made an early presence on Harvard's campus. Nine cars are currently located on campus and in many areas in Boston and Cambridge. Members of the Harvard community receive a discount for joining Zipcar, but they must be 21 or older. There are currently 3,570 Zipcar members affiliated with Harvard.

Harvard established an office devoted to the CommuterChoice program. The office employs two full-time people- a program manager and an administrator. Responsibilities include program implementation, the posting and distribution of marketing materials, including the website, holding promotional events on alternative transportation, program monitoring and evaluation, and to act as a central resource providing transit schedules and program information. The CommuterChoice office has a strong customer-service function. Staff explains all of their programs and tries to fit employees to their own best commuting option. Harvard has also trained 141 transportation coordinators representing all departments on campus. These individuals disseminate materials on commuting options and collect issues, comments, and questions for the university's transportation staff.

Parking at Harvard University

Parking at Harvard University is scare and expensive. There is currently a waitlist for parking in Cambridge and across the river at the business school. Parking applicants are told to expect to wait up to 36 months for a spot to open. The cost of parking varies depending on the location of the lot, whether or not it is underground, and if a space is reserved. The cost of a yearly underground, reserved permit is approximately $1,830 while an unreserved surface space costs $915. Students get a marginal discount, paying $1,585 for a garage space, but the permits are extremely limited.

Cornell University Ithaca, NY

Students: 19,562
Faculty/Staff: 10,000

Ithaca is home to Cornell in a rural county in upstate New York. A small college town with a large university, Ithaca and surrounding Tompkins County coordinate a bus system that provides dependable service throughout the region. Cornell has worked with transit authorities to establish new bus routes and ensure the system will attract new riders. A consolidated transit organization was created between Cornell, the city, and the county to help simplify local transit and more clearly define options for Cornell commuters.

Transportation Programs at Cornell University

Cornell boasts of having 2,600 fewer cars on campus today than it did in 1990. The university's transportation demand management program gets credit for this reduction. One year after the program was launched, the number of parking permits issued declined by 25%. Cornell estimates that it has saved nearly $37 million over the course of 12 years in avoided parking construction, infrastructure improvements, and transportation costs. The university strives to change the habits of its faculty and staff by providing a combination of options- from financial incentives to convenient alternative commutes. An estimated 33% of faculty and staff commute to campus in a mode other than an SOV.

Cornell's students live largely on or adjacent to the campus, so they are not a major target of TDM efforts. The school would like to offer more options for graduate students, but does not have a funding source. Currently, if a student buys a commuter parking pass, they will also get a bus pass.

To suit the commuting needs of employees, they are offered a transportation demand management program called OmniRide that builds on resources provided by the regional government. The university offers 100% subsidized rides on local and county buses for its employees, Monday through Friday, with the option to pay a small fee for an everyday pass. The program currently has 1,500 members. Cornell staff manages the program to integrate local transportation providers. OmniRide members may ride local transit for free anytime within Tompkins County. Cornell has an arrangement with adjacent counties to partially subsidize travel there.

Cornell encourages use of municipal park and ride lots, but has struggled to get employees to utilize them. These lots are connected to campus by the local bus system. The university is working with local city and transportation authorities to relocate park and ride lots closer to the urban core, hoping they will be more enticing for people to give up their on-campus parking.

A carpool option reduces the cost of parking on campus depending on how many people are involved. Cornell has 1,350 signed up for ride sharing. Discounts are provided for campus parking with the most premium parking lots requiring the largest number of riders in order to qualify for a free permit. However, a carpool of two employees does qualify for a free, reserved parking space in many parts of campus. A stipend of up to $350 may be received if four people carpool, but only about 30-40 people receive this bonus. Overall, carpool incentives range from reduced cost premium lot parking to a reserved space plus a rebate. Cornell urges employees to use online matching systems to find a ride partner.

Enhancements to the current TDM program will be the addition of a car sharing program, like Zipcar, and organized vanpools. Cornell's staff admits both additions will be challenging because vanpools only function if employees live in the same general area and work similar hours. The university will offer a financial incentive for vanpooling, but the level of this has yet to be determined. A car sharing program is being created that would benefit both the university and the Ithaca

community. The program would provide short-term car access for people who commute to campus in alternative modes. Cornell was approached by Zipcar, but including a few cars on campus would not be financially feasible unless it were expanded to include access to citizens of Ithaca.

Cornell provides a safety net for commuters who come to campus without their own vehicle. Emergency rides home are offered in case of emergency, though this service is only used a few times a month. Ten one-day parking permits are provided for members of ride shares. These passes may be used when it is not convenient for employees to take their usual mode to the university. The university estimates that approximately 100 people are enrolled in their occasional parker program, meaning they must walk or ride a bicycle to get to campus on other days.

Cornell employs a manager in their commuter and parking services department to coordinate their TDM program, however, they emphasize how TDM strategies are integrated throughout the parking and transportation department. Several employees are responsible for working on different pieces of the program. Coordination with local and regional transportation agencies is a very important function of TDM program management at Cornell. In order to maintain enrolment levels and eventually expand the program further, this relationship must be maintained.

Parking at Cornell University

The employee parking permit system is structured into six tiers. As one gets closer to the center of campus, the cost of parking increases. The priciest parking permits cost $690 annually, while the lots on the edge of campus are free. Cornell raises parking fees incrementally each year to avoid a contentious battle over large hikes every three to five years. University staff believes that parking fees must be raised in order to provide additional incentive for the Cornell community to consider TDM. However, as with any university, the cost of parking can become controversial.

Cornell does not provide any free parking to students. Students may purchase annual permits for $645 to park adjacent to their residence halls or if they commute to school from off-campus.

Stanford University *Palo Alto, CA*

Students: 17,747
Faculty/Staff: 9,771

Stanford University is located in suburban Palo Alto, north of San Jose. In the center of a large urbanized area, Stanford benefits from easy access to local and regional bus and rail service. The university's shuttle connects campus locations with external transit providers to put the Stanford community within reach of all locations in the Bay Area.

Transportation Programs at Stanford University

Stanford created its Commute Club program to help its community find alternative ways to travel to campus and receive incentives for helping to reduce congestion and improve the environment. Members of the program commit to using an alternative means of traveling to campus other than a single occupancy vehicle. In exchange, members receive a wide array of benefits, including:

- Up to $216 a year in cash
- Free travel on regional buses and light rail
- Pretax payment for other local and regional transit passes
- Reserved parking spaces for carpools/vanpools
- Complimentary daily parking passes for carpoolers
- Vanpool subsidies
- Ride matching service
- Ability to purchase up to eight daily parking permits a month
- Rewards for recruiting new members
- Guaranteed ride home
- 12 free hourly car rental vouchers, available to anyone age 18 or older
- Membership appreciation events
- Prize drawings

The Enterprise rental program has proven to be a popular way to solve some transportation worries. Commute Club members who need to leave campus for a

few hours for an errand or appointment, may utilize an hourly rental from Enterprise, similar to the way Zipcar works.

The Commute Club program is managed in Stanford's Parking & Transportation Services office by one full time staff member. The program is constantly under revision and requires full time attention, as well as aid from office administrators.

Parking at Stanford University

The supply of parking is ample at Stanford. There are only two different tiers of lots. Lots located on the campus perimeter are less expensive than those near the center. For 2007, parking in the premium lots costs $552 and in the other lots it is $216.

Freshman students are not permitted to bring their cars to Stanford. Upperclassmen who obtain an on-campus parking permit will pay between $216 - $552 for parking privileges.

University of Wisconsin-Madison *Madison, WI*

Students: 41,000
Faculty/Staff: 24,000

The UW is located in the center of capital city of Madison. The large campus is connected to the city by a network of well-utilized bicycle and pedestrian pathways and an extensive bus system. Currently, all students receive free bus passes to enable them access to campus from anyplace in Madison. Faculty and staff also get a free local bus pass. The bus system's schedule enables the UW community to access the campus for a wide variety of work schedules and is also free to use on weekends. The price of parking is adjusted periodically to keep giving the campus community an incentive to not drive to campus. UW staff believes this cost, along with convenient TDM options, help give the university one of the best mode splits outside a very large city. Currently, over 90% of students and 50% of faculty and staff travel to campus using alternative methods. The university is aiming to make small gains on the faculty and staff mode split and hold the student rate stable.

Transportation Programs at University of Wisconsin-Madison

Alternative transportation, in particular bicycling, is part of the culture at UW. Besides efforts to get the campus community to utilize the local bus system and pathway network, the transportation office offers programs to encourage ridesharing and urges interested employees to use an online database to partner up with others. Vanpools are offered preferential on-campus parking, but carpools are not. UW staff believes there would be enforcement issues if they started offering special parking for their numerous carpools.

UW also offers a park and ride option for commuters who can access a lot on the west side of Madison, but charges an annual $175 fee to park there. In addition, the Madison area transit organization coordinates a series of park and ride lots coming into the city.

A flex parking feature is offered to full-time commuters who commit to alternative transportation to campus, but need the flexibility to be able to drive their cars to work two times a week or less. Flex parkers pay daily rates to park, but get a 25% discount off the standard lot meter rate. This option helps provide peace of mind to commuters who want to use other modes to travel, but need to drive for personal reasons, like medical appointments and childcare.

A full-time TDM manager is employed in the university's transportation department. The position works with the campus community to explain commuting options, coordinates with city and regional transportation authorities, and produces a yearly assessment of campus commuting patterns.

Parking at University of Wisconsin-Madison

The cost of parking at UW varies depending on the location of the lot. The least expensive parking, $175, is offered to commuters who use Park and Ride facilities. On-campus parking ranges from $445 for perimeter lots to $1,035 for central lots and garage parking.

Parking for is extremely limited at UW and students are strongly discouraged against bringing cars to campus. However, commuter students who live outside

Madison and those with frequent off-campus employment. Students pay the same rates as faculty and staff.

University of Michigan *Ann Arbor, MI,*

Students: 34,000
Faculty/Staff: 28,000

Transportation Programs at University of Michigan

Michigan's TDM program is centered on the provision of bus passes to faculty, staff, and students. The local transit authority, AATA, saw a 40% increase in bus ridership once the university instituted the free pass program in 2004.
Park and ride lots are connected via bus services to different areas of campus. More than 1,800 employees utilize the lots to access their workplaces. With frequent bus connections from the lots and campus parking rates continually on the rise, the university hopes this commuting option becomes more popular.

Faculty and staff are encouraged to establish carpools in order to share parking permit and fuel expenses. Michigan contracts with an outside agency to organize vanpools and pays the monthly fee for each rider. Employees only pay the fuel costs associated with each trip. More than 300 people commute to Ann Arbor via vanpool and take advantage of reserved parking spaces.

TDM at Michigan is managed in the parking and transportation department.

Parking at University of Michigan

Michigan has a complex parking policy, but provides options for faculty, staff, and students at various levels. Staff working more than half-time, research scientists, physicians and nurses, and most faculty may purchase parking permits. The university charges annual rates of $191 - $690 annually depending on the location of the lot.

APPENDIX C

SAFETY, CPTED AND ACCESSIBILITY REVIEWS

APPENDIX C – SAFETY, CPTED AND ACCESSIBILITY REVIEWS

The Appendix presents the results of a safety review that was conducted at the University campus as part of the study. The findings and observations can be used by the University to implement location-specific improvements, and larger area-wide safety-oriented initiatives.

As well, this Appendix summarizes the results of Crime Prevention Through Environmental Design (CPTED) and Accessibility reviews that were conducted at the University campus by the Opus Team. The CPTED and Accessibility reviews provide helpful observations that can be used by the University to improve campus security and accessibility at existing locations and when planning new facilities.

C-1 Vehicle Collision Characteristics

Collisions occurring on the campus from January 2002 to December 2007 were provided by the University. A total of 220 collisions occurred, for an annual average of 36.7 collisions on the campus.

The temporal trends were reviewed, and the results are summarized in FIGURE C-1. The results indicate the following:

- The collision frequency is lower in the last four years of the data (2004 to 2007) than in the previous years (2002 to 2003), but in general has been steady.

- The collisions are generally highest between January and March, and between September and November. This is expected, as the University is in full session during these times, and would have the highest number of vehicles entering and exiting the campus during that time.

- Collisions are most common on weekdays. Again, this is expected, as classes are typically in session during weekdays.

- There were no time-of-day collision information, but it is anticipated that morning and afternoon peak periods (when traffic volumes are highest) would have the highest percentage of collisions.

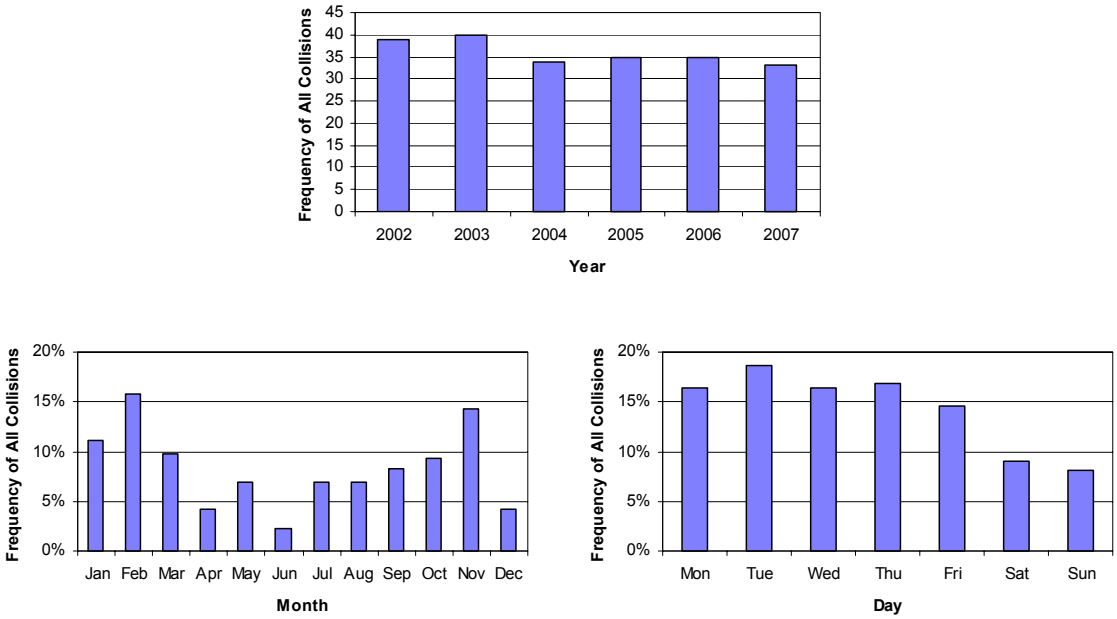
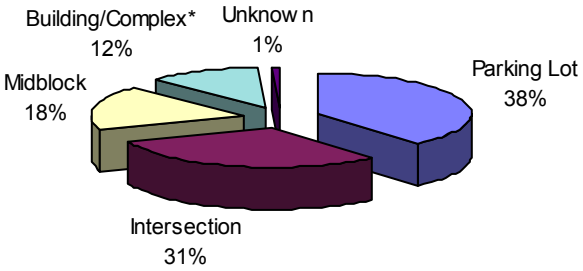


FIGURE C-1 TEMPORAL COLLISION ANALYSIS

The collision location was also determined, and the results are summarized in FIGURE C-2. About 38 percent of the collisions occurred within parking lots, while 31 percent occurred at an intersection. Further analysis into the most common locations for the parking lot and intersection collisions were reviewed, and the findings are shown in TABLE C-1.



* denotes collisions at or near the building loading bays and driveways

FIGURE C-2 LOCATION COLLISION ANALYSIS

TABLE C-1 COLLISION FREQUENCY BY SPECIFIC LOCATION

INTERSECTION

LOCATION	INTERSECTION COLLISION FREQUENCY
Ring Rd. and McGill Rd.	11
Ring Rd. and University Dr.	10
McGill Rd. and Lot 4/8 Accesses	8
Finnerty Rd. and Sinclair Rd.	4
Ring Rd. and Gabriola Rd.	4
Cedar Hill Cross Rd and University Dr.	3
Gabriola Rd. and McKenzie Ave.	3
Gordon Head Rd. and McKenzie Ave.	3
Ring Rd. and Lot E Entrance	3
Ring Rd. and Lot 1 Entrance	2
Ring Rd. and Lot A Entrance	2
Ring Rd. and Lot A Exit	2
Ring Rd. and University Centre Entrance	2
Clarndon Rd. and Sinclair Rd.	1
Gabriola Rd. and Lot 2 Access	1
Gordon Head Rd. and Lot Stewart Complex 2	1
MacKenzie Ave. and McGill Rd.	1
Ring Rd. and Finnerty Rd.	1
Ring Rd. and Lot 1 Exit	1
Ring Rd. and Lot 6 Entrance	1
Ring Rd. and Lot B Entrance	1
Ring Rd. and Lot B Exit	1
Ring Rd. and Lot D Entrance	1
Ring Rd. and Lot E Exit	1
TOTAL	68

PARKING LOT

LOCATION	PARKING LOT COLLISION FREQUENCY
Lot 2	13
Lot 1	10
Lot 5 Upper	10
Lot 4	9
Lot 6	8
Lot 11	7
Lot C	6
Lot A	4
Lot 3	3
Lot 10	2
Lot 5 Lower	2
Lot Stewart Complex 2	2
Lot 5	1
Lot 8	1
Lot 9	1
Lot B	1
Lot D	1
Lot E	1
Lot Human and Social Development	1
Lot Stewart Complex 1	1
Lot 14	1
TOTAL	85

The intersection locations with the most frequent collisions were generally at higher volume intersections (such as Ring Road and University Drive). Lots 2, 1, and 5 (Upper) had the highest collision frequencies among parking areas.

C-2 Safety Audit and Conflict Risk Assessment

A safety audit was performed on the campus during the site visit on January 25. The audit consisted of three specific locations, as well as a general campus-wide assessment.

A. Ring Road and Finnerty Road Intersection

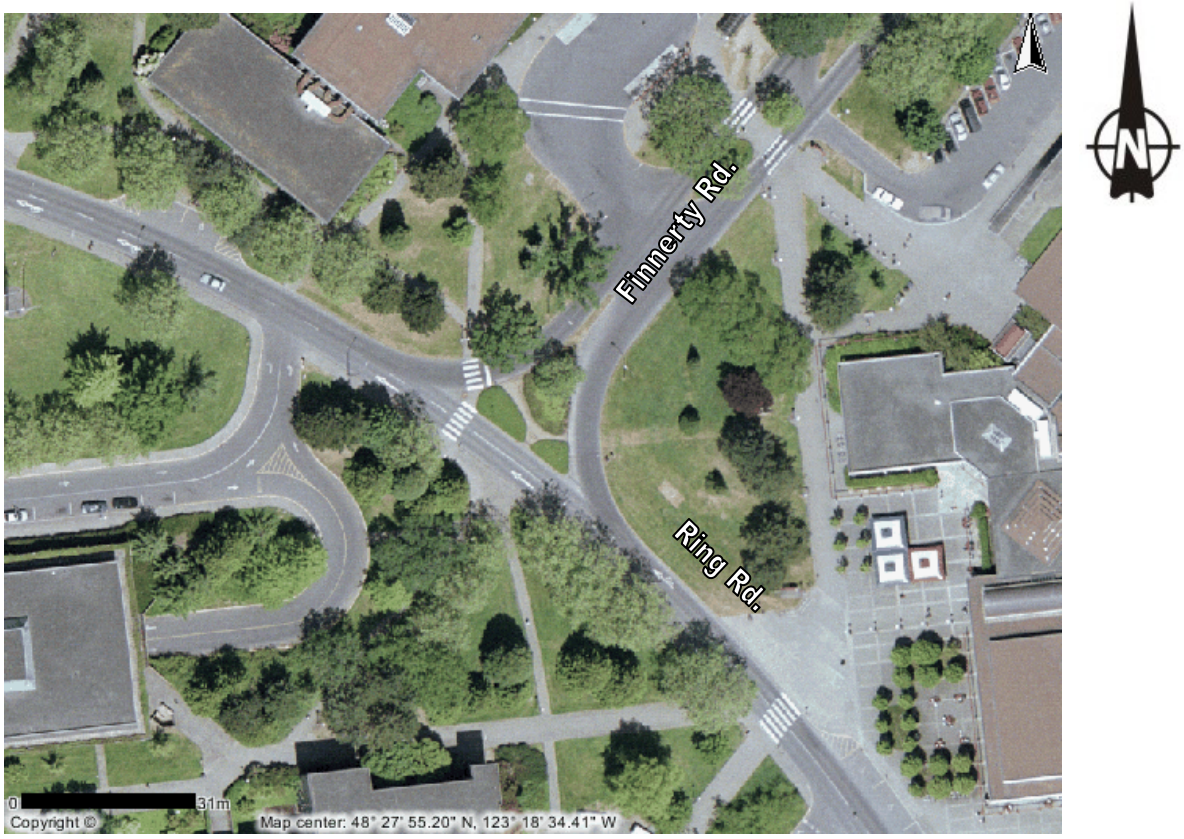


FIGURE C-3 RING ROAD AND FINNERTY ROAD INTERSECTION

Physical and Traffic Characteristics

- The intersection provides right-in-right-out operations with large-radii channelized lanes. A STOP sign is provided for the Finnerty Road approach on the left side of the lane.

- The University transit exchange exit is located approximately 50 metres north of the intersection.

- The exit to the University Centre building and its parkade is located approximately 40 metres west of the intersection.

- Marked crosswalks are located on the eastern portion of the intersection across Ring Road and the southbound right-turn channelized lane. There are also informal pedestrian crossings around the intersection.

- Based on counts from Bunt, over 200 vehicles per hour turn right onto Finnerty Road throughout the afternoon peak period, with a peak volume of approximately 285 vehicles. The right-turn movement volumes onto Ring Road are lower, with a peak volume of 175 and 110 vehicles during the morning and afternoon peak hours, respectively.

On-Site Observations

- Many pedestrians were observed crossing all legs of the intersection in many different directions representing many different desire lines. Some pedestrians fail to watch for approaching vehicles before crossing.

- The channelized right-turn lanes have a radius of about 40 metres, and vehicles were observed to complete their turns at over 40 km/h.

- Although southbound right-turn drivers on Finnerty Road are provided with a STOP sign near the marked crosswalk, most drivers fail to stop, and some were observed to not slow down at all.

- In general, sightlines around the intersection are adequate to see other vehicles and pedestrians. However, drivers during or after completing the right turns may unexpectedly encounter pedestrians crossing the lane. While pedestrians are numerous and not unanticipated, where they cross varies greatly, increasing the potential for pedestrians to surprise drivers. In addition, drivers are typically focused on navigating the turn, and may not be actively watching for pedestrians. Sudden braking for pedestrians was observed during the site visit.

- Westbound right-turning vehicles may unexpectedly encounter buses exiting the transit exchange, and southbound right-turning vehicles may unexpectedly encounter vehicles exiting the University Centre access. Vehicle volumes exiting these accesses are estimated to be less than 50 vehicles per hour based on the site visit and bus schedules.

FIGURE C-4 RING ROAD AT FINNERTY ROAD FACING WEST

Pedestrians cross at many locations at this intersection, resulting in unpredictable encounters and potential collisions with right-turning vehicles.

FIGURE C-5 RING ROAD AT FINNERTY ROAD FACTING EAST

The proximity of accesses close to the right-turn exits (such as at the University Centre exit shown here) may result in unexpected braking and higher collision risk.

Risk of pedestrian collisions – High. Although pedestrians are not unexpected and the sightlines are generally adequate, drivers are typically focused on navigating the curves and might not notice a pedestrian until the last moment. The high volume of pedestrians increases the exposure and potential of pedestrian collisions.

Risk of collisions with buses or other vehicles on exit legs – Medium. Drivers can potentially be concentrating on completing their right turns and not notice a vehicle exiting the University Access or a bus exiting the Transit Exchange. However, these accesses are downstream of the curve where drivers should have the full attention of their surroundings, and the vehicle volumes are generally low.

Potential Mitigating Measures

- **Reduce the channelized right-turn radii**. This would reduce the speed of right-turn vehicles, decrease the likelihood that vehicles can encounter pedestrians during the turn, and provide more distance between the intersection turns and the University Centre and Transit Exchange accesses.

- **Provide additional and/or oversized STOP sign for southbound right-turn approach**. This would emphasize the traffic control and the need to stop for this movement. The risk of collisions with vehicles exiting the University Centre, as well as with pedestrians crossing at or near the existing STOP sign would be lessened.

- **Channelize pedestrians**. This would reduce the number of locations pedestrians cross the intersection and improve driver expectancy regarding pedestrians in their path. This can be done passively with sidewalks, letdowns, and marked crosswalks, or actively with pedestrian fencing.

B. West Campus Way and University Club/Lot 9 Accesses

FIGURE C-6 WEST CAMPUS WAY & UNIVERSITY CLUB/ LOT 9 ACCESS INTERSECTION

Physical and Traffic Characteristics

- West Campus Way near this location is a winding two-lane road through a thickly-forested area. Trees and other shrubbery are on both sides of the road.

- Access to Lot 9 is west of the road, while access to the University Club pick-up-drop-off area is to the east. The two accesses form the east and west legs of this four-legged intersection.

- There is a horizontal curve about 25 metres north of the intersection.

- Speed humps and accompanying warning signs are provided throughout this section of West Campus Way, including directly upstream and downstream of this intersection.

- A "CAUTION – HIDDEN DRIVEWAY" warning sign for southbound traffic is placed in advance of both the intersection and the horizontal curve.

- There are no marked crosswalks at or near this intersection across West Campus Way.

- Vehicle volumes along West Campus Way are unavailable. However, it is estimated that two-way volumes are not higher than 100 vehicles per hour during the day.

On-Site Observations

- The speed humps (and possibly the "CAUTION – HIDDEN DRIVEWAY" sign) appear to slow vehicles before arriving at the intersection. However, some vehicles were observed continue to drive at a relatively high speed (estimated at about 40 km/h). The warning sign for the speed hump immediately north of the intersection might not be seen until arriving at the speed hump itself due to poor sightlines around the horizontal curve.

- The sightlines for vehicles exiting Lot 9 are relatively poor, with a sight distance estimated to be 30 metres when looking north. This distance would be inadequate for a vehicle traveling at 30 km/h or greater.

- Lot 9 appeared to be at most 50% full (about 30 vehicles), of which most seemed to be parked at least two hours. This is comparable to occupancy survey results provided by the University. Three vehicles were observed to arrive and park in Lot 9 during 20 minutes of observation during the midday period. No vehicles were observed to use the University Club access.

- People destined for the University Club were observed to park in Lot 9 and cross West Campus Way. Five pedestrians were observed in 20 minutes during the midday period. The pedestrians appeared to be cautious when crossing.

FIGURE C-7 WEST CAMPUS WAY AT LOT 9 ACCESS FACING NORTH
The horizontal curve and surrounding shrubbery results in poor sightlines for vehicles exiting Lot 9.

Risk of collisions involving vehicles exiting Lot 9 with southbound vehicles – Medium. The sight distance for Lot 9 exiting motorists is poor and might be inadequate should the speed humps fail to slow southbound vehicles. However, vehicle volumes both on West Campus Way and using the Lot 9 access appear to be generally low.

Risk of pedestrian collisions – Low. Similar to Lot 9 exiting vehicles, the sight distance is poor and possibly inadequate. However, the number of pedestrians appears to be generally low, and the pedestrians who did cross seemed to be aware of the potential dangers and crossed with appropriate caution.

FIGURE C-8 WEST CAMPUS WAY AT LOT 9 ACCESS FACING SOUTH

Speed humps are generally effective in slowing vehicles. However, the southbound speed hump and accompanying sign are after the horizontal curve and might not be seen until late.

Potential Mitigating Measures

- **Clear shrubbery to improve sight distance**. This would allow both southbound and eastbound (exiting Lot 9) vehicles to see each other and reduce the likelihood of collisions due to inadequate stopping distance. This would also reduce a pedestrian collision risk.

- **Consider different speed hump design**. Other designs of speed hump or speed bump made to give a driver a more severe vehicle response could be considered. This would typically result in slower vehicle speeds along West Campus Way.

C. Ring Road and McGill Road Intersection

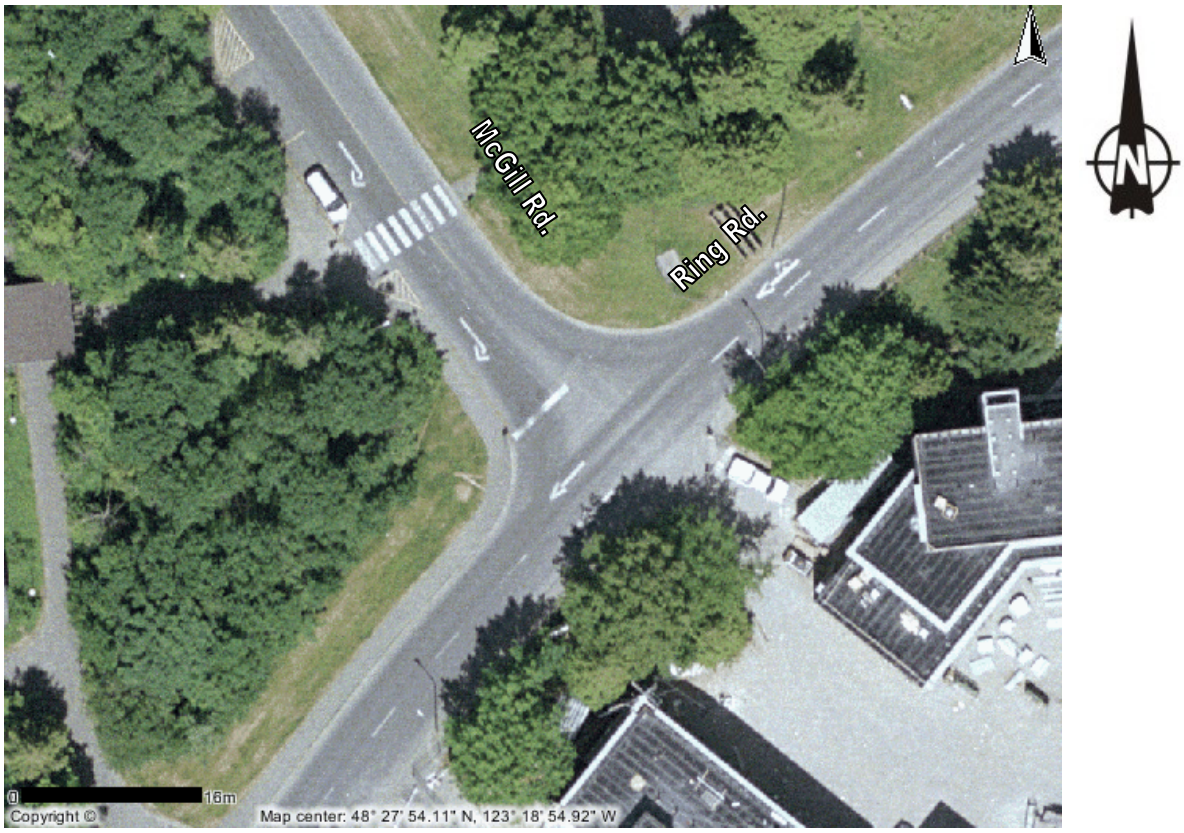


FIGURE C-9 RING ROAD AND MCGILL ROAD INTERSECTION

Physical and Traffic Characteristics

- The intersection operates with right-in-right-out control with a STOP sign on the McGill Road approach.

- A marked crosswalk approximately 20 metres north of the intersection connects Lot 4 and the Fraser Building. There is no marked crosswalk across the north leg of the intersection itself. Sidewalks on the northeast quadrant of the intersection are absent.

- There is an grass-covered earth mound on the northeast quadrant between the Ring Road and Lot 4 about 1.5 metres high relative to the road surface.

- Vehicle volumes along this section of the Ring Road and McGill Road are unavailable.

On-Site Observations

- During the mid-afternoon period, about 50 vehicles turned right from the Ring Road onto McGill Road in 15 minutes. During that same period, over 100 pedestrians crossed either at the marked crosswalk or across the north leg of the intersection.

- The majority of pedestrians walking on the northeast quadrant walked on the grass where there is no sidewalk.

- Westbound right-turning vehicles were observed to make the turn at up to about 30 km/h.

- Construction-related activities associated with the Social Sciences and Math Building construction resulting in a one-lane operation along the Ring Road in the vicinity of the intersection.

- Due to the landscaped earth berm, the traveling sight distance between a lower westbound passenger vehicle turning right and a pedestrian of average height (approximately 1.7 metres tall) starting to cross the marked crosswalk from the east side is approximately 30 metres. This distance would be inadequate for a vehicle traveling at 30 km/h or greater.

- Although drivers in taller vehicles and pedestrians taller than 1.7 metres could see each other at distances greater than 30 metres, the earth mound would obscure the visibility of most of the vehicle and person, decreasing the ability of both to see and perceive each other.

- Driver/pedestrian interaction related to the lack of sight distance was observed. While on-site for 15 minutes, two near-collisions (where there would have been a collision without evasive action by the driver and/or pedestrian) occurred. This involved relatively heavy braking.

- The earth mound and nearby trees also makes the intersection less conspicuous, thus increasing the likelihood of approaching Ring Road drivers being unprepared for intersection-related vehicle movements, such as sudden braking by right-turning vehicles turning onto McGill Road or unexpected right-turning vehicles from McGill Road entering the Ring Road.

FIGURE C-10 MCGILL ROAD AT RING ROAD FACING SOUTH
The earth mound between the Ring Road and the walkway and crosswalk restricts visibility between Ring Road motorists and pedestrians using the crosswalk, increasing the risk of pedestrian collisions and conflicts.

Risk of pedestrian collisions – High. Pedestrians in the area are frequent, the pedestrian sightlines are poor, and the stopping sight distance may be inadequate. In addition, drivers are typically focused on turning right and might not notice a pedestrian until the last moment.

Risk of collisions at the intersection – Medium. The inconspicuousness of the intersection and the relatively high vehicle volumes increases the risk of right-turn and rear-end collisions.

FIGURE C-11 RING ROAD AT MCGILL ROAD FACING WEST

Sidewalks are not provided along Ring Road on the northeast quadrant. However, pedestrians continue to walk along the Ring Road curb, even with undesirable walking conditions such as the muddy sections shown above.

Potential Mitigating Measures

- **Move marked crosswalk to north leg of intersection**. This would allow both Ring Road motorists and pedestrians crossing McGill Road to see each other and reduce the likelihood of collisions due to inadequate stopping distance. This is also a more standard intersection layout, thus increasing driver expectancy. It is also recommended to remove the walkway between Lot 4 and the crosswalk to further dissuade pedestrians from crossing at the current marked crosswalk location.

- **Provide sidewalk along Ring Road on the northeast quadrant**. To further encourage pedestrians to cross along the north leg and fill the observed pedestrian desire path, it is suggested that a sidewalk be provided along Ring Road east of the intersection.

- **Provide signage denoting the intersection**. Signage of some type for approaching Ring Road motorists denoting the approaching intersection would prepare the motorists to anticipate associated intersection vehicles.

D. Campus-wide Assessment

Observations indicate that the main access roads for automobiles within the campus were the Ring Road, University Drive, McGill Road, Finnerty Road, and McKenzie Avenue. In general, the lane geometry, sightlines, intersection layouts, and intersection and access conspicuity appear to be appropriate for the observed traffic. Traffic control devices appear to be standard and adequate where desired. Parking lot layouts appear to be typical of other parking lots in the Greater Victoria area and in British Columbia in general. Provisions for public buses such as at the Transit Exchange or at bus stops operated adequately.

However, the general observations indicated the following potential campus-wide safety concerns:

- Wide right-in-right-out channelized lanes
- Inconsistent pedestrian signing at marked crosswalks
- Inconsistent or poor street and guide signing
- Unpredictable pedestrian crossing pattern

Large Right-Turn Channelized Lanes with Inconsistent Signing

Some intersections provide right-turn channelized lanes with an estimated 20-metre or more horizontal curve radius. These locations include all right-turn movements at:

- the Ring Road and Finnerty Road intersection;
- the Ring Road and University Drive intersection; and,
- the McGill Road and McKenzie Avenue intersection.

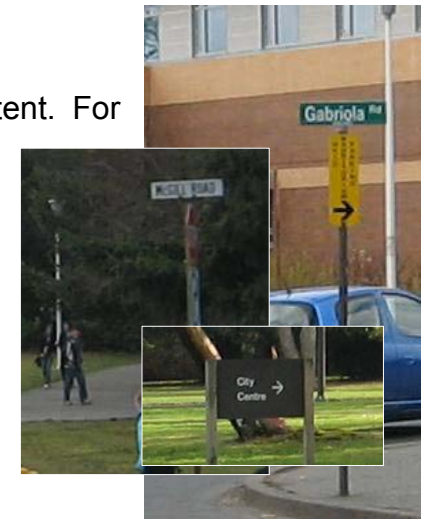
Vehicles were observed to complete their turns at generally high speeds, typically over 40 km/h. While sightlines around these turns are adequate to see other vehicles and pedestrians, the relatively high speeds would increase the distance required to stop and reduce the safety of the turns.

Inconsistent Pedestrian Signing at Marked Crosswalks

The marked crosswalks provided throughout the campus generally provided the appropriate signing and pavement markings as suggested in the TAC Pedestrian Crossing Control Manual. However, the signing was inconsistent. For example, most crosswalks provided pedestrian crossing signs on both sides of the crosswalk, such as at the crosswalks on the west portion of the Ring Road near the Sedgewick Building. However, some only provided a sign on one side of the road (such as near the “Ring Road” Residence), or in some cases, none at all (such as across West Campus Way near Lot 10). The inconsistent signage reduces driver expectancy as to where to expect pedestrians.

Inconsistent Street and Guide Signing

Street signs and guide signing are generally inconsistent. For example, the street sign for Gabriola Road is generally large and green with white lettering, but the sign for McGill Road is small and white with black lettering. For the University Drive intersection, a street sign is absent; only a directional roadside sign denoting “City Centre” is present.



The guide signs directing visitors to the relevant parking lots are also inconsistent and difficult to read. For example, the text on the sign directing motorists to Lot E is small and difficult to read that the lot is reserved for faculty and staff with parking passes. A visitor may mistakenly enter the lot and would need to exit; however, the layout of the accesses and the Ring Road would require the motorist to drive around the Ring Road to park near to Lot E (in this case, the nearest public pay lot is Lot 6).

The inconsistency in sign appearance can make looking and spotting the signs for visitors more difficult, especially along portions of the Ring Road where there are visual roadside distractions. These distractions prevent drivers from concentrating on the road, and thus increasing the safety risk.

Unpredictable Pedestrian Crossing Pattern

As discussed previously, the pedestrian crossing patterns are not limited to the location of the marked crosswalks. Site observations indicate that pedestrians cross at any location. The unpredictability of where pedestrians cross may result in pedestrians crossing unexpectedly, increasing the risk of a pedestrian collision.

C-3 CPTED Review

As well as designing environments to prevent crime, it is also important to design environments to prevent the fear of crime that may discourage use of an area, or a certain mode of transportation.

Overall the University of Victoria campus is well designed in terms of crime prevention. Although crime statistics were not available for this review, the lack of graffiti and litter on the campus, is a strong indication that there are relatively few crimes, and assist in fostering a sense of safety on campus.

The areas that have been highlighted as being of potential concern with regards CPTED are:

Several areas of the campus lack natural surveillance, and are shown in FIGURE C-12. This includes:

- The areas just past McGill Road, continuing counter-clockwise around the Ring Road;
- Locations of both covered and uncovered bike racks;
- Gabriola Road; and
- Remote sections of parking lots.

FIGURE C-12 AREAS LACKING IN NATURAL SURVEILLANCE

In some areas of the campus there is a lack of pedestrian-level lighting, particularly in parking lots which rely just on vehicle designed lighting. Although it is important to ensure that lighting is not introduced into areas where it will encourage or facilitate anti-social or nuisance behaviour.

FIGURE C-13 AREAS LACKING IN PEDESTRIAN-LEVEL LIGHTING

Whilst not directly associated with criminal activity, anti-social and nuisance behaviours are associated with CPTED. Several people were witnessed using skateboards as a mode of transportation, which although is not a crime, one was skateboarding against the traffic flow on Gabriola Road, which has safety implications, whilst another was using a pedestrian crossing and pathway, as were many cyclists. Other skateboarders were witnessed using the centre of the campus as a form of skate park. Again, whilst not a crime, it may discourage other people from using the area through indirect intimidation. The university prohibits skate park type activities with enforcement by Campus Security Services, but permits regular travel in a safe manner along pathways.

Although there were no noticeable crime problems at the UVic campus, areas around Student Union Buildings, buildings where late night socialising take place and Transit Exchanges can be crime facilitators, so it will be important for the university to ensure that any future changes to these areas are designed within CPTED principles.

C-4 Accessibility and Universal Access

During the course of the site visit to the University, several people with accessibility issues were noticed travelling independently, around the campus, which is a most positive sign that the campus is accessible. By designing an environment that is accessible for those with accessibility issues, particularly pedestrians with accessibility issues, the environment will be more accessible for all.

There was a very noticeable vehicle dominance within the parking lots showing a strong vehicle hierarchy. Although most journeys will ultimately begin and end as vehicle trips, the vast majority of people will be pedestrians during the time in the parking lot. Parking lots should have pedestrian areas that match or compliment pedestrian desire lines, or be deigned to reduce the vehicle hierarchy. The following photos show that parking lot 6 has no pedestrian access / egress routes towards the ring road, forcing people to use the roadway.

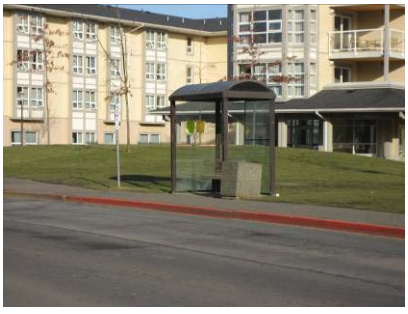
It should be ensured that dropped curbs are both lined up with and present for all pedestrian crossings and crosswalks. This will ensure that wheelchairs do not have to manoeuvre out of crossings, or entering it at an angle which may potentially conflict with live traffic. Additionally lined-up curb drops will assist in correctly orientating the visually impaired to the crossing.

Street furniture should be positioned so not to block or inhibit certain manoeuvres on sidewalks, for example the post blocking sidewalk, in the following photos.



Street furniture should also contain colour contrasting lines to ensure visibility to the visually impaired. Examples of street furniture on campus that would benefit from colour contrasting lines, includes the post given in the previous example; the covered bicycle shelters; the bar across the back of the parking lot pay machines; bus shelters; and bins.






Parking lots specifically for handicapped spaces were well signed within the context of the University's current WayFinding and signage systems. Handicapped parking spaces should be positioned in areas that are nearest the destination of the general users of the parking lot, combined with safe areas for being able to manoeuvre in and out of vehicles. For large parking lots such as Lot 2, handicapped parking spaces are in more than one area of the lot. But some handicapped parking spaces are very small, mainly the space in the west side of parking Lot 2, and in Lot D.

Although the university has very good signage for alternate routes to avoid steps, and to warn of steep hills, alternate route signage to avoid the steep hill leading down parking lot 9 and University Club is lacking.

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APPENDIX D

PUBLIC CONSULTATION

APPENDIX D – PUBLIC CONSULTATION

D-1 Public Consultation Strategy

Opus Hamilton developed a consultation strategy in support of the Traffic and Parking Management Study for the University of Victoria. The consultation strategy consisted of:

- First round of internal stakeholder consultation in the form of a focus group held as two sessions on Friday February 15, 2008;
- First on-line survey which went live on March 11, 2008 and was closed on April 14;
- External stake holder consultation via telephone interview;
- Second round internal stakeholder consultation on Tuesday 10, June 2008 as a presentation of the recommendations followed by a discussion on the recommendations;
- Public open house on Tuesday 10, June 2008 with feedback forms available; and,
- Second on-line survey from June 10 to July 2, 2008, to provide feedback on the proposed recommendations.

This APPENDIX provides a summary of the results of both on-line surveys, and the external stakeholder consultation.

D-2 First round of internal stakeholder consultation

The following is a summary of the first round of internal stakeholder consultation which was conducted as a focus group held as two sessions on Friday February 15, 2008.

The main points that came out of the morning focus group were:

- Parking fees for the year are reasonable.
- The introduction of evening and Saturday parking fees has caused particular difficulties for users of the Cinecenta and the Phoenix theatre.
- Information on the availability of accessible designated parking spaces is not adequate.
- Parking can be an issue for catering services clients.
- Parking issues overlap with WayFinding and a coordinated approach for map information and signage is required.
- A half day parking pass option for people who wish to park for the morning or afternoon only should be an option that is looked at.
- The 6:00 start for $2 evening parking can be an issue for people who arrive on campus for the evening starting at 4:30 or 5:00pm.
- Short term parking needs for parents who drop off or pick up children participating in athletic camps is an issue that should be addressed.
- Parking charges at the Ian Stewart recreation complex can be an issue as no other recreation facilities accessed by the community have pay parking.
- The pay parking ticket dispensers and the area around them need to be better illuminated in the evening.
- More pick up and drop off areas should be designated on campus.
- The areas set aside for reserved parking should be adjusted to ensure that they meet the demand from permit holders but not too extensive given the need for space by general permit holders.
- Sidewalks are needed around all of the Ring Road as currently people are forced to cross the road to continue on a sidewalk.
- In parking lot no. 5 the internal stop lines in the vehicle lane ways are not obvious enough which is a safety hazard.
- A cyclist lane designation is required on Gabriola Rd. and better signage could be utilized at the intersection at Ring Road where the cyclist curb cut is located.
- Gabriola Rd. is an active area with vehicles, cyclists, service vehicles and pedestrians and could use better overall traffic management.
- The traffic and the configuration of McKenzie Ave. is a problem for cyclists and needs attention.

- Planning should be underway for a parking structure.
- The pricing of parking should vary depending upon the location of the parking space with prime locations charged a significantly higher rate.

The afternoon session was held with members of the Facility Development and Sustainability Sub Committee. The main points that came out of the afternoon focus group were:

- The need for parking for employees given the different hours of work, inadequacy of transit service and the individual needs of people for errands, children, etc.
- The need for attention to be given to key points of congestion and conflict between pedestrians, cyclists, vehicles and buses.
- The attention that should be given to enforcement relative to traffic speeds, service and other vehicles that are on internal campus shared service roads and pathways.
- The need to provide for more drop off and pickup areas
- The use of pricing strategies for regulating parking demand overall and at different times during the day and for different locations.
- The need to plan now for the future development of a parking structure.

D-3 First On-line Survey

The first on-line survey went live on March 11, 2008 and was closed on April 14. A total of 607 responses were collected. Of these, 365 respondents provided other comments at the end of the survey, while the response count for each question (excluding other comments) averaged to 598.

Please note that the high response rate is in part due to the creation of a campaign page on the popular social networking web site, FaceBook. It has been suggested that the page was created by a student running for election using parking fee reduction as a campaign tool.

Of the respondents (see FIGURE D-1):

- 50 percent are students of the University of Victoria;
- 47 percent are teachers or staff members of the University of Victoria; and
- 3 percent are visitors or other users of the University of Victoria.

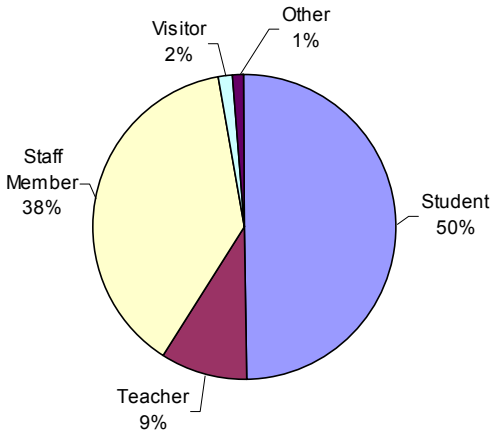


FIGURE D-1 DISTRIBUTION OF RESPONDENTS

As indicated in FIGURE G-.2, 56 percent of the respondents selected the car as their primary mode. After this mode, bus, bicycle, and walk modes divided the remaining portion into 24 percent, 11 percent and 7 percent shares, respectively. 2 percent reported using other modes of transportation to get to campus; it is reasonable to assume that these campus users are dropped off / picked up from the campus area.

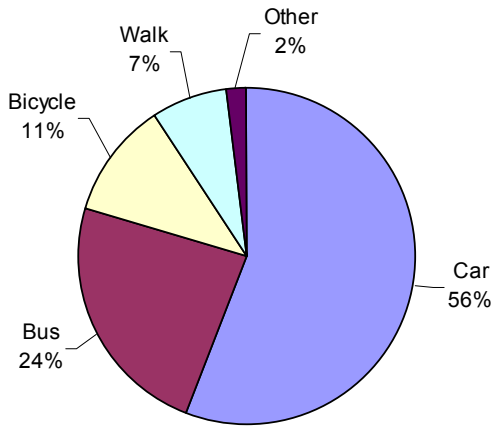


FIGURE D-2 TRAVEL MODE

92 percent of the respondents indicated that they come to campus at least four times per week between September and May (see FIGURE D-3). The remaining 8 percent come to campus 3 times or less per week.

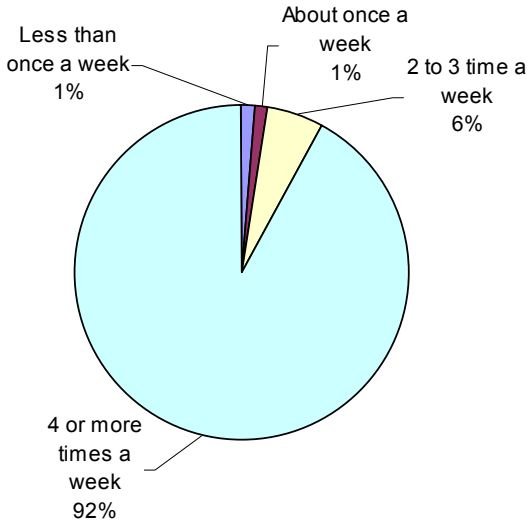


FIGURE D-3 COMMUTING FREQUENCY

The survey provided statements related to the following topics:

- Parking;
- Public transit service;
- Pedestrian and bicycle facilities; and
- Traffic and circulation on campus.

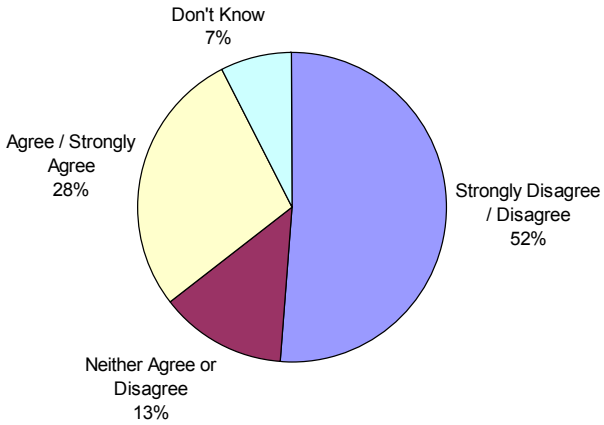
Respondents were asked to indicate their level of agreement with each statement. They were able to choose from the following possibilities:

- Strongly disagree;
- Disagree;
- Neither agree or disagree;
- Agree;
- Strongly agree; and
- Don't know.

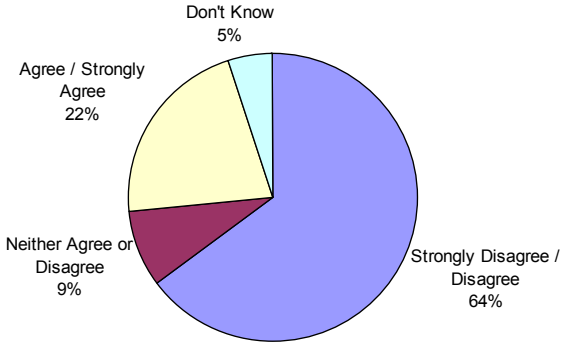
A summary of the responses to these statements is provided below. They are organized into the four topics listed above.

Parking

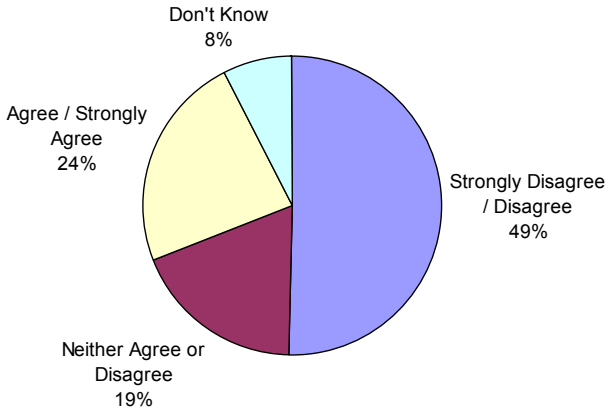
As indicated in FIGURE D-4, the majority of respondents felt that is often difficult to find parking space on campus and that the cost of parking is high. In addition, finding parking close to their destination is a challenge. They also agreed that additional parking should be provided on campus. Furthermore, many did not think that making campus parking more expensive and less easily available would encourage more sustainable and healthier transportation choices.



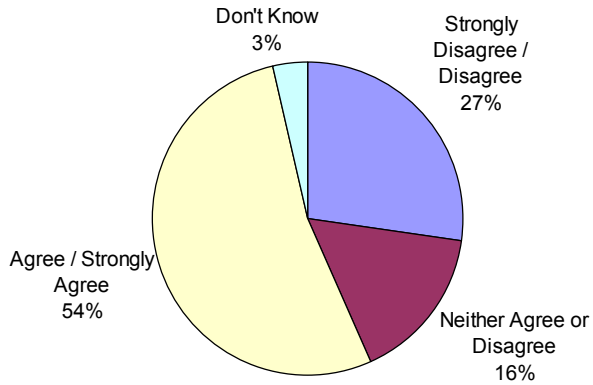
1. It is usually easy to find a parking space on campus



2. Parking on campus is generally affordable.

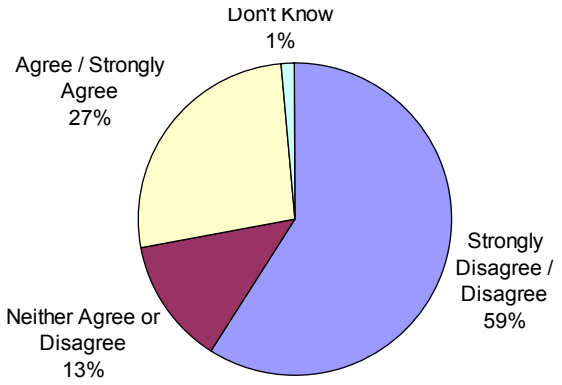


3. If parking on campus was more expensive, I would consider traveling by another mode (bicycle, bus, walk).

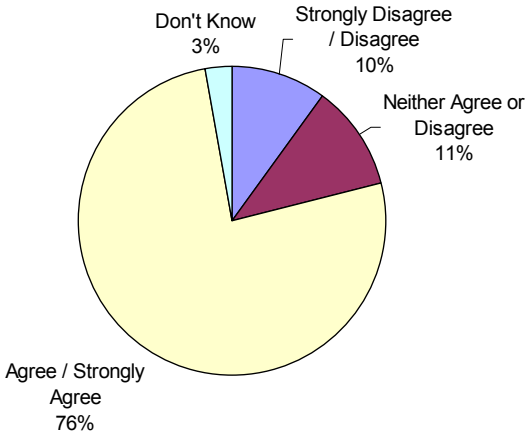


4. In the future, there should be more parking spaces provided on campus.

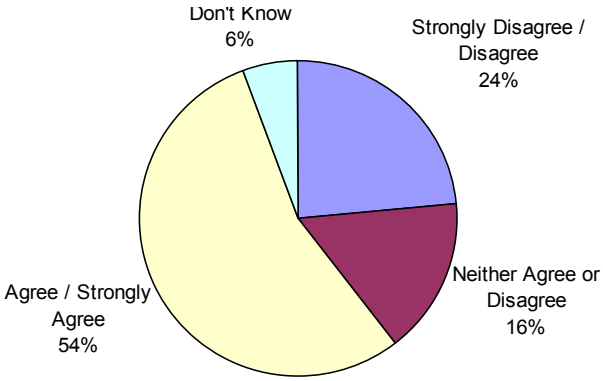
FIGURE D-4 COMMUTING FREQUENCY



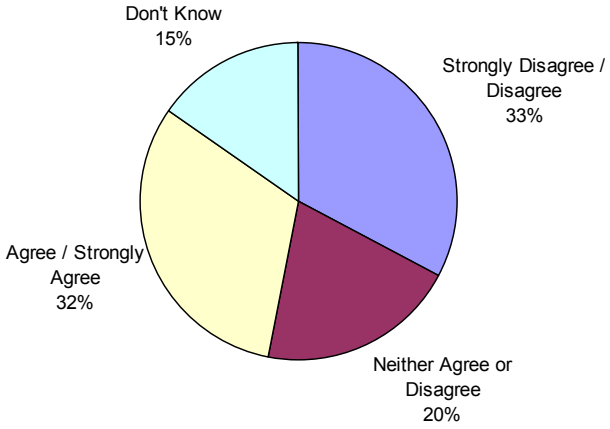
5. By making campus parking more expensive and less easily available, we encourage more sustainable and healthier transportation choices.



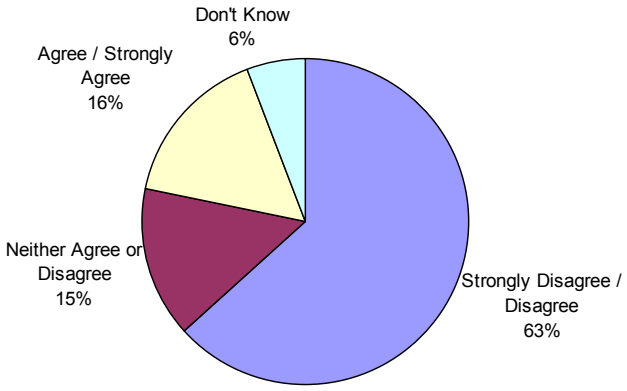
6. I usually feel personally safe walking to and from the campus parking lots.



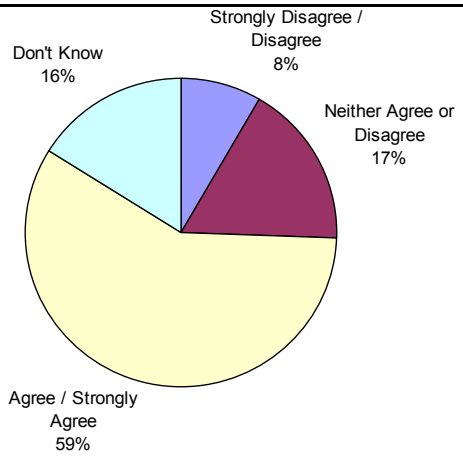
7. There is adequate signage of the parking lots.



8. The parking dispenser machines are convenient to use.



9. It is easy to find a parking space close to the desired destination.



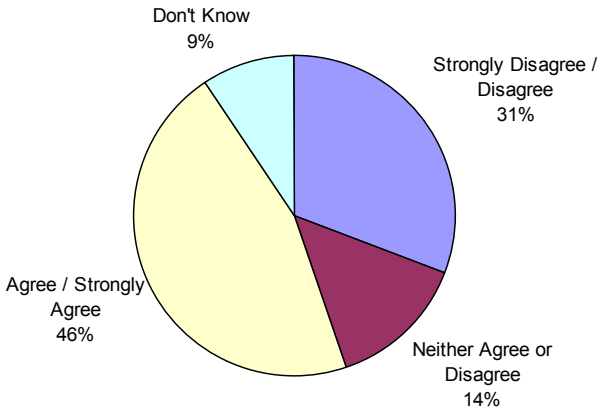
10. There is strong enforcement of parking violations.

FIGURE D-4 COMMUTING FREQUENCY (CONTINUED)

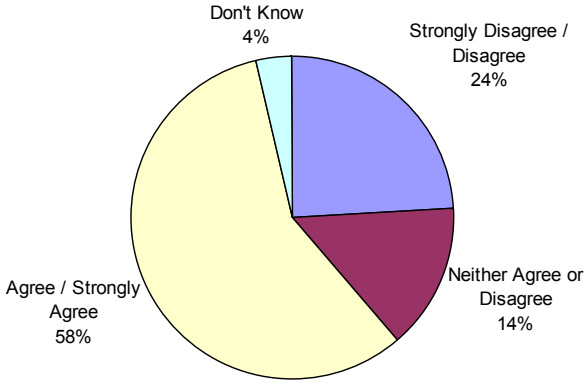
With regards to campus parking lots, the majority of respondents felt personally safe walking to and from them. Most found that there was adequate signage in the lots.

Public Transit Service

As shown in FIGURE D-5, more than half of the respondents found transit service to the campus to be generally adequate and that the U-Pass system to be a good deal for transit users. However, a large majority indicated that they would be more willing to take the bus to and from campus if transit service was improved and that transit service should be improved throughout the day.

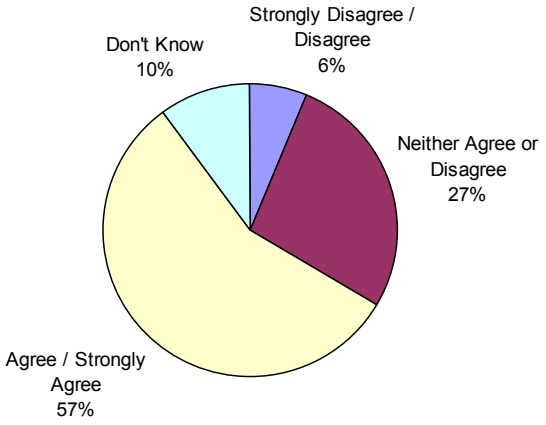


1. Transit service to the campus is generally good.

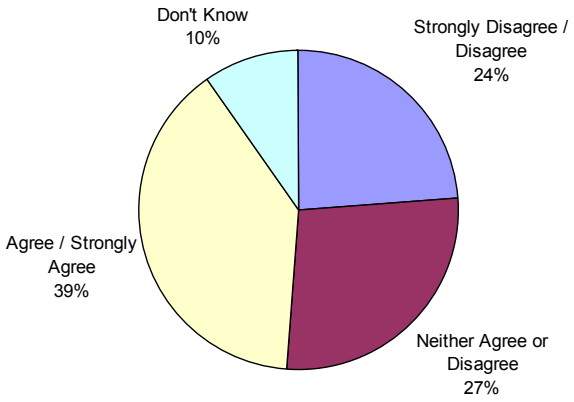


2. If Transit service to the campus was improved (more frequent buses) I will be more likely to use the bus to and from the campus

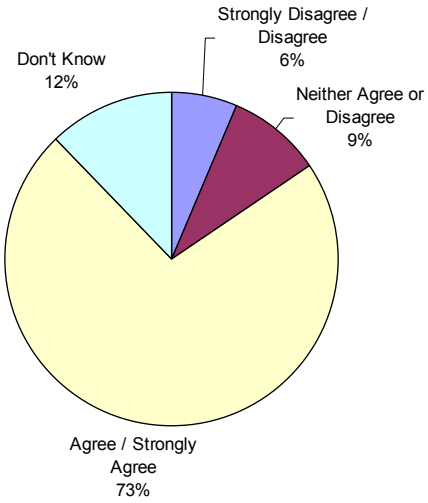
FIGURE D-5 PUBLIC TRANSIT SERVICE



3. Transit service to the campus should be improved throughout the day.



4. Transit service to the campus should be improved during the morning and afternoon peak periods only.

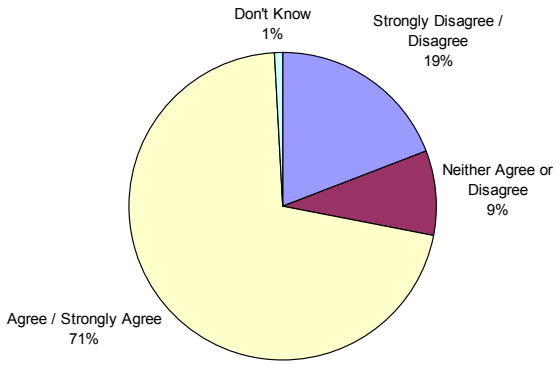


5. The U-Pass system provides a good deal for transit users.

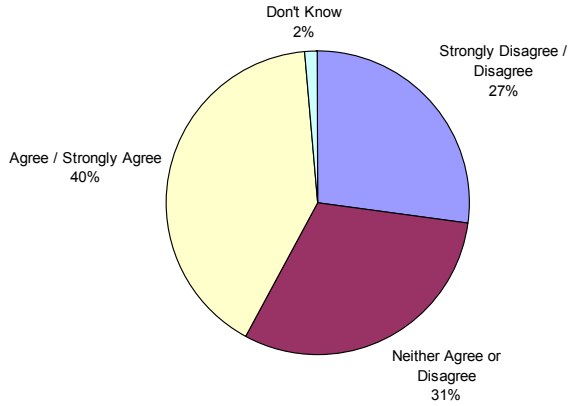
FIGURE D-5 PUBLIC TRANSIT SERVICE (CONTINUED)

Pedestrian and Bicycle Facilities

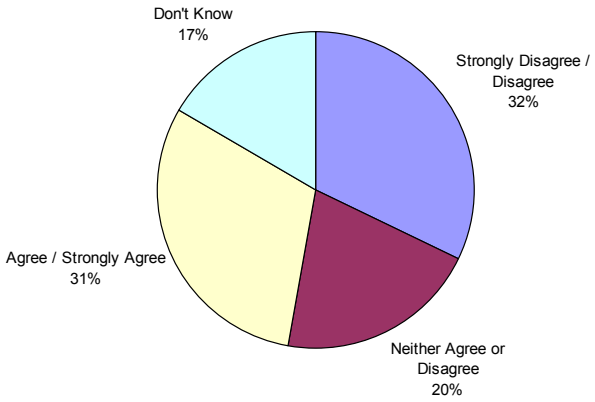
As suggested by FIGURE D-6, there was a strong agreement that pedestrian facilities on campus are generally adequate. Hence there was not a large number of respondents who felt that the campus should be made more pedestrian-friendly.



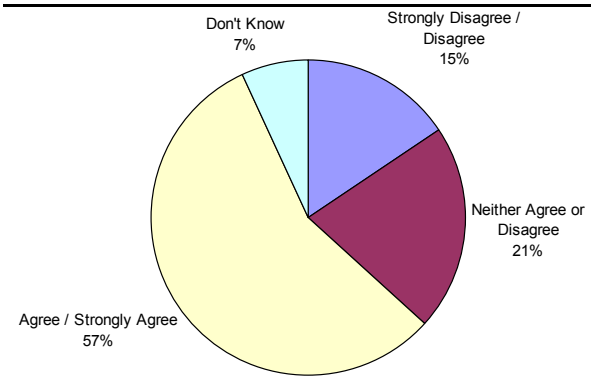
1. Pedestrian facilities (sidewalks, crosswalks) on-campus are generally adequate.



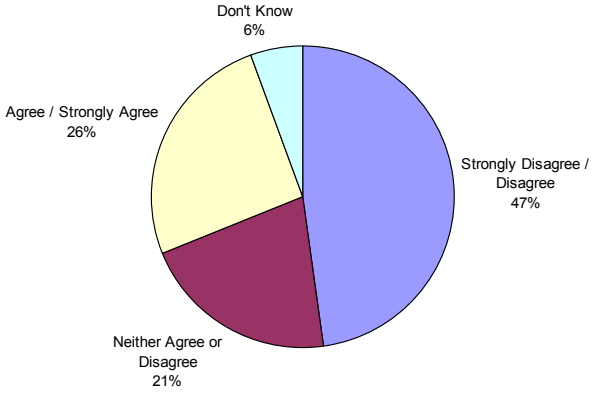
2. The campus should be made more pedestrian-friendly, for example by adding sidewalks, widening sidewalks, and adding pedestrian paths



3. Bicycle facilities (bike lanes, bike parking) on-campus are generally adequate.



4. The campus should be made more bicycle-friendly, for example by adding bicycle lanes, bicycle paths, and bicycle parkin.



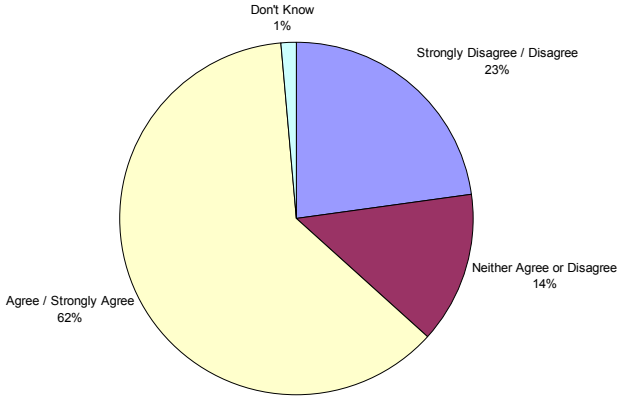
5. I will be more likely to use my bicycle instead of my car or transit to travel to and from the campus if the on-campus bicycle facilities were improved.

FIGURE D-6 PEDESTRIAN AND BICYCLE FACILITIES

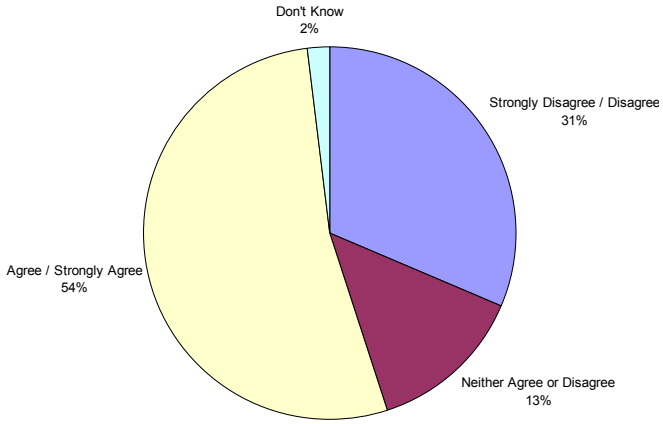
There seemed to be a low response to the question of whether the bicycle facilities are adequate. Moreover, 100 respondents (17 percent) indicated that they did not know if the campus bicycle infrastructure was sufficient. In addition, most respondents thought that improvements to the bicycle facilities would not encourage them to commute via bicycling.

Traffic and Circulation on Campus

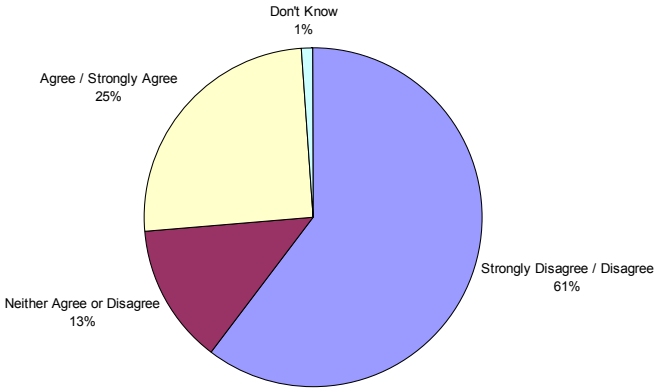
Most respondents agreed that the roads into and out of campus, as well as the Ring Road, are generally efficient (see FIGURE D-7). The majority disagreed with allocating more space to pedestrians and bicycles and less space to motor vehicles to encourage more sustainable travel choices.



1. The roads into and out of campus (not including the Ring Road) are generally efficient.



2. The Ring Road is generally efficient for car circulation.



3. The campus should provide more space to pedestrians and bicycles and less space to motor vehicles in order to encourage more sustainable travel choices, even if this inconveniences car users.

FIGURE D-7 TRAFFIC AND CIRCLING ON CAMPUS

The survey also provided respondents the opportunity to add additional comments related to University of Victoria campus parking and transportation. 365 of the total 607 respondents provided additional comments. Each individual comment was read through and distinct patterns were found.

Top Concerns

These comments represent the general concerns:

- Evening and Saturday parking fees;
- Peak-period Greater Victoria Area transit already at full capacity;
- Transit scheduling, accessibility, and trip duration for suburban area commutes;
- Inequalities of gender, single parents, and persons with dependents facing rising parking cost burden as a result of TDM;
- Pedestrian and cyclist manoeuvres on Ring Road;
- Bicycle parking security, shelter and lockers; and
- Moped / motorcycle / scooter parking.

Current transit users reported reliability issues throughout Victoria.

Greater Victoria dwellers reported that in-bound transit to University of Victoria is at capacity during morning periods. That means people are left at bus stops waiting for the next bus service, which might take an additional half hour.

Greater Victoria's suburban dwellers that voiced comments about the lack of efficiency and accessibility of the Victoria Regional Transit System's service were from the Saanich Peninsula (Brentwood Bay, Saanichton, and Sidney) and Western Communities (Langford, Colwood and Metchosin). These individuals indicated that their car trips took 30 minutes while the transit commute would take at least 2 hours.

The most frequently made comments are summarized in TABLE D-1.

TABLE D-1 SUMMARY OF MOST FREQUENT CONCERNS

TOPIC	COMMENT	POPULARITY
Transit	No service, or unrealistic due to my distance from campus	34
	No service at 5:00 a.m., 6:00 p.m. onwards, or on weekends, which I would need for work or school on campus	24
	Buses too crowded at peak a.m. and p.m. periods (unable to get on for the last 10 to 15 stops in the morning)	13
Traffic & TDM	Bicycling to campus is not safe for me, the rider, or for my parked bike when I arrive	5
	Disorganized parking signage and inadequate, or impolite parking patrols	4
	The pedestrians and bicycles on the Ring Road are a hazardous (especially from SUB building)	15
	The vehicle traffic on the pathways is obstructive and unsafe	4
Parking	Paying 2 dollars after 6:00 p.m. and on Saturdays is a serious burden for me*	64
	Tickets for parking are unfairly high at 25 dollars	3

*note this responses popularity could be artificially high due to the FaceBook page created during the student elections. This page details possible reasons against the stipulated $2 charge, and was widely circulated amongst the student body.

Top Suggestions

The following represents the most frequently expressed ideas from the survey:

- Express buses to / from suburban areas;
- Parking pass for once a week use (6 or 8 times a week, not 12)
- Designated staff parking lot;
- Lots 1 and 5 should be connected for better inter-parking distributions;
- All traffic exit Lot 1 to Cedar Hill Cross Road to reduce Ring Road trips;
- Parking machines consistent throughout campus lots;
- Bicycle lanes on roadways surrounding campus area;
- Signage for efficient pathway use;
- Pick-up / drop-off spots along the Ring Road (20-minute parking);
- Pedestrian crossing site in front of SUB / Elliot Area;
- More pedestrian-oriented cross-walks on campus;
- No bicycles allowed on the Ring Road; and
- Staff parking rates correlate to income brackets.

Dedicated express buses were suggested as a way to service the ferry and airport terminal areas, the Brentwood Bay and Saanichton areas, and the Langford, Colwood and Sooke areas. In addition, express bus corridors along Patricia Bay Highway and Island Highway were identified as potential routes.

TABLE D-2 provides a summary of the most frequently made suggestions.

TABLE D-2 SUMMARY OF TOP SUGGESTIONS

TOPIC	COMMENT	POPULARITY
Transit	Run better transit service during peak class times	1
	Run smaller community buses more frequently (e.g., at night)	1
	Place a bus stop in front of the ECS building	1
Traffic & TDM	Decrease car use along the Ring Road, increase pedestrian crossings, and add better lighting for safety	6
	Make the Ring Road a single lane and widen the sidewalk and add bicycle lanes	6
	Add signal controls for pedestrian crossings along the Ring Road for better traffic efficiency and safety	5
	Add more covered bicycle facilities with lockers nearby and safety lighting	11
	Add a left-turn lane from Hillside onto Henderson	2
Parking	Create a staff-only parking lot and have a staff rate (which could be tied to staff income)	4
	Make scooter, moped and motorcycle parking more affordable and more available	5
	Create free 20-minute pickup or emergency drop-off parking	3

D-4 External Stakeholders

The following agencies and municipalities were identified as key external stakeholders:

- District of Oak Bay
- District of Saanich
- BC Transit
- Capital Regional District (CRD)

Meetings were held with representatives from each agency. The input provided and the results of these meetings were used to help formulate the recommendations of this study. In general, the representatives of all four of the key external stakeholders expressed a strong desire to continue working collaboratively with the University of Victoria to provide and improve multi-modal transportation and parking solutions that support sustainability objectives.

D-5 Second Round of Internal Stakeholder Consultation

Those internal stakeholders, who were invited to the first round of consultation, were invited back to the second round internal stakeholder consultation on Tuesday 10, June 2008. This took the format of a presentation of the recommendations followed by a discussion on the recommendations. Feedback forms were also available and fact that feedback could be made via a second on-line survey linked from the university's website was also publicised.

Below are the results of the post-presentation discussion. Those feedback forms and on-line surveys that were completed by stakeholders have been analysed with all other feedback forms and surveys.

- The lack of allocated road space and dedicated on-road facilities for cyclists
- Many felt that the parkade was the only viable long term parking option for the campus.
- There should be reallocation of parking and space type when planning and building the parkade.
- UPass for staff and faculty is a good idea
- Ensure that the relationship between the university and the community is continued, as in particular want the community to use the university's facilities.
- There was still concern that charging for after hours parking may discourage visitors
- Evening parking charges should be included in the ticket price of events so to disguise the fact that patrons are paying for parking.
- Events and marketing should advertise parking charges and also alternate modes to travel to the university other than by private vehicles.

D-6 Public Open House

A public open house was held on Tuesday 10, June 2008. The consultants and director of campus planning were there to answer any questions. Feedback forms were available, and it was also possible to view the presentation material on-line and complete the feedback form on-line to provide feedback on the proposed recommendations.

The poster shown in FIGURE D-8 was used to advertise the public open house.

In addition to the advertising of the event, invitations were sent, inviting representatives of the of the following Resident Associations groups:

- Cadboro Bay Residents Association
- Camosun Community Association
- Quadra Cedar Hill Community Association
- Gordon Head Residents Association
- Saanich Community Association Network
- Mt. Tolmie Community Association
- North Henderson Residents Association

The following posters were displayed at the Open House and afterwards on the university website. It was then possible to complete the feedback form via an on-line survey. The results of the feedback are in Section D-7.

Tuesday, June 10, 3 – 7 p.m.
Student Union Building, Michèle Pujol Room, University of Victoria

The study addresses issues related to vehicle, pedestrian, cyclist and transit bus traffic and the quantity, type and location of the parking supply needed to accommodate future growth in a manner that reflects the interests of the campus community and the directions of the Campus Plan and Sustainability Guidelines.

Please join us to learn about the draft recommendations from the campus traffic and parking management study being undertaken by the Office of Campus Planning and Sustainability.

The university's transportation and engineering consultants, Opus Hamilton Ltd., will report on their research and present options, preliminary conclusions and recommendations from the draft report.

- Maps and information will be on display.
- Light refreshments will be served.
- Please come with your questions and feedback.

FIGURE D-8 COPY OF POSTER ADVERTISING PUBLIC OPEN HOUSE

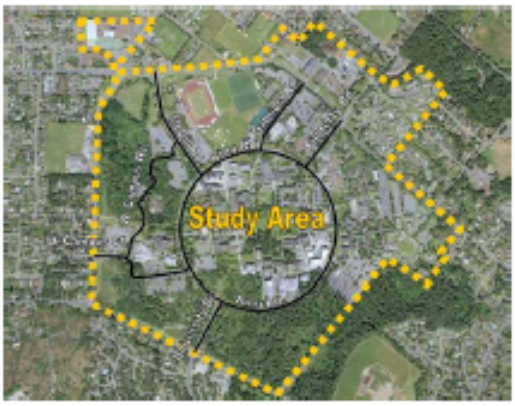
UVic Transportation and Parking Study

University of Victoria

STUDY OBJECTIVES

The University of Victoria is one of Canada's leading academic institutions. With 10 faculties and 2 Divisions, the University is widely recognized for its innovative and responsive programs.

Looking forward, the University is planning to further manage and plan the future parking, traffic, and safety issues at the Gordon Head Campus. The University continues to experience strong growth, with six new buildings set to open in 2008 and 2009. It is essential that future parking and traffic requirements are well managed and planned to achieve the optimal balance between efficiency, cost, impact to the surrounding community, convenience for all users, and sustainability.



Opus Hamilton were retained by the University to produce a transportation and parking management study to support the University's aim of increasing sustainable transportation choices by reducing single-occupant vehicle trips, encouraging increased use of public transit, cycling and walking, and reducing impacts on climate change.

STUDY OBJECTIVES

The two key objectives of this study as summarized by Opus Hamilton are:

1) Establish a parking supply and management strategy that supports sustainability objectives, is cost-effective, and is sensitive to the needs of all stakeholders; and,

2) Establish a multi-modal on-site traffic management strategy that minimizes conflicts while promoting safe and efficient movement within the campus for all campus users.

OPUS Hamilton

UVic Transportation and Parking Study

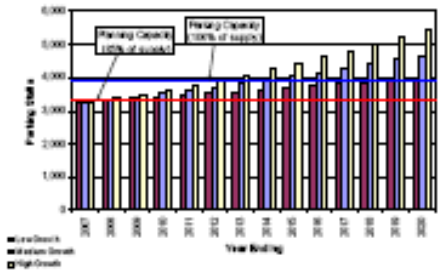
University of Victoria

CURRENT CONDITIONS

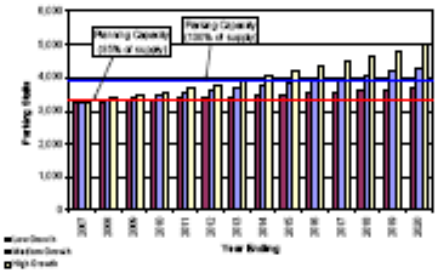
PARKING CAPACITY

Based on 3 predicted growth rates (low, medium and high) at the university of undergraduates, graduates, staff and faculty it is predicted that even with Transportation Demand Management (TDM) measures to assist people in using methods other than driving to campus, the current parking lots will reach capacity within the next 6 to 8 years.

PARKING CAPACITY WITH CURRENT TDM



PARKING CAPACITY WITH AGGRESSIVE TDM



TRAFFIC AND RING ROAD

- Pedestrian flows are too high across cross-walks during peak hours for vehicles
- The cross-walks do not match all of the pedestrian desire lines for crossing the Ring Road
- Lack of facilities for cyclists can lead to safety conflicts between cyclists and vehicles
- Passengers exiting buses and crossing the Ring Road are vulnerable to vehicles passing the bus

TRANSIT AND OTHER MODES OF TRAVEL

- Buses are often full which can lead to pass-bys, especially at peak times
- There is a lack of on-road bicycle facilities, for example bike lanes
- The sidewalks do not connect up all the way around the Ring Road

OPUS Hamilton

UVic Transportation and Parking Study

University of Victoria

PUBLIC CONSULTATION

WHO HAS PROVIDED COMMENTS

- Internal Stakeholders to the University
- Students, staff, faculty and public through the on-line survey
- The Campus Security and Parking Services Department
- The Office of Campus Planning and Sustainability
- The FDSS (Facilities Development and Sustainability Sub-Committee)
- BC Transit
- Capital Regional District
- District of Oak Bay
- District of Saanich

WHAT WERE THE COMMENTS

- Lack of communication between UVic, Oak Bay and Saanich regarding facilities for cyclists
- Bus drivers find it dangerous that pedestrian cross in front of buses at bus stops
- Flows of pedestrian at cross-walks can be too high and too consistent delaying vehicles on the Ring Road
- Lack of continuous sidewalk around the Ring Road
- Pass-bys by full buses particularly during morning peak times
- Bus times not convenient for unusual class times
- Lack of end-of-trip facilities for cyclists
- Lack of on-road facilities for cyclists such as bike lanes
- The need to have good parking lot signage and parking permit dispensers that are conveniently located and lighted at night

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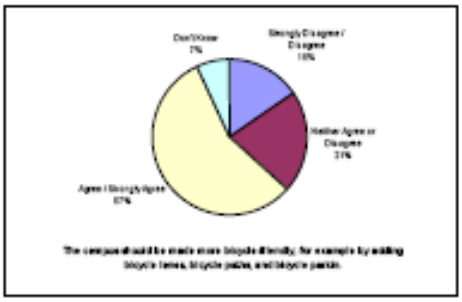
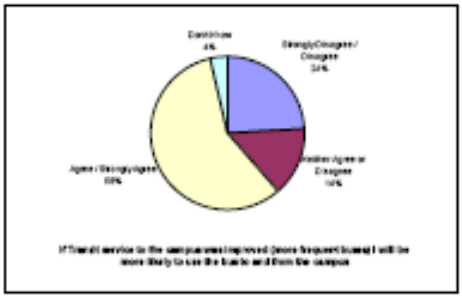
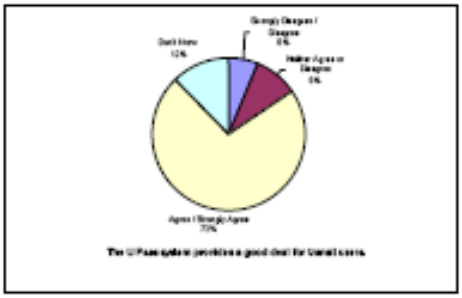
RESULTS FROM ON-LINE SURVEY







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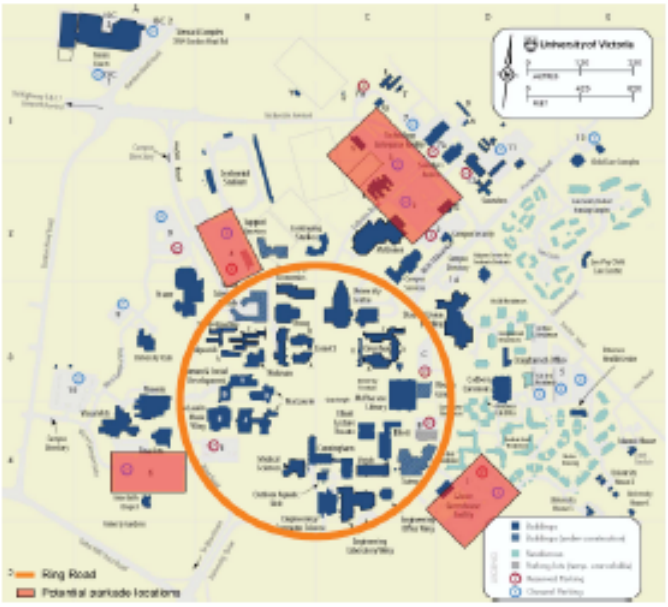
PRELIMINARY RECOMMENDATIONS - PARKING

PARKING ISSUES

- Parking is reaching capacity on campus
- The number of students, staff and faculty at the University is growing
- There is little room or desire to use green space to build additional surface parking
- Our preliminary recommendation is to plan for a parkade structure to be operational by the year 2014 at the latest

OPTIONS FOR THE LOCATION OF THE POSSIBLE PARKADE



Criteria	Potential Locations			
	Existing lots 2 and 3	Existing lot 4	Existing lot 6	Existing lot 1
Existing lot occupancy	High	High	Medium	Medium
Access to external road network	High	High	High	Low
Proximity to campus buildings / facilities	High	Medium	Low	Medium
Least impact on neighboring land use	Medium	Medium	High	High
Ranking of potential locations	First	Second	Third	Fourth

High = best meets criteria
Medium = readily meets criteria
Low = meets criteria least

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RING ROAD ISSUES

- Pedestrian volumes at cross-walks very high especially around the SUB (Student union building) causing congestion for vehicles on the Ring Road
- Sidewalks are not continuous around the Ring Road
- Cross-walks do not meet all pedestrian desire lines
- There are too many pedestrian desire lines across the Ring Road to be met by cross-walks
- Lack of on-road facilities for cyclists, for example, bike lanes and curb-cuts
- Bus passengers cross in front of buses when they are pulled in at bus stops, causing potential pedestrian-vehicle conflict with vehicles on the Ring Road




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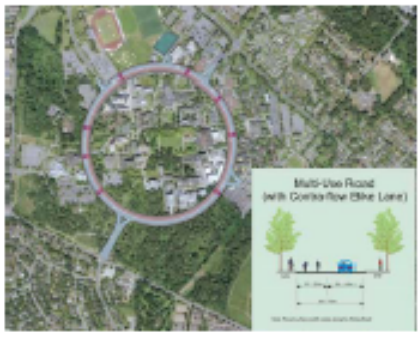
RING ROAD OPTIONS

Minor Upgrades

- Ring Road still operates as one-way with two lanes of general traffic
- Transit would still integrate with general traffic. Sidewalks would be widened with curb cuts for bicycle access
- Coloured pavement would distinguish pedestrian crossings and crosswalks, with the possibility of curb extensions and/or raised crosswalks for wide sections or locations along pedestrian desire lines

Multi-User Road:

- The general traffic lane is reduced to one lane, with transit using that one lane
- Bus stops would be located with build-outs (bus bulges) to prevent overtaking of buses when a bus stops reducing the pedestrian-vehicle conflict that BC Transit Bus Drivers have expressed concern over
- The space that was formally the second traffic lane would be used for a 2-way bicycle lane
- Curb extensions should be considered with lane narrowing
- Coloured pavement could be used to distinguish the different areas, e.g. bicycle lanes



Shared Streets,

- The majority of the Ring-Road closed to general traffic, allowing pedestrian, cyclists and transit vehicles to share the space
- There would not be the need for particular crosswalks, pedestrian crossings and sidewalks because they would all be integrated
- Access to the parking lots would be gained from outer roads, except Parking Lot 1 where the only access and egress is via the Ring Road. For this, the Ring Road will be converted into a two-way roadway between Parking Lot 1 and University Drive to allow access and egress traffic

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PRELIMINARY RECOMMENDATIONS – AGGRESSIVE TRANSPORTATION DEMAND MANAGEMENT

- U-Pass for Staff and Faculty

- No parking permits or permit limitations for 1st and 2nd year undergraduates
- Parking permit limitations for those who live within a 2 mile radius of the campus
- No discount for purchasing parking passes over buying daily passes

- Increasing on-street parking restrictions in neighboring areas
- Compulsory entry into university car-pooling database
- High proportion of car-pooling reserved parking spaces in desirable parking stalls

- Emergency ride-home scheme
- Increase transit service particularly in off-peak period
- Shift and class times synchronized with transit times
- Express buses to campus to reduce chance of pass-by by local stopping buses
- Increasing end-of-trip cycling facilities on campus, such as showers
- Action to integrate and coordinate cycling facility improvements such as bike lanes in conjunction with the jurisdictions and Cycling Advisory Committees of UVic, Oak Bay, and Saanich

Please note that exceptions will be made for those people who meet criteria, for example registered disabled.

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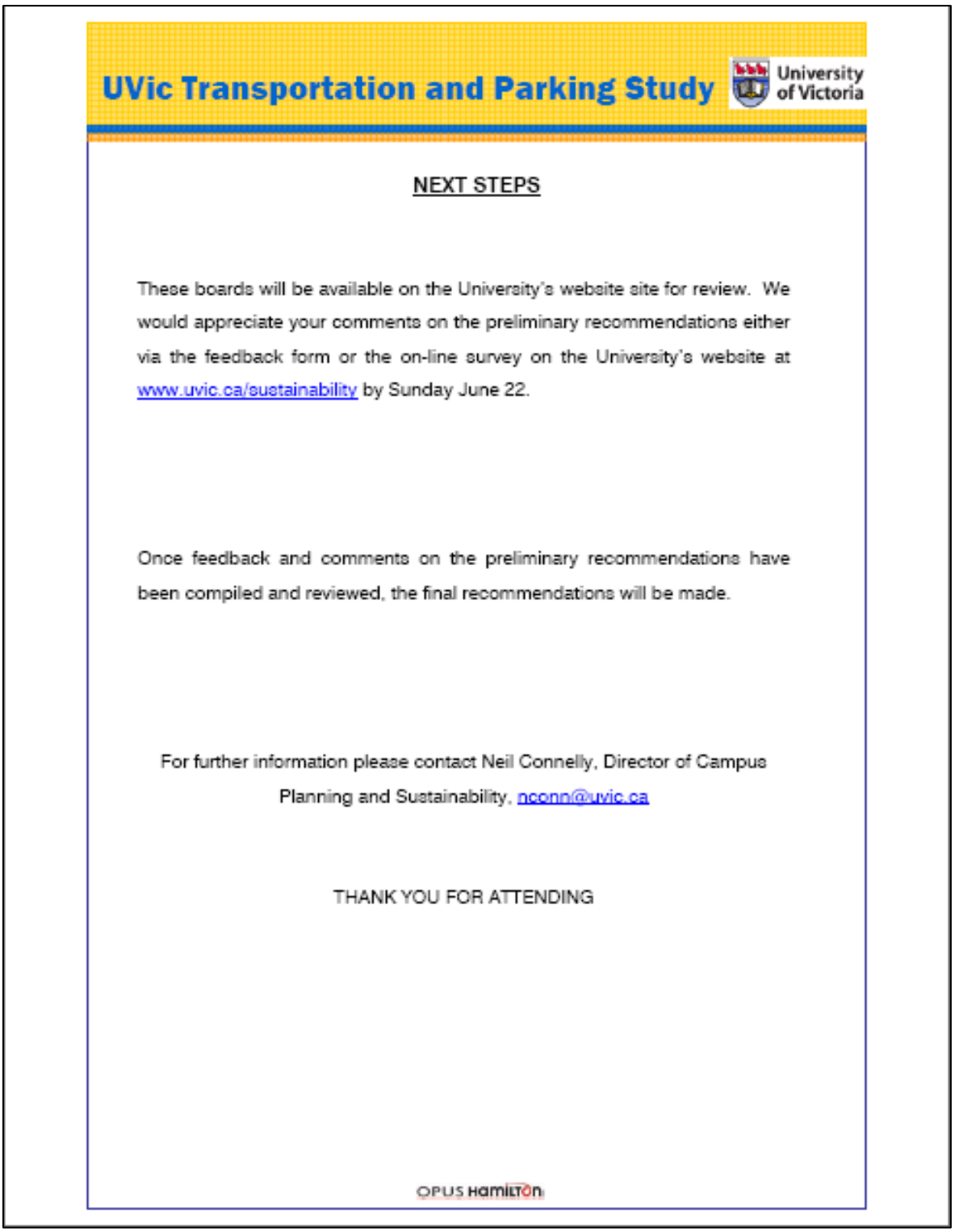

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NEXT STEPS

These boards will be available on the University's website site for review. We would appreciate your comments on the preliminary recommendations either via the feedback form or the on-line survey on the University's website at www.uvic.ca/sustainability by Sunday June 22.

Once feedback and comments on the preliminary recommendations have been compiled and reviewed, the final recommendations will be made.

For further information please contact Neil Connelly, Director of Campus Planning and Sustainability, nconn@uvic.ca

THANK YOU FOR ATTENDING

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D-7 Feedback on Recommendations

Both internal stakeholders and the public were able to provide feedback on the recommendations through feedback forms available at the Open House and also through an on-line form.

The results of the feedback are presented below in summary tables for each question, followed by the detailed write-in comments.

1. What are your comments on the preliminary options for a parkade on campus?					
Support parkade	Support parkade for options other than lot 1	Support parkade only as opposed to surface parking	Reduce car trips by other means	Do not support	Total Responses
2	3	3	3	1	12
17%	25%	25%	25%	8%	100%

2. What are your comments on the preliminary options for the Ring Road?						
Support closing Ring Road to general traffic	Support closing ring road to general traffic if external parkade access is improved	Support dedicated bike lane	Support dedicated bike lane (not 2 way)	Not helping	Shared streets	Total Responses
1	4	3	1	1	2	12
8%	33%	25%	8%	8%	17%	100%

3. What are your comments on the preliminary options for Transportation Demand Management for travel to campus?							
Not support ideas	No comment	Support UPASS	Do not support Upass	Support the TDM ideas	Do not support restricting parking passes	Support restricting parking passes	Total Responses
2	2	2	1	3	1	1	12
17%	17%	17%	8%	25%	8%	8%	100%

1. What are your comments on the preliminary options for a parkade on campus?
Response Text
A parkade would take up less of a footprint on campus, but in light of the pressing need to encourage alternate transportation, I would not want to see overall parking capacity increased
It is a better solution than taking up more green space to create additional parking lots. It will likely be very expensive though and during construction, key parking areas will be temporarily unavailable creating a parking capacity crunch.
A parkade seems good but it needs easy access to a main road via a trafic light and constant patrol by secuity. lot 2 would be good.
Wondering if aggressive TDM and the projection of even higher oil and gas prices would deter driving to campus and therefore the demand for further parking?☐ ☐ I know that the results were a bit skewed due to the 'student campaign' to do the survey and to
A parkade is a much better use of space than adding more ground level parking lots that take up way too much valuable space. However, the parkade must be well lit and patrolled by security regularly so women feel safe at all times and break ins are minimi
With all the new buildings opening on campus, the need for increased parking is a reality, and thus I find the preliminary options to be a good step.
I think this is a stop gate / bandage solution a full campus wide UPASS if implemented with EXPRESS BUS SERVICE should reduce parking demand especially in light of increasing gas prices.
Reduce car trips to campus.
Support parkade to facilitate closure of Ring Road as noted below. All locations reasonable except for lot 1 option.
Would like to avoid a parkade. A bigger push for comprehensive transit is needed.
Parkade - ok
Lot 2/3 would be a good choice - but I only support this as a multi-modal transportation HUB not just a parkade.

2. What are your comments on the preliminary options for the Ring Road?
Response Text
The multi-user road and shared streets options are the most progressive. I like the idea of closing Ring Rd to general traffic but can't quite visualize the shared street area and access to parking lots between PL 1 and U Dr.
I have not felt unsafe cycling on the ring road, only once I leave campus and have to deal with traffic when there is no cycling lane. If external access to parking can be arranged, limiting traffic on the ring road to improve access for buses, cyclists
limited access, (bikes, service vehicles and buses) would be good as long as access to parking lots is upgraded. parking lots need access to main roads via trafic lights. continuous sidewalks with maybe a railing to prevent jaywalking might be good.
I like the 2nd recommendation of creating a 2 lane bike lane - suggestion to raise those lanes so that they would be level with the sidewalk and so that cars can not pass other cars or busses.
The current design of ring-road is unsafe for everyone. Absolutely connect the sidewalks, improve the number and visability of cross walks. Have one lane dedicated as a two way cycling lane and paint it a bright colour so drivers and buses understand the
I'm unsure if any of the proposed solutions truly solve the underlying problems. Other than for fitness use, continuous sidewalks around ring road doesn't seem useful; if on bicycle or on foot, it's typically quicker to walk through the paths through the
I really like the dedicated bike lane proposal. This should reduce congestion
Private cars should not be allowed on Ring Road.
Suggest closing Ring Road to all traffic except for emergency vehicles, buses, bicycle traffic. Access all parking lots external to Ring Road.
I strongly prefer a multi use or shared road approach
Ring Road - Becomes shared streets option.
Multi-user Road is appealling but 2 lane (opposite directions) for bikes could be confusing. Shared Street is a great concept but only could happen if Lot 1 was built on (& 0+2/3 had parkade)

3. What are your comments on the preliminary options for Transportation Demand Management for travel to campus?
Response Text
Generally agree with all options, especially U-Pass for staff and faculty, which is an excellent idea.
I can see that the current UPass system for students provides very poor service but students are compelled to participate. I would be very angry if forced to purchase a UPass but had to stand and watch overflowing buses go by when I am trying to arrive a
these are not good ideas, most are a negative approch. you need to encourage bikes, buses and carpooling with monatery incentives not the opposite!!!
Must be more emphasis on lobbying for more transit service to and from campus - especially earlier and later night☐ Great idea to make the cost of parking the actual cost of parking - ie not making it cheaper to purchase a an annual parking pass☐
The campus needs to better advertise non-driving options and provide stronger incentives for people to leave their cars at home and to seek alternatives. Make parking more expensive for people especially for those who live close by, create a U-Pass system
No comments.
I believe the idea of restricting student access to parking passes in 2nd year could be seen as discriminatory.
No response.
Support but unsure inclusion of travel by scooter/motorcycle as one of the accepted/supported options for travel.
I like the aggressive strategy proposed
TDM - Approve ALL reccommendations
Pathetic - HOV lanes on campus? How will that work in relation to Question 2? Many more good ideas: Love the idea about the carpool database What about Uvic shuttle to/from remote parking lot? All special events on campus should automatically include valet bike parking + free transit tickets.

APPENDIX E

CURRENT TDM INITIATIVES

APPENDIX E - CURRENT TDM PROGRAMS

The following TDM programs are active at the University of Victoria in 2008 / 09:

Universal Bus Pass
Employee Bus Pass Program
Employee Car Share Program
Family Student Housing Car Share Program
Car Share Co-op Vehicles on Campus
Rideshare Parking Permit
Carpool Parking Permit
Flexible Parking Permit
UVic Ride Matching Posting Board
Cycling Infrastructure Investment Program
SPOKES Bicycle Bursary Program
UVic Fleet Vehicle Program
Electric Bike Charging Stations
Bicycle Education Programs
Motorcycle and Scooter Shelters
Campus Safewalk Program
Videoconferencing Facilities

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

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