FOREWORD

With the campus consolidation process of Edith Cowan University currently on track, the growth of student and staff numbers at the Joondalup and Mount Lawley campuses will be significant, especially from now until 2007.

It is recognised that ready access to campus is an important contributing factor to providing a campus environment which supports the University’s strategic objective of attracting and retaining students and staff. It is also acknowledged that viable alternatives to reduce dependence on access by car to campus are important for improving the campus’s natural environment. It will also enable funds that would otherwise be required for providing additional parking to better utilised in supporting the University’s core business activities of teaching, learning and research. The development and implementation of an Integrated Transport Plan is seen as critical to achieving these objectives.

This report is the result of a detailed investigation and analysis of ECU metropolitan campuses’ current and future needs for transport. It has been prepared by transport consultants in close consultation with key stakeholder groups from within ECU with input and direction from the Department for Planning and Infrastructure.

The report makes a range of recommendations and proposes an implementation plan that will result in a more sustainable and holistic approach to transport at ECU. Already a number of key recommendations have been implemented including the introduction of the shuttle bus service from the rail station to the Joondalup campus, employment of a full time TravelSmart Officer, increased bus services to the Mt Lawley campus and improved bike facilities on all campuses.

I support this Integrated Transport Plan as a series of workable solutions to the transport issues facing us at ECU now and in the future.

Andrew Branston
Director, Facilities and Services
Edith Cowan University
ACKNOWLEDGEMENTS

In completing this Integrated Transport Plan report for Edith Cowan University, sincere thanks and appreciation is given to all who gave their valuable time, enthusiasm, guidance and comments to help make this report a valuable transport plan for ECU to use as a working guide for its current and future transport needs.

In particular thanks go to the ‘Transport Reference Group’ (TRG). The group was set up to provide stakeholder participants with the opportunity to guide and influence the process through all steps of the project’s development. The TRG has been a key source of valuable information and their on-going input has proved to be very successful (refer to Appendix A for the full list of members of the TRG). Input from the Bike User Group (ECUBUG) and the members’ enthusiasm to the transport issue has been received with much appreciation.

Thanks to the Project Managers, Estill & Associates who successfully managed this project through to its completion.

Thanks also to Mr John Hayes (Manager Campus Services) for his devoted assistance and provision of information throughout the project.

On-going assistance from the Department for Planning and Infrastructure (DPI) has aided this project invaluably in ensuring that transport opportunities are workable. Many thanks to Mr David Igglesden for his assistance throughout the project. DPI provided valuable assistance with the preparation of access plans. Additionally, the success of DPI’s promotion to ECU of engaging a dedicated TravelSmart officer to ECU metropolitan campuses is one of the most pivotal aspects of the success of the integrated transport plan.

The City of Stirling and City of Joondalup are also thanked for their comments and feedback regarding transport initiatives assessed in their areas.
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APPENDIXES:
A Transport Reference Group (TRG) Stakeholder Participants
B Mode Split MTS Trends and Targets (source: TravelSmart 2010 A Ten Year Plan)
C Master Plan Staging Maps for Joondalup and Mount Lawley Campuses
D Campus Attendance by Location of Staff and Students by Parking Permit
E Public Transport Routes and Suggested Shuttle bus service Routes for Joondalup Campus
F Perth Bicycle Network Extracts
G Rationalisation of Car Parking Layouts for Joondalup campus and Mount Lawley campus
H Campus Plans - Existing and Recommended Pedestrian and Cyclist Facilities (ML and JO)
I Business Case for Appointment of a TravelSmart Officer for ECU
1 EXECUTIVE SUMMARY

Background:
Edith Cowan University is currently in the process of its campus consolidation with the divestment of Churchlands and Claremont campuses. The closure of the Churchlands campus will see an increase in students and staff at the Joondalup and Mount Lawley campuses. Joondalup campus is expected to experience additional growth due to the rapid growth of the north-west corridor.

Growth:
The most significant growth is expected to occur from now to 2006. This will be an intense growth period where student and staff numbers increase by:

Mount Lawley:
- Approximately 1000 full time equivalent (FTE) students [i.e. from the current 6200 (FTE) to 7100 (FTE)]; and,
- Approximately 100 (FTE) staff [i.e. from current 603 (FTE) to 700 (FTE)].

Joondalup:
- Approximately 3000 (FTE) students [i.e. from the current 3800 (FTE) to 6700 (FTE)]; and,
- Approximately 300 (FTE) staff [i.e. from current 405 (FTE) to 700 (FTE)].

After year 2006, a steady growth each year is expected, where in year 2020, staff and student numbers are anticipated to be:

Mount Lawley:
- 12 070 (FTE) students and 1 200 (FTE) staff (i.e. 2 x over 20 years).

Joondalup:
- 9 400 (FTE) students and 1 000 (FTE) staff (i.e. 2.5 x over 20 years).

The next 4 to 6 years are the most critical for the implementation of an integrated transport plan to ease the expected pressure on the existing parking on the campuses, which are already at or close to peak capacity.

The continued practice of expanding parking supply to meet demand cannot be sustained at the ECU metropolitan campuses on the basis that:

- The surrounding road network capacity will not accommodate unrestricted growth of vehicle access to/from the campuses. If unrestricted growth of vehicles is to occur, the surrounding road network will reach its peak capacity at a much faster rate and cause traffic congestion on the surrounding arterial roads.

- There is limited space available on the campuses. Although some additional at-grade parking can be achieved, current space that is available should not be utilised solely for the provision of additional parking. This would have an adverse affect on the visual quality of the university’s environment. Due to the limited space additional parking will need to be mostly multi-storey.
There is a very large cost factor in providing numerous additional parking bays. The cost for one (1) new parking bay is in the order of $20 000. This is for a multi storey bay, which is the type of parking bay requirement at the campuses over the medium and long term. If the current parking provision (i.e. the ratio of number of parking bays per student or staff) is maintained at both campuses over the next 20 years, the capital cost for providing the additional parking at ECU is approximately **$33 Million for each campus.**

There would be a serious loss of potential opportunity to the University if $66 million were used to maintain the current provision of parking over the next 20 years. This is funding that would need to be taken away from other initiatives or opportunities. The level of expenditure would be much better spent in ways that bring more valuable and sustainable returns to the University, such as the investment in its education programs.

Continued growth will contribute to environmental issues such as pollution, greenhouse gases, and congestion. It would be disregarding the principles of the University’s environmental policy.

There would be additional costs to students if good alternative transport options are not available.

**Process:**

The current and future travel needs for staff and students to access the campuses were assessed to determine their adequacy and to identify opportunities and recommendations (in the short term, medium term and long term) to ensure that access to/from campus and around campus meets future demands.

The integrated transport plan developed was founded on ECU’s vision and policy in regard to its environmental declaration and strategic priorities.

The focus of the integrated transport plan is providing the means for changing current travel behaviour.

A stakeholder group known as the ‘Transport Reference Group’ (TRG) was formed to help develop appropriate strategies, objectives and guiding principles based on ECU’s vision and policy. The TRG has had a guiding and advising role to the project team giving its feedback on concepts and initiatives presented to the group.

The Department for Planning and Infrastructure (DPI) has had a significant role in assisting with the project’s development and providing invaluable input to ensure that recommendations are practical.

**Scope:**

The scope of the development of the campus access plans included:

- Parking management and programming;
- Public transport;
- Cyclists;
- Pedestrians;
- Awareness raising (information and communication);
Inter-campus travel; and,
Implementation plan.

Guiding Principles

Prioritised Guiding Principles, resulting from discussion with the TRG, were determined to assist the process of achieving suitable operational outcomes. Some of the main principles are:

- Retain perceived competitive advantage enjoyed by ECU regarding campus access;
- Review existing parking practices that promote car usage (e.g. annual purchase of parking permit) and cap parking levels at a more sustainable level;
- Communicate and promote availability of alternative modes of transport and provide incentives for encouraging alternative modes of transport;
- Provide for a strengthened inter-campus link between Mount Lawley and Joondalup;
- Promote “SmartCard” technology for the future to provide better flexibility for use of facilities and car parking pricing options; and,
- Cycling – appropriate infrastructure/resources requirements, current and future.

(Refer to Section 6 for the full list of Guiding Principles)

Existing Master Plans:

Development Master Plans have been previously prepared for the Mount Lawley and Joondalup campuses. The intention of the Master Plan is that it is recognised as a conceptual master planning framework for the campus. Therefore the issues and suggestions for improvements made in this report for an Integrated Transport Plan tie in with the proposed Master Plan framework.

Current Access and Transport Related Issues:

A number of access and transport related issues currently being experienced at the metropolitan ECU campuses were identified as needing improvement (refer to Sections 9.1 and 9.2) and are described as follows:

Current parking practices that promote car usage (e.g. annual purchase of parking permit);

(i) Periods of peak demand for parking on campus;
(ii) Prioritisation of parking on campus;
(iii) Communication to promote knowledge and availability of parking (ie, overflow parking off campus);
(iv) Infrastructure costs for parking - Manage parking demand ;
(v) Education and information to change traditional transport beliefs and behaviours;
Communication to promote knowledge and availability on alternative modes of transport;
Encouragement for using alternative modes of transport by providing incentives;
Using a proportion of parking income to subsidise / partly fund alternative modes of transport;
Monitoring and improving targeted mode split;
Inter-campus travel;
“SmartCard” technology for the future to provide better flexibility for use of facilities and car parking pricing options;
Cycling and walking – appropriate infrastructure/resources requirements, current and future;
Ride sharing (e.g. car pooling);
Universal access;
Transport partnerships with state and local Government and other key stakeholders; and,
Accountability and ownership of the integrated access plan.

Recommendations:
The recommendations have been developed in accordance with the agreed transport goals and objectives and ECU’s vision and policy. They are:

a) Car Parking at Peak Periods: Make current overflow parking available during periods of peak demand. At the Mount Lawley campus provide security patrols at Inglewood oval and signage with good legibility to/from campus.; Continue providing after hours security escort service; Advise staff and students of the ability to use existing loading bays to drop off heavy equipment and therefore negate need to find parking close to facilities; Improve information about parking options and availability.

b) Total Vehicle Parking Bay Provision: Cap parking provision at appropriate master plan levels (Joondalup: Cap parking provision at year 2008 Master Plan levels, a provision of a total of 2294 bays) (Mount Lawley: Cap parking provision at year 2010 Master Plan levels, a total provision of 2592 bays); Carry out a Travel Demand Survey to establish a benchmark; Increase capacity for prioritised users (e.g. lecturers, part-timers, those who do not have alternative means) through the TravelSmart officer in conjunction with Manager Parking by, for example, a special permit for particular days and times that people apply for; Defer construction of multi-storey parking for as long as possible by making best use of existing parking; At the Mount Lawley defer the decision to use the campus’ hockey oval for additional permanent parking. Find alternative opportunities for parking in and around the campus by rationalising existing parking layouts to gain additional at-grade bays (can achieve approximately 540 bays at Joondalup and 110 bays at Mount Lawley). Provide free (security patrolled) parking at the Inglewood Oval.
c) **Parking Management System:** Set appropriate levels for parking permit fees to at least meet the current parking loan commitment and to also meet at least 50% of all future capital development costs of future parking; Keep parking permit fees at competitive rates compared with other local universities; With the introduction of SmartCard technology by Transperth in 2004 (anticipated), **change over to a Pay as You Use/Stay basis of payment for parking on campus for all or for the majority of parking bays** (the introduction this year of the “Scratchie” parking ticket is a good starting point for a change over to a user-pays system); Set appropriate hourly fees to cover at least the current loan commitments, and to contribute towards incentive schemes, where considered appropriate, to encourage use of alternative modes of transport; **Parking Strategy** to include: allocation of bays by greatest priority, a system that creates the greatest turn-over of car bay use, availability of car bays, user-pays to encourage use of all alternative modes; need key person(s) to champion this change in culture to drive the implementation process.

d) **SmartCard:** Set up an ECU “SmartCard” working group immediately to develop the University’s requirements for its SmartCard applications and card type; Introduce a University ID SmartCard in 2005 to link in with Transperth’s timing of its transport SmartCard; Have the Transperth application as a component of the university card; Build in incentive schemes in the SmartCard to encourage use of alternative modes of transport and use it to provide access for parking. For example: allow a free park on campus for every 30 public transport trips and/or for car parking users, allow a maximum of 40 parks on campus per semester (fee per hour basis).

e) **Travel Pass:** Trial a Travel Pass program as a scheme in conjunction with the SmartCard system.

f) **Ride Sharing:** Trial a Rideshare program for 1 year. Gauge initial level of interest by including a register at enrolment for interested people and set up a database (TravelSmart officer). Review after 1 year.

g) **Inter-Campus Travel:** Improve timetable connectivity for public transport; Improve information/communication of available options and travel planning; Trial a shuttle bus service from Joondalup to Joondalup Station (private operator) in short term. Trial a shuttle bus service from Mount Lawley to Glendalough Station (Transperth operation funded by ECU) in medium term. Trials should be followed by a review.

h) **Class Scheduling/Timetabling:** Carry out detailed analysis of class scheduling to determine a more even utilisation of classes throughout the week.

i) **Communication / Information:** Have a dedicated person(s) (TravelSmart Officer) on campus for providing guidance and information on access and travel options/routes/timetables/facilities for staff and students and coordinate surveys and implementation. ; Improve Information/communication to staff and students about alternative access options regarding public transport, cycling, walking, their opportunities, routes, facilities, incentives including the production of an “Access and Facilities Guide”, alternative parking facilities at peak times, after hours security escort service, availability and use of loading zones; Assist staff/student with travel planning (TravelSmart); Undertake Travel Survey to
determine current travel mode, demand for inter-campus travel and potential use of shuttle bus services.

j) Public Transport: Rationalise existing services and opportunities; Provide new services (refer to Section 11 for specific details for each campus) on existing routes to increase frequency of service; Trial shuttle bus services between Joondalup Station and Joondalup campus (short term), Glendalough Station (medium term) and Mount Lawley campus (medium term) and Maylands Station and Mount Lawley campus (long term).

k) Walking and Cycling: Install improved/additional signing to provide increased legibility/visibility for pedestrians and cyclists on campus; Investigate providing sheltered walkways on the Joondalup campus; Provide adequate and legible signing to disabled access ramps; Incorporate pedestrian/cyclist desire lines in the current Master Plan; Review provision of pedestrian signalised crossing at major intersections with Local Government and Main Roads WA; Review and comment on draft Local Area Bicycle Plans with Local Government to identify any shortfalls for bicycle access to ECU; Provide bicycle parking appropriate for both short stay (U rails) and long stay needs (secure enclosures); Ongoing upgrade of pedestrian and cycling facilities including provision of adequate signing of bicycle facilities - parking and showers/lockers; Investigate further the provision of perimeter paths around campuses; Sell “Kryptonite” bike locks on campus; Continue support for ECUBUG; Ensure that adequate storage (lockers) and showering facilities are provided at key points on campus; Ensure future building guidelines to include guidance on provision of appropriate end of trip facilities for cyclists (showers, lockers, short stay and long stay parking); Provide shelter at security phones for people waiting to be collected.

Implementation:
The above recommendations have been allocated a time basis for implementation, short term (within 12 months, before end 2003), medium term (within 2 to 3 years, i.e. 2004 – 2005) or long term (2006 on). As can be expected, with the imminent changes occurring to the metropolitan campuses, most of the recommendations are suggested to be actioned in the short term and medium term. The long-term actions are mostly on-going monitoring items.
### Short Term Recommendations (within 12 months, before end 2003)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General - All campuses</strong></td>
<td></td>
</tr>
<tr>
<td>Carry out Travel demand survey to use as benchmark for modal split and better determine travel demand for staff and students</td>
<td>$8 000</td>
</tr>
<tr>
<td>Introduce Ride-share scheme and review after 1 year</td>
<td>$5 000</td>
</tr>
<tr>
<td>Improve class scheduling</td>
<td>$10 000</td>
</tr>
<tr>
<td>Devise appropriate communication strategy to inform staff and students about alternative transport options, use of current and planned facilities (on going)</td>
<td>$20 000/yr</td>
</tr>
<tr>
<td>Set up an ECU “SmartCard” working group immediately to develop the University’s requirements for its SmartCard applications and card type.</td>
<td></td>
</tr>
<tr>
<td>Investigate SmartCard technology applications for ECU in conjunction with Transperth.</td>
<td>$15 000</td>
</tr>
<tr>
<td>Dedicated transport information person on each campus (TravelSmart Officers)</td>
<td>$60 000/yr</td>
</tr>
<tr>
<td>Provide long stay parking for cyclists (secure bicycle lockers and/or enclosures) in appropriate locations in vicinity of end of trip facilities such as lockers and showers</td>
<td></td>
</tr>
<tr>
<td><strong>Short Term Recommendations to revisited periodically</strong></td>
<td></td>
</tr>
<tr>
<td>Carry out Travel demand survey to identify travel demand for shuttle bus services and determine times of operation and frequency of service before operating for a trial period</td>
<td></td>
</tr>
<tr>
<td>Produce an Access and Facilities Guide to show public transport routes and pedestrian and cycle network and facilities</td>
<td>$25 000 funded by DPI</td>
</tr>
<tr>
<td>Review and comment on Local Area Bicycle Plans from Local Government (in 2003) and identify any shortfalls for ECU access</td>
<td></td>
</tr>
<tr>
<td>Provide adequate and legible signing for:</td>
<td></td>
</tr>
<tr>
<td>- Site orientation,</td>
<td></td>
</tr>
<tr>
<td>- Disabled access routes,</td>
<td></td>
</tr>
<tr>
<td>- End of trip facilities for cyclists</td>
<td></td>
</tr>
<tr>
<td>Ensure that all future building guidelines include guidance on provision of appropriate end of trip facilities for cyclists (showers, lockers, short stay and long stay parking).</td>
<td></td>
</tr>
</tbody>
</table>
### Short Term Recommendations (within 12 months, before end 2003)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sell “Kryptonite” bike locks on campus</td>
<td>Cost recovery</td>
</tr>
<tr>
<td>Plan for the creation of additional on-grade bays within existing car park areas – needed immediately at Mount Lawley and when required at Joondalup</td>
<td></td>
</tr>
</tbody>
</table>

#### Joondalup Campus

- Operate shuttle bus service between Joondalup Station and Joondalup campus for a trial period of one year $60 000/yr
- Defer construction of multi storey parking bays for as long as possible.
- Liaise with Transperth to rationalise the existing bus services by moving the existing 465 service which travels on Grand Boulevard to match the existing 466 service which travels on Lakeside Drive. N/A
- Liaise with the City of Joondalup to provide bus shelters (Nth bound on Grand Boulevard) and good pedestrian access to bus stops on Lakeside Drive and Grand Boulevard (cut back vegetation at existing bus stop on Grand Boulevard) $15 000 (Joondalup City)
- Liaise with Transperth to produce ECU specific timetable which is displayed at Joondalup Train Station (and also at ECU bus stops, noticeboards and/or website) |
- Review City of Wanneroo Local Area Bicycle Plan (in 2003) and identify any shortfalls for ECU access. |

#### Mount Lawley Campus

- Defer construction of multi storey parking bays for as long as possible. |
- Liaise with Transperth to provide 2 additional services (886, 887 and 889 services) departing Perth CBD at 8:20am and 8:40am to improve frequency to a 10 minute service to ECU in the 30 minute period from 8:10am to 8:40am. $5,500 operating costs per annum* |
- Approach Transperth to reschedule the 18 and 19 services to provide an overall frequency of 10 min between Perth and Mount Lawley campus when combined with the 886, 887 and 889 services (as a result of removing the No 20 service). |
- Liaise with DPI and Council to move bus stops to south of Bradford Street. (Shared funding proposal between DPI, Council and ECU, $25 000 each) $75 000 |
### Short Term Recommendations (within 12 months, before end 2003)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liaise with Transperth in support of modifying the existing 20 service to run between Morley Bus Station and ECU only and thus increase frequency of service.</td>
<td></td>
</tr>
<tr>
<td>Modify internal roundabout access from Bradford Street to provide bus stop, shelter, and timetable information for the modified No. 20 service and after-hours access for No. 18 and 19.</td>
<td></td>
</tr>
<tr>
<td>Continue to upgrade bicycle parking to U rail facilities and provide long stay parking for cyclists (secure enclosures) in appropriate locations in the vicinity of end of trip facilities.</td>
<td></td>
</tr>
<tr>
<td>Review City of Stirling Local Area Bicycle Plan (in 2003) and identify any shortfalls for ECU access.</td>
<td></td>
</tr>
</tbody>
</table>

#### Churchlands Campus

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-assess parking requirements at each stage of the redevelopment process.</td>
<td>$2 000/yr</td>
</tr>
<tr>
<td>Liaise with Transperth in support of the planned modification of the existing 401 route from Perth to Churchlands by deleting the part of the route between Leederville and Perth and thereby increasing the frequency of the service between the Churchlands campus and Leederville.</td>
<td></td>
</tr>
<tr>
<td>Re-assess pedestrian and cyclist access and facilities at each stage of the redevelopment process.</td>
<td></td>
</tr>
<tr>
<td>Review City of Stirling Local Area Bicycle Plans in 2003 and identify any shortfalls for ECU access.</td>
<td></td>
</tr>
</tbody>
</table>

* Based on 165 operating days per year.
### Medium Term Recommendations (within 2 to 3 years, i.e. 2004 – 2005)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General – All campuses</strong></td>
<td></td>
</tr>
<tr>
<td>Introduce SmartCard technology incorporating a Transperth transit component</td>
<td>Further investigation needed.</td>
</tr>
<tr>
<td>Investigate possibility of introducing a Travel Pass program</td>
<td>$5 000</td>
</tr>
<tr>
<td>Prepare incentive schemes to encourage use of SmartCard (ECU’s SmartCard committee)</td>
<td>$5 000</td>
</tr>
<tr>
<td>Review access modes against Travel demand survey benchmark</td>
<td></td>
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<tr>
<td>Review and update Campus Access and Facilities Guide</td>
<td></td>
</tr>
<tr>
<td><strong>Joondalup Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Build additional parking between service roads</td>
<td></td>
</tr>
<tr>
<td><strong>Mount Lawley Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Operate shuttle bus service to and from Glendalough Station for a trial period of one year.</td>
<td>See Table 10.7(a) for indicative cost options</td>
</tr>
</tbody>
</table>

### Long Term Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General – All campuses</strong></td>
<td></td>
</tr>
<tr>
<td>Review access modes against Travel demand survey benchmark</td>
<td></td>
</tr>
<tr>
<td>Liaise with Local Authority for next review of Local Area Bicycle Plans</td>
<td></td>
</tr>
<tr>
<td><strong>Joondalup Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Cap parking provision at year 2008 Master Plan levels to provide total of 2294 parking bays <em>(based on 985 new bays, 480 bays at-grade (at $3.5k/bay capital cost), 505 bays multistorey (at $20k/bay capital cost) as at Feb 2002)</em></td>
<td>$11.8 million *</td>
</tr>
</tbody>
</table>
### Long Term Recommendations (2006 on).

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liaise with Transperth for the rationalisation of bus services to improve spread of the No 462, 463, 464 services (based on the assumption that service 465 is moved to Lakeside Drive)</td>
<td></td>
</tr>
<tr>
<td>Note that the flexibility to move these services is likely to be constrained as these services are timed to train arrivals and departures at Warwick Train Station</td>
<td></td>
</tr>
<tr>
<td>Liaise with City of Joondalup for subsequent review of Local Area Bicycle Plan</td>
<td></td>
</tr>
</tbody>
</table>

**Mount Lawley Campus**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operate a trial run for shuttle bus service between Maylands Station and Mount Lawley campus</td>
<td>Transperth service funded by ECU See Table 10.10 for indicative costs</td>
</tr>
<tr>
<td>Cap parking provision at year 2010 Master Plan levels to provide total of 2592 parking bays</td>
<td>$20 million**</td>
</tr>
<tr>
<td><strong>(based on 1004 new bays, all multi storey (at $20k/bay capital cost) as at Feb 2002)</strong></td>
<td></td>
</tr>
<tr>
<td>Liaise with City of Stirling for subsequent review of Local Area Bicycle Plan</td>
<td></td>
</tr>
</tbody>
</table>
2 BACKGROUND

In 2001 the State Government endorsed the University’s campus consolidation strategy and the divestment of Churchlands and Claremont campuses. The proceeds of the divestment will fund the expansion of Joondalup and Mount Lawley campuses.

The closure of the Churchlands campus will see an increase in students at the Joondalup and Mount Lawley campuses. With the rapid growth of the north-west corridor, future student demand will focus on Joondalup Campus with Mount Lawley as the near city campus and Bunbury servicing the South West.

The impacts that the strategic changes may have on access needs of campuses in the future with all metropolitan ECU students attending either or both the Joondalup or Mount Lawley campuses by 2005/2006 are expected to be:

- Significant increases in student numbers at Mount Lawley and Joondalup campus over the next few years;
- Increase in numbers of daily student arrivals to campus during peak times;
- Two to two and a half fold increases in student and staff numbers on both campuses from 2001 to 2020;
- The urgent need to plan for future traffic management on campus as it is acknowledged that there is already a perceived problem and access is at a critical stage;
- The high cost of new infrastructure; and
- The competitive market ECU operates in.

The next 4 to 6 years are the most critical for the implementation of an integrated transport plan to ease the expected pressure on the existing parking on the campuses, which are already at or close to peak capacity.

The continued practice of expanding parking supply to meet demand cannot be sustained at the ECU metropolitan campuses on the basis that:

- The surrounding road network capacity will not accommodate unrestricted growth of vehicle access to/from the campuses. If unrestricted growth of vehicles is to occur, the surrounding road network will reach its peak capacity at a much faster rate and cause traffic congestion on the surrounding arterial roads.
- There is limited space available on the campuses. Although some additional at-grade parking can be achieved, current space that is available should not be utilised solely for the provision of additional parking. This would have an adverse affect on the visual quality of the university’s environment. Due to the limited space additional parking will need to be mostly multi-storey.
- There is a very high cost factor in providing numerous additional parking bays. The cost for one (1) new parking bay is in the order of $20 000. This is for a multi storey bay, which is the type of parking bay requirement at the campuses over the medium and long term. If the current parking
provision (i.e. the ratio of number of parking bays per student or staff) is maintained at both campuses over the next 20 years, the capital cost for providing the additional parking at ECU is prohibitive, at about $33 Million for each campus.

- There would be a serious loss of potential opportunity to the University if $66 million were used to maintain the current provision of parking over the next 20 years. This is funding that would need to be taken away from other initiatives or opportunities. The level of expenditure would be much better spent in ways that bring more valuable and sustainable returns to the University, such as the investment in its education programs.

- Continued growth will contribute to environmental issues such as pollution, greenhouse gases, and congestion. It would be disregarding the principles of the University’s environmental policy.

- Without a good range of transport choices available to students, students may be forced, or perceive to be forced, into using expensive car based travel and possibly not attending ECU due to costs or limited access to motor vehicles.

[Note: Student numbers are generally referred to in this report as full time equivalent numbers (i.e. “FTE”).]
3 PROCESS

The starting point of the integrated transport planning process was to understand the university’s vision and policy and use this as the basis for developing appropriate strategies and guiding principles. Once the strategies and guiding principles were developed and agreed, an analysis of the current and future needs was carried out to determine suitable operational outcomes.

ECU recognised the importance of working in partnership with key stakeholders to develop an agreed access plan.

Potential stakeholders were invited to participate in the development of the ECU metropolitan campus access plan. Stakeholders include staff, academia, students, local government, state government, neighbouring land owners and other representative groups.

The stakeholder group formed a Transport Reference Group (TRG) which has been meeting on a monthly basis (since June 2002). It has a guiding and advising role for discussing ideas and options. It has been providing input towards the development of the access plan for the metropolitan campuses and has provided guidance and feedback on concepts and initiatives presented to the group. This has lead to the development and ownership of the outcomes.

Appendix A contains a list of the Transport Reference Group participants.

The group has been led by management and transport, planning and engineering professionals who have carried out investigation, analysis and management in the development of a suitable process for the project. The Department for Planning and Infrastructure has played a key role in the project’s development and has provided invaluable input to assist in ensuring that recommendations are practical, workable and in keeping with the State Government’s holistic approach to transport.

The management team has met on a regular (generally) weekly basis to discuss findings of analyses, investigations, discussion with various stakeholders and to determine issues, suggested actions, and feedback and guidance to the TRG.

The focus of the integrated access plan is to provide the means for changing current travel behaviour.
4 **SCOPE**

The scope of the development of the integrated transport plan for the Mount Lawley and Joondalup campuses include:

- **Parking Management**
  - Parking provision levels
  - Allocation of various types of parking
  - Revenue and Costs
  - Permit fee levels
  - Location of parking areas
  - Peak periods
  - ‘Smart’ Technology
  - Ride sharing

- **Public Transport**
  - Buses
  - Trains
  - Mini bus / shuttle

- **Cyclists**
  - Facilities
  - Access around campus
  - Access to and from campus

- **Pedestrians**
  - Facilities
  - Access around campus
  - Access to and from campus

- **Awareness raising**
  - For all transport options
  - Methods

- **Inter- Campus Travel**
  - Options
  - Identify user groups
  - Level of requirement

- **Development of an implementation plan for the ECU Metropolitan campuses**
The extent of the scope of the integrated transport plan for the Churchlands Campus has been governed by the degree to which the campus consolidation plans have been determined at this point in time. The uncertainty of the staging details of this project directly impacts access planning and recommendations. However, the above items listed for the other metropolitan campuses have been considered in the context of the campus’ short-term operation.

5 ECU’S VISION AND POLICY

With the anticipated rapid growth of the Joondalup and Mount Lawley campuses there is an essential need to develop and establish a strategy to meet the future access needs for the growing metropolitan campuses.

ECU has developed 5 Strategic Priorities from its 2003 – 2007 Strategic Plan that it will adopt to give it direction over the next five years.

These are:

1. Enhance Teaching, Learning, and Research
2. Engaging with Professions and Professional Life
3. Building Partnerships, Pathways and Precincts
4. Shaping the University for ECU’s Staff and Students
5. Strengthening Enterprise and the Resource Base

The fourth strategy, ‘Shaping the University for ECU’s Staff and Students’, is the basis for shaping future decisions for the University’s environment and infrastructure. It states:

“ECU will provide a challenging and supportive environment suited to the staff and students that work and study at the University, so they can realise their potential and develop their skills and flexibility needed to succeed in their careers. It will shape policies, programs, services and infrastructure to foster the active engagement of staff and students in support of ECU’s strategic positioning as a leader in professional education for the service professions.”

In relation to the University's physical environment, ECU has set the following objectives for 2003–2007:

- Position the University’s teaching, social and built environments competitively to attract and retain staff and students
- Provide a safe, healthy and inclusive environment, free from harassment or discrimination, for all staff and students

Additional Strategies stated for ‘Shaping the University for Staff and Students’ include:

- “Improve the quality of the built environment and the C&IT (Communications and Information Technology) infrastructure” – an ongoing strategy
• Strategy for 2003 and beyond - “Use creative solutions to locate services where we can best service students, particularly during campus consolidation”

On the 23 May 2002, the University Academic Board resolved to endorse an Environmental Declaration and to recommend it to the Vice-Chancellor for its adoption.

The Environmental Declaration states (inter alia) that Edith Cowan University is committed to environmentally sustainable development. It also makes the following statements:

• Sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and the institutional change are made consistent with future as well as present needs

• Raise public, government, industry, foundation and institutional awareness by publicly addressing the need to move towards an environmentally sustainable future;

• Set an example of environmental responsibility by establishing and maintaining processes of resource conservation, recycling and waste reduction.

The image that Edith Cowan University desires to project and uphold is a that of a tertiary education provider that is young, progressive and contemporary, having its own unique identity.

The University’s future success depends on its ability to attract students and generate income from a range of sources in competition with other education providers.

A vision or policy for an integrated transport plan encompassing the Environmental Declaration and Strategic Priorities therefore must bear in mind the impact of maintaining an appropriate balance between its attraction to potential students and the level of revenue needed to be generated from relevant fees.

The vision is not one that requires a wholesale change of everyone’s attitudes to their method of transport to/from campus. More that it is to:

- Provide a plan that gives a mechanism for potential public transport users (including pedestrians and cyclists) to migrate across from current car use to public transport (including walking and cycling). To achieve this a structured and planned approach is necessary.

- Provide information to enable people to be aware of their transport choices.

- Identify and fill the gaps in the current transport system to better facilitate those choices.

- Progressively change structures and pricing mechanisms to reflect costs of using motor vehicles and reduce university subsidies to motor vehicle drivers.
6 TRANSPORT GOALS AND OBJECTIVES

Transport objectives were developed by the Transport Reference Group (TRG) during a workshop in June 2002.

The group agreed that ECU’s **strategic transport objectives**, to be used as a guide in the development of an Integrated Transport Plan, should be:
- Educate and inform staff and students to promote desired transport behaviours;
- Reduce demand for parking and car usage;
- Promote improved campus connectivity;
- Promote alternative transport use;
- Improve transport communication with all stakeholders;
- Build transport partnerships with state and local Government and other key stakeholders;
- Promote accountability and ownership of agreed transport outcomes; and
- Make best and most effective use of available resources; and,
- Encourage changes in driver behaviour to reduce parking demands.

The above objectives are considered as the over-arching transport goals to guide underlying strategies and actions. The actions are taken over the life of the access plan (considered as a 20 year period) and are to support the strategies. The objectives must be kept in context in order that solutions should not conflict with the University’s interests. Therefore, balance is the key.

The following are the agreed **transport strategies**, developed by the TRG, to assist in achieving the desired objectives:
- Manage parking supply and use to meet greatest needs;
- Better understand campus travel behaviour and preferences;
- Educate and inform to change traditional transport beliefs and behaviours;
- Promote and provide alternative and affordable transport use (with consideration to providing subsidisation);
- Promoting improved campus connectivity (integration is an influence);
- Agreeing, monitoring and improving targeted mode share splits between and beyond campuses;
- Improved communication and co-operation with all stakeholders;
- Promote accountability and ownership of agreed outcomes;
- Build transport partnerships with state and local government and other key stakeholders; and,
- Direct available resources to areas of greatest need and benefit.
In conjunction with the above transport strategies, the following prioritised Guiding Principles have been determined to assist the process of achieving suitable operational outcomes. These have resulted from discussions with the TRG to date.

- Retain competitive advantage enjoyed by ECU regarding campus access;
- Solutions to be consistent with and support the corporate strategies;
- Use a portion of parking income for alternative modes of transport;
- Review existing parking practices that promote car usage (e.g. annual purchase of parking permit);
- Cap parking levels at a sustainable level based on the Master Plan principles;
- Communicate to promote knowledge and availability on alternative modes of transport;
- Address parking prioritisation;
- Address high periods of peak parking demand;
- Communicate to promote knowledge and availability on parking;
- Provide incentives for encouraging alternative modes of transport;
- Provide for a strengthened inter-campus link between Mount Lawley and Joondalup;
- Promote “SmartCard” technology for the future to provide better flexibility for use of facilities and car parking pricing options;
- Cycling and walking – appropriate infrastructure/resources requirements, current and future; and,
- Awareness of surrounding road network capacity. Strategy for parking is not in isolation to the road network status/requirements. Future parking policy to tie in with integrated transport plan and desire to change current travel behaviour.

The focus of the integrated transport plan is providing the means for changing current travel behaviour.
7 INTRODUCTION TO MODES OF TRANSPORT

7.1 Public Transport

Frequent services that do not require timetable planning (generally acknowledged as better than 15 minute service) are seen as attractive as they attempt to provide the flexibility of the car. In the Transperth system, the Circle Route and 900 Series services operate to this frequency.

The range of hours during which a service operates (including days of the week) establishes the range of trip purposes that can be accomplished by a service. Frequency drops off during weekday evenings and on weekends, with weekends having limited service hours.

Accessibility, or ease of access is a result of the service coverage. Although Transperth achieves its service coverage standard of 95% of residents being within 500 metres of a bus line this coverage is most difficult in semi-rural and new urban development areas, where, because of low demand, frequency is limited.

Transperth’s criteria for introduction of a bus service is three hundred housing units per linear kilometre, within 500 metres of the route.

There is strong support for the Metropolitan Transport Strategy targets (double public transport mode share by 2029) to achieve a greater mode share for public transport and reducing per capita trips by car. Improvements in the area of connectivity, travel time, frequency, service and accessibility are the most effective methods to achieve these targets.

7.2 Cycling

The ultimate bicycle plan for the Perth metropolitan area has excellent network connectivity. However, there are currently only limited segments of the network in place due to either limited funding resources, or non-contiguous urban development patterns that create gaps in routes, often for critical links between centres and/or public transport facilities.

The Department for Planning and Infrastructure (DPI) Perth Bicycle Network (PBN) program is proposed to be funded in three stages. Stage 1 is complete. The current program of $18 Million for the 2001/02 through 2004/05 years will fund 50% of Stage 2. The remainder of Stage 2 and Stage 3 are unfunded at present.

The current allocation for the local network is $3.5 million. The completion of Stage 2 of the PBN program is currently proposed to be the end of local network funding.

Every local government develops a local bicycle plan in consultation with its community to complement the PBN. Funds are available from the DPI to assist with this planning as well as for capital requests for their local bike network.
The continued implementation of the PBN will go a long way to improving the long distance bicycle commuter network. However most bicycle trips are and will continue to be on the local road network.

The development of local plans and implementation by Councils, with funding support from the DPI, will be the most effective means of increasing bicycle use and achieving Metropolitan Transport Strategy mode split targets for cycling.

In addition to extending the bicycle route network, signage and maintenance of the existing network requires improvement. Also there is considerable scope to improve trip end facilities. Development control conditions should be considered by Councils where appropriate.

7.3 Pedestrian Facilities

Walking is an important transport mode. Currently about 10% of all trips are walking trips. In addition to this, walking makes up a part of a significant number of car and public transport trips. As a result of TravelSmart and for other reasons, it is likely that the number of walking trips could increase by 50% to 60% within 5 to 10 years.

Much of the existing walking network – footpaths and road crossings, does not meet current standards. In addition, there are portions of the network missing, requiring people to walk on road verges or on the roadway itself. This is a problem for all walkers, but particularly for the young, the elderly and for people with disabilities.

Many public and private facilities do not provide “Universal Access”. Design standards and construction methods are only now starting to address the impacts of design decisions on the ability of people with mobility impairments to access many public and private facilities.

Like the cycling network, there are currently gaps in the local pedestrian networks due to either limited funding resources or undeveloped areas. Efficient pedestrian networks are not always required as part of development approval. In some cases impediments to neighbourhood permeability are designed into subdivisions and structure plans, often for critical links between centres and/or public transport facilities.

Like the public transport system, social behaviour has created a perception that walking (including as part of a public transport trip) has personal security risks. Investment in lighting and design which provides easy public surveillance will help increase the mode share for walking.

Assuming that walking is part of most public transport journeys, all walking networks should be developed to universal design standards to meet the needs of all users.

Walking (including non-vehicular mobility for people with disabilities) should be promoted as a mainstream transport mode, in accordance with the principles outlined in Perth Walking (Metropolitan Region Pedestrian Strategy) and the Australian Pedestrian Charter.
Perth Walking outlines a number of important aspects of walking that improve quality of life and urban living. It notes that walking:

- “Is a practical and minimum cost activity for all trips that do not involve carrying large or heavy loads;
- Imposes no costs on other travellers or environmental costs, such as air pollution or depletion of resources;
- Improves health and fitness; and
- Increases social interaction and enhances community wellbeing.”

Perth Walking includes an action plan based on the following principles:

- “Provide information for professionals and community leaders;
- Increase knowledge and awareness of the benefits of walking;
- Review facility criteria and develop plans to increase walking; and,
- Promote safe and secure walking environments”.

On a similar vein, the principles for the Australian Pedestrian Charter include:

- “Accessibility:
- Sustainability and Environment;
- Health and Wellbeing;
- Safety and Personal Security; and,
- Equity”.
8 THE TRANSPORT ENVIRONMENT IN CONTEXT - GENERAL

8.1 Sustainability

In 1987, the Brundtland Commission developed the following landmark definition; “Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Since that time sustainability has become an accepted criteria in urban transport planning decision making. A sustainable transport system has been defined as one that:\footnote{Centre for Sustainable Transportation (2002). (Definition adopted by the European Council of Ministers for Transport).}

- “Allows the basic access and development needs of individuals, companies and societies to be met safely and in a manner consistent with humans and ecosystem health, and promotes equity with and between successive generations;
- Is affordable, operates fairly and efficiently, offers a choice of transport mode, and supports a competitive economy, as well as balanced regional development; and,
- Limits emissions and waste within the planet’s ability to absorb them, uses renewable resources at or below their rates of generation, and uses non-renewable resources at or below the rates of development of renewable substitutes, while minimising the impact on the use of land and the generation of noise”.

Key principles of sustainable transport include:

Intergenerational Equity – Preserve the rights of future generations to make their own decisions. Maintain and develop a variety of transport options.

Triple Bottom Line Assessment – Assess and evaluate transport proposals on a broad basis, including social, environmental and economic considerations.

High Degree of Accessibility for All – Maintain and improve access needs of individuals, companies and society generally.

Fair and Affordable – Provide travel options offering real choice for all sectors of the community.

Limit Adverse Impacts of Transport – Issues to consider include excessive use of non-renewable resources, noise, pollution, death and injury, social exclusion and greenhouse gases.

A sustainable transport system supports sustainable growth. The evolving accepted planning context for urban areas is an increased role for non-car based transport options in pursuit of a more balanced transport system. It is generally accepted that major transport projects should meet sustainability objectives. They should be assessed and evaluated on a broad basis (triple bottom line assessment).
8.2 Metropolitan Transport Strategy

The Metropolitan Transport Strategy (MTS) is the key State Government transport policy for Metropolitan Perth. It sets targets to increase the market share of walking, cycling and public transport and to reduce the average number of car driver trips per person (refer Figure 8.2 below).

- Figure 8.2

![Figure 8.2](image)

This policy is broadly supported in the community and by local governments. Key strategies and directions of the MTS include:

- Substantial improvements to the public transport system (infrastructure and services) and to walking and cycling networks;
- Reduced reliance on road expansion projects designed primarily to increase capacity for general traffic. Design for connectivity rather than capacity;
- A range of travel demand management measures that will encourage behaviour change by making driving a relatively less attractive option; and,
- Future land development that is supportive of walking, cycling and public transport.

The MTS strategy is based on key elements of increased coordination of the development and use of the transport system as a whole, greater mutual support between the transport system and land uses, and improved efficiency in the use of transport infrastructure and services.

The above key strategies and directions will assist in the facilitation of changes in mode of transport used. The graph in Appendix B diagrammatically shows the comparison of current trend of trip types (using various modes of transport) to a targeted MTS trend for year 2029 as an anticipated outcome of those key strategies.
8.2.1 MTS Principles and Other Local Universities

UWA
The University of Western Australia has embraced the principles of the MTS as it recognises its own challenges with managing limited access and parking for vehicles on and around its campus.

The University, the Department of Transport, QEII hospital, and Nedlands and Subiaco Councils are committed to encourage modes of transport other than single occupancy vehicles in order to reduce parking difficulties and parking congestion.

It has developed a UWA-QEII Precinct Access Plan which aims to improve modes of transport to other areas rather than single occupancy vehicles, so that:

- Parking problems are reduced on the campus and in local and commercial areas; and,
- Traffic congestion and pollution is reduced in line with the University Environmental Policy.

The university is continuing to further develop and implement its campus access plan to ensure alternative modes of transport are available and appealing. Key points of its access plan are:

- Policies implemented to minimise car access and single occupancy vehicle access to Campus;
- Financial and other incentives to encourage alternative transport modes;
- Financial disincentives to discourage parking and hence reduce parking demand;
- The critical need to work with local government to support access planning in the precinct;
- The various initiatives implemented including:
  - A ceiling of parking bays;
  - Increased parking fees;
  - Improved facilities for cyclists;
  - Ban first year student parking on campus; and,
  - Communication strategies to promote desired transport behaviour.

Murdoch University
Murdoch University has undertaken a detailed access study which has also embraced the principles of the MTS. It has recognised the need to reduce the proportion of single occupant car drivers parking on campus by improving alternative modes of transport and associated facilities. Its current ratio of car parking bay provision per full time student is the highest of all local universities.
Key points of its campus access plan are:
- Improve public transport and cycling facilities;
- Improve transport information;
- A travel pass concept; and
- Increase parking fees.

8.3 Transport Mode Split

Table 8.3 shows the results of a recent survey on the split of transport mode used for any trip. The survey was carried out by TravelSmart for the Perth metropolitan area.

Table 8.3 TravelSmart Mode Split Survey Trip Results for Metro Area

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>Proportion of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Driver</td>
<td>57%</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>25%</td>
</tr>
<tr>
<td>Public Transport</td>
<td>6%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>2%</td>
</tr>
<tr>
<td>Walk</td>
<td>10%</td>
</tr>
</tbody>
</table>

Independent studies carried out for the City of Joondalup and Murdoch University have resulted in almost identical results. This therefore leads to the assumption that the mode split of transport type is reasonably consistent across the Perth metropolitan area.

8.4 Behaviour Change and Transport/Travel Demand Management

In addition to providing public transport services and improved infrastructure for the alternative travel modes (public transport, walking and cycling) influencing people’s travel mode choices can significantly impact on mode choice decisions. It is widely recognised that attempts to meet peak hour demand for car travel by increasing the capacity of the road network will be unsustainable in social, environmental and economic terms (refer to definition on sustainable transport in Section 8.1). Spreading peak travel demand over the multi-modal network is an efficient use of transport resources.

8.4.1 TravelSmart

TravelSmart is an initiative by the Department for Planning and Infrastructure to help preserve the environment and quality of life. It is a voluntary community-based behaviour change program that encourages people to use alternatives to travelling in their private car.

Improved information and knowledge of the system, combined with motivational techniques, can result in a sustained reduction of car trips and increases in travel by walking, cycling and public transport. TravelSmart individualised marketing has been developed and tested in Western Australia.
over a four year period. It is now recognised as being at the leading edge in travel behaviour change programs around the world. Widespread implementation of TravelSmart when the South West Metropolitan Railway becomes operational will increase usage of public transport, walking and cycling and reduce car usage.

Behaviour change programs such as TravelSmart and a range of travel demand management tools can influence the modal choice of travellers and in so doing, can make the transport system more sustainable. Over a number of years there is scope for utilising both voluntary behaviour change programs and other travel demand management measures that seek to restrain car usage through parking or other means.

In South Perth, the introduction of TravelSmart across the municipality has resulted in a 14% reduction in car driver trips and increases in public transport, cycling, walking and car passenger trips. The full results are shown in Table 8.4.1.

- **Table 8.4.1 South Perth TravelSmart Results**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Trips per person per week (before)</th>
<th>Trips per person per week (after)</th>
<th>Difference</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car as Driver</td>
<td>13.4</td>
<td>11.5</td>
<td>-1.9</td>
<td>-14%</td>
</tr>
<tr>
<td>Car as Passenger</td>
<td>4.5</td>
<td>4.9</td>
<td>0.4</td>
<td>+9%</td>
</tr>
<tr>
<td>Public Transport</td>
<td>1.3</td>
<td>1.6</td>
<td>0.3</td>
<td>+17%</td>
</tr>
<tr>
<td>Cycling</td>
<td>0.4</td>
<td>0.7</td>
<td>0.3</td>
<td>+61%</td>
</tr>
<tr>
<td>Walking</td>
<td>2.7</td>
<td>3.6</td>
<td>0.9</td>
<td>+35%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>22.3</td>
<td>22.3</td>
<td>0</td>
<td>No Change</td>
</tr>
</tbody>
</table>

Implementation of TravelSmart elsewhere in Australia has resulted in similar reductions in car travel. The total increase in walking, cycling and public transport has been of a similar magnitude, although the proportional increase in travel by each of these modes can vary in different areas.

Funding and support is available from the Department for Planning and Infrastructure (DPI) to assist in the implementation of the TravelSmart program.

**8.4.2 Other Travel Demand Management Measures**

Whilst the implementation of TravelSmart, a voluntary behavioural change program, will bring major benefits, a broader range of travel demand management initiatives will be required over time. Full implementation of these measures will require the co-operation and agreement of a wide range of stakeholders, including local governments across the metropolitan area, the State Government and its agencies, the Commonwealth Government and employers. Importantly, they will also need the support and endorsement of the community generally.

The following measures have been identified as having potential to assist in developing a sustainable transport system for ECU:

- Parking Management;
- Pricing, Taxing and Charging Mechanisms;
- Public Transport Service Improvements; and,
- Improved Pedestrian and Cycle Network.
9 ECU’S CURRENT TRANSPORT OPERATING ENVIRONMENT

9.1 ECU’s Areas of Influence

9.1.1 Master Plan
Master Plans have been previously developed for the Mount Lawley and Joondalup campuses.

The University’s Capital Development Plan identified the need for new buildings on the campuses and as a result Council approved the commissioning of consultants to prepare revised master plan reviews for the Joondalup and Mount Lawley campuses in 1998 and 2001 respectively.

The Master Plans were developed by consultants Cox Howlett and Bailey Woodland.

The Plans detail the long-term infrastructure planning for each campus and in particular, show the stage by stage implementation strategies and development on the campus, and projected growth scenarios over a 20 year or so period.

The intention of the Master Plan is that it is recognised as a conceptual master planning framework for the campus. Therefore the issues and suggestions for improvement made in this report for an Integrated Transport plan should tie in with the proposed Master Plan framework.

Master Plan staging maps can be referred to in Appendix C.

9.1.2 Current Issues
ECU’s policy regarding access and transport can be summarised as:

- To improve the quality of the built environment;
- Use creative solutions to locate services where they can best service students;
- Address the need to move towards an environmentally sustainable future; and,
- Set an example of environmental responsibility.

On this basis, the objective of an integrated transport plan is therefore to maximise accessibility of the transport system, utilising a variety of transport modes and to manage transport demand in a way that improves livability and minimises overall cost to users and the community.

The current access and transport related issues facing the metropolitan ECU campuses are:

(i) Significant increase in campus population at Joondalup Campus 2003 – 2005 and a steady increase in campus population growth at the Mount Lawley from 2002-2004 then a major increase in 2005 – 2006. - As a result of the closure of Claremont Campus in 2003, the redevelopment
of Churchlands campus from 2002-2005/6, plus anticipated long-term growth. Therefore an urgent issue;

(ii) The relocation of activities currently at the Churchlands Campus to the remaining campuses between 2002 – 2005/6;

(iii) Limited resources;

(iv) Competitive environment;

(v) Demand of car parking on campus already at peak levels at Mount Lawley, and close to peak levels at Joondalup campus;

(vi) Impact on neighbouring areas, particularly at Mount Lawley;

(vii) Infrastructure costs - Unsustainable growth and cost of parking bay provision to cater for future campus student/staff growth;

(viii) Traditional transport beliefs and behaviour for accessing the campuses;

(ix) Inter-campus travel;

(x) Suitable access to campus for cyclists and pedestrians; and,

(xi) Access and linkages to public transport services;

The access and transport related issues that have been identified as needing review and/or improvement are:

(i) Current parking practices that promote car usage (e.g. annual purchase of parking permit);

(ii) Periods of peak demand for parking on campus;

(iii) Prioritisation of parking on campus;

(iv) Communication to promote knowledge and availability on parking;

(v) Infrastructure costs for parking - Manage parking demand;

(vi) Education and information to change traditional transport beliefs and behaviours;

(vii) Communication to promote knowledge and availability on alternative modes of transport;

(viii) Encouragement for using alternative modes of transport by providing incentives;

(ix) Using a proportion of parking income to subsidise / partly fund alternative modes of transport

(x) Monitoring and improving targeted mode split;

(xi) Inter-campus links;

(xii) “SmartCard” technology for the future to provide better flexibility for use of facilities and car parking pricing options;
The most significant growth at the Mount Lawley and Joondalup campuses is expected between now and 2006. This will be an intense growth period where student and staff numbers increase by:

**Mount Lawley:**
- Approximately 1000 full time equivalent (FTE) students [i.e. from the current 6200 (FTE) to 7100 (FTE) ]; and,
- Approximately 100 (FTE) staff [i.e. from current 603(FTE) to 700 (FTE)].

**Joondalup,**
- Approximately 3000 (FTE) students [i.e. from the current 3800 (FTE) to 6700 (FTE) ]; and,
- Approximately 300 (FTE) staff [i.e. from current 405(FTE) to 700 (FTE)].

After year 2006, a steady growth each year is expected, where in year 2020, staff and student numbers are anticipated to be:

**Mount Lawley:**
- 12070 (FTE) students and 1200 (FTE) staff (i.e. 2 x over 20 years).

**Joondalup,**
- 9400 (FTE) students and 1000 (FTE) staff (i.e. 2.5 x over 20 years).

The following section details the spread of where current student and staff are live within the metropolitan area.

### 9.1.3 Catchment

The population of staff and students who have purchased a parking permit (determined by their post codes of the home addresses of specific to each of the Mount Lawley and Joondalup campuses) were plotted on a map of the metropolitan area (refer to Appendix D).

**Mount Lawley**

The results show that the spread of staff and students who attend the Mount Lawley campus is reasonably wide with a centralised concentration around the Mount Lawley and central suburbs north of the river. As can be expected, compared to the results for the Joondalup campus, there is a greater proportion of students and staff from the southern suburbs than for the
Joondalup campus, and a much less proportion of staff and students from the northern suburbs more than 15km from the campus.

The average distance travelled to/from the university is 12.7km. The greatest proportion of staff/students live within a 1.5km–10km radius.

**Table 9.1.3 (a)  Student/ Staff Attendance to Mount Lawley campus by Parking Permit**

<table>
<thead>
<tr>
<th>Proximity to Mount Lawley Campus of Staff and Students (attendance by parking permit)</th>
<th>Number of Staff/ Students</th>
<th>% of Staff/ Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 1.5km</td>
<td>115</td>
<td>2.1</td>
</tr>
<tr>
<td>Within 5km</td>
<td>1022</td>
<td>18.3</td>
</tr>
<tr>
<td>Average distance from Campus: 12.7km</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of the plot demonstrate that access for staff and students to Mount Lawley campus is quite evenly scattered centrally from the campus. It shows that there is a need for good north/south access and also east/north access.

The 115 or so people who are living within a 1.5km radius of campus are considered to be good targets for encouraging cycling and walking modes of transport to campus. This number is considered to be quite significant.

The 1022 or so people who live within a 5km radius of the campus are also considered good targets for encouraging cycling or public transport modes to campus. Again, this number is quite significant and suggests that incentives and encouragement of the use of alternative modes of transport to this group would result in some significant benefits.

It is considered unlikely that those living 20km or more from campus in the eastern and south/eastern areas are able to access direct and convenient public transport and are most likely to have to use their car to drive to campus.

The numbers in the above table represent the potential opportunity to encourage staff and students to use alternative modes of transport rather than their car, as the numbers are based on those who have purchased a parking permit. The numbers do not include the portion of staff and students within those zones who have not purchased a parking permit because they are already utilising alternative forms of transport. Therefore the above figures represent the potential opportunity to change rather than actual figures for those who are already walking/cycling/ or using public transport.

In developing transport access strategies, these requirements and opportunities have been borne in mind.

**Joondalup**

The results show that the spread of staff and students who attend the Joondalup campus is very wide with a greater than anticipated proportion travelling from the southern suburbs (approximately 30%).
The average distance travelled to/from the university is 18km (5.3km more than for Mount Lawley campus). The greatest proportion of staff/students live within a 10km–20km radius however the greatest concentration of staff/students are within the 0 km to 10 km radius along the coastal suburbs.

Table 9.1.3(b)  Student/Staff Attendance to Joondalup campus by Parking Permit

<table>
<thead>
<tr>
<th>Proximity to Joondalup Campus of Staff and Students (attendance by parking permit)</th>
<th>Number of Staff/Students</th>
<th>% of Staff/Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 1.5km</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Within 5km</td>
<td>428</td>
<td>17</td>
</tr>
</tbody>
</table>

Average distance from Campus: 18km

The results of the plot demonstrate that access for staff and students to Joondalup campus is not confined to any particular area or within a short radius of the campus. It shows that there is a need for good north/south access and also east/north access.

The 30 or so people who are living within a 1.5km radius of campus are considered to be good targets for encouraging cycling and walking modes of transport to campus.

The 428 or so people who live within a 5km radius of the campus are also considered good targets for encouraging cycling or public transport modes to campus.

It is considered unlikely that those living 25km or more from campus in the eastern and south/eastern areas are able to access direct and convenient public transport and are therefore, most likely to have to use their car to drive to campus.

The numbers in the above table represent the potential opportunity to encourage alternative modes of transport rather than use their car, as the numbers are based on those who have purchased a parking permit. The numbers do not include the portion of staff and students within those zones who have not purchased a parking permit because they are already utilising alternative forms of transport. Therefore the above figures represent the potential opportunity to change rather than actual figures for those who are already walking/cycling/ or using public transport.

In developing transport access strategies these requirements and opportunities have been borne in mind.

9.1.4  Student/Staff Travel Demand

The peak demand intervals for students on the campus have been determined from information received from ECU.

The peak demands seem to follow a fairly consistent pattern with Mondays and Fridays being quieter days. There is a peak each day around the lunch time period, but since the information is based on numbers of students in classes in
each half hour period, this may simply be due to fewer classes being held during the lunchtime period.

In each case, the most significant peak is in the 8.30 to 9.00am period which occurs each weekday. It has been confirmed with ECU that all classes start on the hour and that the first class is 9am.

It is noted that due to the statistics being based on half hour periods, the peak intervals may actually be between half an hour to one hour, however, this cannot be accurately determined based on the information provided.

The peak periods for each of the campuses are as follows:

- **Mount Lawley**
  - Morning: 8.30 - 9.00am
  - Afternoon: 12.30 - 1.30pm, 2.30 - 3.00pm (noted on Tuesday and Wednesday only) and 4.30 - 5.30pm

- **Joondalup**
  - Morning: 8.30 - 9.00am
  - Afternoon: 12.30 - 1.30pm (excludes Fridays), 2.30 - 3.30pm (noted on Tuesday only) and 4.30 - 5.30pm (excludes Fridays)

Through discussions with the TRG it is understood that there is an additional peak loading for classes commencing at 11.00am. Therefore, the review has focussed on the following times:

- Peak for students and staff arriving – 8am to 9am and 10am to 11am
- Peak for students and staff leaving – 3.30pm to 5.30pm

Generally Friday’s are the quietest days on campus. All other week days have a reasonably similar level of campus activity. Almost all classes start no earlier than 9.00am however it is anticipated that there may be an increasing number of earlier starting times for classes to help alleviate time tabling issues. The period around 5pm can be chaotic in particular at the Mount Lawley campus as day-time students are leaving campus whilst evening class students are arriving. Joondalup campus does not appear to experience the same level of difficulty during the evening change over period.

As can be expected, the periods when parking demand is at its greatest coincides with these periods of campus peak demand. The demand for parking is exacerbated by a transitional period and the lag time after a student has finished his or her lectures for the day before he/she leaves campus, whilst the next classes’ students are arriving on campus.

### 9.1.5 Mode Split

To date, no detailed surveys for the ECU metropolitan campuses have been carried out to determine the transport modal split of how people are accessing the campuses.
For the purpose of this study, it was not considered necessary at this stage to carry out such a survey. However, it has been recommended that a survey of ECU staff and students should be undertaken in the short term such that the baseline transport modal split can be determined.

Independent results from a recent journey survey of the City of Joondalup for various modes of transport, and the Murdoch University trip survey gave almost identical results to the Perth metropolitan area TravelSmart mode split results. Therefore, due to the consistency of results, the TravelSmart survey results were used as the basis of analysis for the metropolitan ECU campuses where required. (Refer to Section 8.3 for the mode split percentages for each transport mode type.)

9.1.6 Existing Infrastructure - Vehicle Access and Parking

Parking

ECU compares favourably to other Australian Universities with its current average parking provision.

Table 9.1.6(a) Comparison of Parking Provision across other WA Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Bays per 100 Equivalent Full Time Student Unit (EFTSU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECU (average)</td>
<td>37.6*</td>
</tr>
<tr>
<td>ECU Joondalup</td>
<td>38.6</td>
</tr>
<tr>
<td>ECU Mount Lawley</td>
<td>28.4</td>
</tr>
<tr>
<td>National Average</td>
<td>22.8*</td>
</tr>
<tr>
<td>UWA</td>
<td>26.8*</td>
</tr>
<tr>
<td>Curtin</td>
<td>36.8*</td>
</tr>
<tr>
<td>Murdoch</td>
<td>45.1*</td>
</tr>
</tbody>
</table>


The benchmark ratios are calculated by taking the total number of car bays available times 100 divided by the student equivalent full time student unit (EFTSU) number.

In the short to medium term, ECU prefers to maintain a parking provision that compares favourably to other local Universities to preserve its competitiveness.

At present, Mount Lawley campus parking is close to capacity on most days and at the Joondalup campus, parking is adequate for most of the time.

In February 2002, the total number of parking bays at Mount Lawley was 1588, and 1309 at Joondalup.
Parking bays are divided into the following categories:

- Reserved
- Zone A
- Zone B
- Visitors
- Disabled
- Loading Zone
- Motorcycle
- University Vehicles

Parking on campus operates on a permit system that either covers one semester or the whole year. Visitor parking operates on a pay and display system. Additionally a parking ‘Scratchie’ ticket has recently been introduced which allows students and staff to use the ticket on the day of their choice in the permit areas. The date that the ticket is used is scratched off the face of the ticket.

Current proportions for the allocation of various parking bays (e.g. Reserved Parking, Zone A, Zone B, Visitors, etc) is suitable. Parking bay availability is representative of the permit type fee.

The cost of a parking permit for 2003 for a student has increased from $40/year (2002) to $57/year and the recently introduced one day ‘Scratchie’ ticket is $2.50. On the Mount Lawley campus in particular, a high infringement rate has been occurring where students are parking without a permit on the campus. It is considered that the high frequency rate may be attributed to the low fines ($10 for most parking infringements in 2002) so that a student can risk being fined four times before he or she has paid an equivalent to an annual student parking permit. Increased fines (raised to $25 in 2003) for parking is expected to result in a lower frequency rate of prohibited parking.

The comparison of parking permit fees with other local universities is shown below.

Table 9.1.6 (b) Comparison of Parking Permit Fees with Other Local Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Annual Parking Permit Fee ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>ECU 2003</td>
<td>412</td>
</tr>
<tr>
<td>Murdoch 2003</td>
<td>360</td>
</tr>
<tr>
<td>Curtin 2003</td>
<td>330</td>
</tr>
<tr>
<td>UWA 2003</td>
<td>286</td>
</tr>
</tbody>
</table>

As can be seen from the figures above, ECU has very competitive permit fees for its students.
Vehicle Access – Intra Campus

a) Joondalup Campus:
At Joondalup, the main access for vehicles into the campus is via Kendrew Street, off Grand Boulevard. There are other entry points into campus from Joondalup Drive, and the recently opened Lakeside Drive. The entry points feed into an established partial ring road system linking the main car parks around the campus. The eastern side of the campus near the Childcare centre and on-campus residential area cannot be accessed from the south by the internal ring road system. From this direction, access needs to be via Lakeside Drive or by travelling around the ring road in a clockwise direction.

Overall access for vehicles within the Joondalup campus is satisfactory.

b) Mount Lawley Campus:
At Mount Lawley, the main access for vehicles into the campus is from Bradford Street located to the south-west side of the campus. There is also access from Central Avenue, access for south bound traffic from Alexander Drive, and access from the eastern side of campus from Learoyd Street and Stancliffe Streets. The Mount Lawley campus has a partial ring road system for vehicles to access other car parks although it is not well defined and appears somewhat fragmented.

The majority of vehicle access is via the main entrance at Bradford Street. At morning peak times this can become congested as Bradford Street is also the main access to Mount Lawley High School.

The Master Plan shows that the main access into the campus will change from Bradford Street to Central Avenue and this should alleviate the current congestion problems being experienced on Bradford Street.

c) Churchlands Campus:
The redevelopment of the Churchlands campus over the next few years will see on-going changes to the access for vehicles around the campus. The staging plans have not yet been finalised, however, one of the significant considerations in developing the plans is the need to maintain appropriate vehicle access into and around the campus.

9.1.7 Existing Infrastructure - Walking and Cycling
ECU formed its own bicycle user group (BUG) called ECUBUG in 2002. This was achieved by cyclists on the Joondalup campus who were interested in improving access and facilities for bicycle commuters at ECU.

The ECUBUG offers free membership and is open to anyone interested in cycling. It defines itself as a group of concerned cyclists who want to:

- Encourage cycling to the university;
- Improve cycling facilities at all ECU campuses;
- Promote the benefits of cycling for health and environment;
- Organise social rides and other social events; and,
- Contribute to other relevant cycling initiatives.
The ECUBUG has recently created a web page on the ECU internet site which invites members to join via email. The web page includes background, initiatives, events, facilities, maps and links.

**Joondalup Campus**

An on site review was undertaken at Joondalup Campus of the existing walking and cycling access including a review of the disability access. Generally, the facilities and level of maintenance on the campus is good.

Specific commendations include:
- Provision of access ramps for disabled access;
- Provision of security phone and shelter adjacent to the disabled parking bays which is adjacent to the access ramp;
- Security – 24 hour presence and at night people can request to be escorted to their cars;
- Lighting at night on all footpaths;
- Available shower and locker facilities for cyclists;
- ECUBUG initiatives have resulted in the provision of U rails for bicycle parking which are signed, easily identifiable and well located around the campus; and,
- Bike parking for students staying at the student housing.

Specific issues include:
- Campus is spread out which creates longer walking distances between buildings (when compared to Mount Lawley campus for example);
- Lack of shelter along the pedestrian routes;
- Access ramps and routes for disabled access are circuitous in an already spread out campus;
- Lack of signing linked to difficulties in finding your way around;
- Lack of signing to bike parking and shower facilities; and,
- Lack of long stay parking for bikes, i.e. secure enclosures.

**Mount Lawley Campus**

An on site review was undertaken at the Mount Lawley Campus of the existing walking and cycling access including a review of the disability access. Generally, the facilities and level of maintenance on the campus is good.

Specific commendations include:
- Mainly flat campus with good footpath network suitable for disabled access;
- Provision of security phone adjacent to the taxi bays;
- Security – 24 hour presence and at night people can request to be escorted to their cars;
- Lighting at night on all footpaths;
- Available shower and locker facilities for cyclists; and,
- ECUBUG initiatives have resulted in the planned removal of toast rack style bike parking to be replaced by ‘U’ rails for bicycle parking which will be
signed, easily identifiable and well located around the campus (as per recently installed at Joondalup).

Specific issues include:

- No shelter at the security phone adjacent to the taxi bays (this is available at Joondalup campus);
- No bus stop and shelter at internal roundabout accessed from Bradford Street;
- Poor pedestrian provision at north end of the site and along Learoyd Street which is often congested with traffic, particularly at school start and finish times;
- Lack of signing to bike parking and shower facilities; and,
- Lack of long stay parking for bikes, i.e. secure enclosures.

9.1.8 Inter-Campus Travel

There is a requirement for a portion of staff and students to travel to more than one campus as a part of their work or as a part of their curriculum.

The extent to which the demand for inter-campus travel is required is difficult to quantify.

The main issue faced by those staff and students who drive between campuses is finding available parking. Anecdotal evidence shows that this is often a result of not allowing enough time before classes commence to find parking close to the office/ classroom, where, in most cases, parking has been available at locations further away..

Student Demand:

A preliminary attempt to roughly determine the demand for students for inter-campus travel was carried out by determining the number of students who are enrolled in classes at more than one campus.

The results of student’s studying units at metropolitan campuses other than their ‘home’ campus during Semester 2, 2002, are as follows:

<table>
<thead>
<tr>
<th>Table 9.1.8(a) Percentage of Units Enrolled in by Students at other than their Home Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home Campus</strong></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Mount Lawley</td>
</tr>
<tr>
<td>Joondalup</td>
</tr>
<tr>
<td>Churchlands</td>
</tr>
</tbody>
</table>
As the above represents percentage of units taken at other than the home campus, it will not represent a direct relationship to the number of inter-campus trips required. This is due to the likelihood of a number of possible scenarios, such as:

- More than one unit may be taken during any one trip;
- More than one unit enrolled in by the same student;
- The unit may be the only one taken on that day;
- All units that day may be on the one campus, etc.

So the results at best, show the greatest proportion of possible demand for inter-campus travel for students. It can be seen that the proportions are quite low for students.

It is considered that the demand for student inter-campus travel is not a significant issue that warrants specific action.

**Staff Demand:**
A preliminary attempt to roughly determine the demand for staff for inter-campus travel was carried out by questioning Faculty Managers about their staff's inter-campus movements.

The responses of the brief questionnaires sent to the Faculty Managers about the extent of staff inter-campus travel requirements are summarised on the following pages in Table 9.1.8(b).

Staff suggestions to improve inter-campus travel from the survey of Faculty Managers include:

- "Guaranteed availability of reserve Parking for those who have paid for it;
- More parking;
- Have different functions on different campuses. i.e. Have courses being on one campus only;
- Have research centres on the same campus as PGrad teaching programs with which the research is connected;
- Prior to 1991 there was dedicated parking for transient staff which was located close to the teaching area. Staff recommended this be re-introduced with a transient parking sticker provided which indicates their home campus and permission to park in dedicated areas; and,
- Rather than invest in more University fleet cars, have a shuttle bus service that runs between Mount Lawley and Joondalup as a minimum, or a preferred driver service with negotiated rates.

**Summary of Survey Results**
Overall, the survey results highlight the varied and random nature of the requirement for inter-campus travel. They also demonstrate that the inter-campus travel requirement is a significant work characteristic for a reasonable portion of staff, especially for some of the Schools within the various Faculties.
Therefore it is considered that the issue of staff inter-campus travel needs to be dealt with immediately to address the current issues as best as possible and practicable.

Section 10.7 looks at inter-campus further by considering the opportunities and constraints, and Section 11.1.8 gives recommendations.

**ECU International and Commercial**

Feedback from some current and prospective agents is that the opportunity to attract international students to ECU is lessened by the difficulty associated with inter-campus travel. This situation arises from students being able to pick units for their courses from different campuses. An after-hours shuttle vehicle, driven by students, is currently operating for international students for the purpose transporting students from the Churchlands campus to the Glendalough Rail Station and around Herdsman Lake.

To ensure that the marketable position of ECU to attract international students is not weakened, the opportunity to satisfy the demand for inter-campus travel in the future may need to be sought. ECU International and Commercial could drive this process, however the issue of inter-campus travel is not confined to ECU International alone.

Therefore opportunities to provide a service to meet demand (or to meet an agreed level of service) should be explored and assessed further with consideration to the following points:

- Weighing up ECU International and Commercial’s marketing opportunities against the liabilities and risks (as well as service level, journey time taken, availability and cost) associated with the current shuttle service that it is operating;
- Utilising a privately operated shuttle service may be cost prohibitive and the level of service may not be reasonable. However, it may nevertheless be considered necessary as an important marketable need (i.e. provided as a student service obligation). The provision of (and extent of) the service would need to be weighed up against potential income arising from additional international students and the opportunity to promote ECU among the local community with appropriate bus signage;
- Ride sharing/car pooling opportunities for students;
- Providing students with cab charge vouchers as an alternative to providing a shuttle bus service;
- A comparison of journey times and service frequencies of public transport to a shuttle bus service for the various route combinations required.

Further consideration of opportunities and constraints for inter-campus travel in general for ECU are given in Section 10.7, and Section 11.1.8 gives recommendations.
Campus Consolidation

The Campus Consolidation process, which includes the redevelopment of the Churchlands campus will require the Faculty of Business and Public Management to change from its current operations out of Churchlands and Joondalup.

Post campus consolidation, the faculty will be divided between Mount Lawley and Joondalup. Undergraduate full-time students will be located at Joondalup and part-time undergraduate and coursework post graduates will be located at Mount Lawley. It is likely that most of the research higher degree students will be at Mount Lawley. The results show that the Faculty has some immediate needs for inter-campus travel from its current Churchlands location and is expected to continue its demand to almost the same extent in the medium to long term.

i.e. These changes are likely to result in similar demands as those currently experienced for future inter-campus travel between Joondalup and Mount Lawley.
## Table 9.1.8(b) Results of Staff Inter-Campus Travel Demand Questionnaire to Faculty Managers

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Questions</th>
<th>Issues</th>
<th>Form of Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How many and what % of units are available at other campuses?</td>
<td>What time of day do they travel. Is it on a regular or random basis?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>How many and what % of staff need to travel to other campuses for work purposes?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Which campus(s) do they travel from/to?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>How many trips are made?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. School of Community Services, Education and Social Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School of Psychology</td>
<td>None. Travel is for research needs</td>
<td></td>
<td>Uni car or own car</td>
</tr>
<tr>
<td></td>
<td>About one third of staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>And</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 to 3 staff more regularly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>From JO To ML</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A third of staff once every 6 to 8 weeks &amp; 2 to 3 staff, 2 to 3 three times/week</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Varies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some early morning. Some regular, some random</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parking when you get to the other campus (ML) can require a 10 min walk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School of ICCS</td>
<td>12 units in 2003 approx. 4.2% (at JO, ML, Midland, CH</td>
<td></td>
<td>Mostly own car, sometimes Uni car</td>
</tr>
<tr>
<td></td>
<td>8 (16.5%) for teaching, 10-20 for research purposes, and most others at various times</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>From JO and ML to ML, JO and CH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teaching staff: 1-2 times per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other purposes – difficult to quantify</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Varies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teaching time slots: 9-12, 1 or 2-4, 4 or 5-8pm. Regular meetings random 9-12 or 1-4pm. Teaching trips are regular, others random basis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parking especially at ML, middle of the day. Reserve parking not always available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sense of unfairness that some staff rarely need to travel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loss of time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of suitable alternative modes of transport rather than use own car. Shuttle bus services are not without their problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td>How many and what % of units are available at other campuses?</td>
<td>How many and what % of staff need to travel to other campuses for work purposes?</td>
<td>Which campus(s) do they travel from/to?</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>School of KK</td>
<td>5% (J O and CH)</td>
<td>Approx. 2 staff</td>
<td>From ML to J O From ML to CH</td>
</tr>
<tr>
<td>School of Education</td>
<td>5 courses in 2003</td>
<td>Most Staff for admin purposes, about 15% Students: approx. 250</td>
<td>From ML to J O From ML to CH From CH to J O</td>
</tr>
<tr>
<td>2. Faculty of Communication, Health and Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School of Natural Sciences</td>
<td>2 units</td>
<td>2 staff, 10%</td>
<td>To/ from ML and CH</td>
</tr>
<tr>
<td>School of Engineering and Maths</td>
<td>7%</td>
<td>5 staff 20%</td>
<td>J O and ML</td>
</tr>
<tr>
<td>Faculty</td>
<td>Questions</td>
<td>Issues</td>
<td>Form of Transport</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td></td>
<td>How many and what % of units are available at</td>
<td>How many and what % of staff need to travel to other campuses for work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other campuses?</td>
<td>campus(s) do they travel from/to?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>How many trips are made?</td>
<td>What time of day do they travel. Is it on a regular or random basis?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Faculty of Student Support Services</td>
<td>N/A</td>
<td>At least 1 per week, sometimes as many as 3 - 4 a week.</td>
<td>Random nature of travel makes it</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>difficult to book use of university</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>vehicles at short notice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Uni vehicle (preferred), use own</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>car if none available.</td>
</tr>
<tr>
<td>4. Faculty of Business and Public Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School of Marketing Tourism and Leisure</td>
<td>30%</td>
<td>10 trips/week</td>
<td>None raised</td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>All day, latest at 9pm</td>
<td>Own car</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular basis</td>
<td></td>
</tr>
<tr>
<td>School of Justice and Business Law</td>
<td>20%</td>
<td>5 trips / week</td>
<td>None raised</td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>All day, latest at 9pm</td>
<td>Own car</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular basis</td>
<td></td>
</tr>
<tr>
<td>School of Management Information Systems</td>
<td>70%</td>
<td>1 trip/ week</td>
<td>None raised</td>
</tr>
<tr>
<td></td>
<td>70%</td>
<td>All day, latest at 9pm</td>
<td>Own car or Uni car</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular basis</td>
<td></td>
</tr>
<tr>
<td>School of Accounting, Finance and Economics</td>
<td>90%</td>
<td>2 trips/week</td>
<td>Proximity to house and availability</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>All day, latest at 9pm</td>
<td>of Uni Vehicle for inter-campus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular basis</td>
<td>visits on the same day</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Own car or Uni car</td>
</tr>
<tr>
<td>School of Management</td>
<td>75%</td>
<td>2 trips/ week</td>
<td>None raised</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>All day, latest at 9pm</td>
<td>Own car</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular basis</td>
<td></td>
</tr>
</tbody>
</table>
9.2 External Influence on ECU

9.2.1 Local Government

Mount Lawley

From previous discussions with the City of Stirling, it is understood that there are concerns relating to campus traffic cruising around nearby streets trying to find off-campus parking.

The City of Stirling is also concerned about increased traffic volumes on the road network associated with the proposed redevelopment and expansion of the ECU Mount Lawley campus.

Their concerns particularly relate to the potential for increased traffic volumes in the residential area south of the campus.

The City of Stirling previously completed a traffic study for the Menora area which included a series of traffic management improvements. Specific proposals relevant to ECU include:

- the provision of a raised plateau at the intersection of Learoyd Street and Bradford Street, and;
- the proposed upgrading of Bradford Street (Alexander Drive to Learoyd Street) to provide additional on-street parking and improved pedestrian and cycle facilities.

The proposals from the Menora study have been put on hold by the City of Stirling in light of the proposed redevelopments by ECU and Mount Lawley Senior High School.

Joondalup

The City of Joondalup expressed the following concerns/issues with the campus and the local road network surrounding the campus.

Parking:

- Local Council does not see any issues with off-campus parking arising in the short to medium term but wants to ensure that any future plans do not shift the problem to surrounding local roads;
- Pedestrian Access from Grand Boulevard;
- There have been some complaints received by the Local Authority from motorists that some students walking from the train station in the morning via Collier Pass and Grand Boulevard are crossing Grand Boulevard on the paved roadway area without regard for the road traffic, and causing safety issues to motorists. Possible reasons are that they consider they are on a pedestrian crossing, traffic won’t clear and need to take risks to cross, impatient, ‘bullet proof’.
Vehicle Access:

- Some access issues at morning peak periods exist with access into the Campus;
- The right turn pocket (travelling north) on Grand Boulevard turning in to Kendrew Crescent is not adequate at peak morning times;
- City of Joondalup has asked Main Roads to reduce the speed zoning along Grand Boulevard in this area from 70km/h to 60 km/h; and,
- Traffic light intersection at Freeway north bound / Hodges, and Grand Boulevard / Joondalup Drive tends to bank back during the AM peak (PM peak is satisfactory).

9.2.2 Local Area Network

Joondalup Campus

Joondalup Campus is located on a site bound by Grand Boulevard and Joondalup Drive which are major regional roads.

Grand Boulevard (east of Joondalup Drive) currently carries 12,000 vehicles per day (vpd) and Joondalup Drive (south of Grand Boulevard) currently carries 37,000 vpd.

There are on and off ramps to the Mitchell Freeway at Hodges Drive which connects to Grand Boulevard at its intersection with Joondalup Drive.

Lakeside Drive which runs from Joondalup Drive north of Moore Drive along the east side of the Joondalup campus has recently been extended to connect back onto Joondalup Drive south of Grand Boulevard.

The site is well served by the road network with access from Grand Boulevard and Lakeside Drive via Kendrew Crescent which runs east west along the north boundary of the campus. There is a second access from Lakeside Drive and also an access from Joondalup Drive.

There is good road connectivity through the site with each of the access points from Kendrew Crescent, Lakeside Drive and Joondalup Drive connected via an internal road network.

Intersection counts have been obtained for the intersection of Joondalup Drive and Grand Boulevard. The AM peak hour is from 8am to 9am when in the order of 3900 vehicles travel through the intersection. In the order of 4400 vehicles travel through the intersection in the PM peak hour which is between 4.30pm and 5.30pm. Note that these volumes exclude the left turning vehicles which do not pass through the traffic signals.

Based on these traffic volumes, an intersection analysis was undertaken to determine the level of service of the intersection.

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3 SCATS counts at the signals were undertaken between 18 and 25 November 2002, sourced from Main Roads WA
**Level of service (LOS)** provides an indication of the operation of the intersection in terms of the average overall delay per vehicle in seconds\(^4\). LOS ranges from A (representing free flow) to F (representing severely congested). Design Levels of Service usually range between C and D.

The results indicate that overall, the intersection of Joondalup Drive and Grand Boulevard operates with a LOS D during both the AM and PM peak periods. During the AM peak, the Joondalup Drive northern approach is shown to operate with a LOS E with an associated queue length of 160m in the right turn lane.

During the PM peak, both the Joondalup Drive northern approach and Grand Boulevard eastern approach are shown to operate with a LOS E with associated queue lengths of 235m on the right turn lane (Joondalup Drive) and 145m on the through lane (Grand Boulevard).

These results indicate that the intersection is currently congested during AM and PM peak periods and therefore there is limited capacity to increase traffic volumes during peak periods.

**Mount Lawley Campus**

Mount Lawley Campus is located on a site bound by Central Avenue and Alexander Drive which are District Distributor A roads. Central Avenue currently carries 17,000 vehicles per day (vpd) and Alexander Drive (south of Grand Boulevard) currently carries 34,000 vpd\(^5\).

Stancliffe Street and Bradford Street currently provide the two main links from Central Avenue and Alexander Drive respectively to the Mount Lawley campus each carrying in the order of 2,500 vehicles per day.

Learoyd Street (to the south of Bradford Street) is classified as a local street providing access to the adjacent properties and carries 1820 vpd.

Learoyd Street (north of Bradford Street) is privately owned by Mount Lawley Senior High School and is used by students, staff and visitors of both MLSHS and ECU to access the car parks, park on-street and also for pick up and drop off of students at MLSHS. At school start and finish times, Learoyd Street experiences traffic congestion.

The existing intersection of Learoyd and Bradford Street operates as a give way with Learoyd Street (north) forming the minor approach. This intersection has been identified for improvements by City of Stirling.

The signalised intersections of Alexander Drive and Central Avenue and Alexander Drive and Bradford Street tend to be congested during the AM and

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\(^4\) Based on the USA Highway Capacity Manual (HCM) method

PM peak periods. This is evidenced by on site observations and an analysis of the intersections outlined as follows.

Intersection counts have been obtained for these intersections\(^6\). The AM peak hour and PM peak hours on the road network are from 7.45am to 8.45am and 5.00pm to 6.00pm. During the peak hours in the order of 3000 vehicles travel through the intersections of Alexander Drive with Bradford Street and Central Avenue.

The two way peak hour traffic volumes on Bradford Street (east of Alexander Drive) during the AM and PM peak hour is in the order of 500 vehicles and 350 vehicles respectively.

The two way peak hour traffic volumes on Central Avenue (east of Alexander Drive) during the AM and PM peak hour is in the order of 1150 vehicles and 1000 vehicles respectively.

Based on these traffic volumes, an intersection analysis was undertaken to determine the existing level of service of the intersection.

**Level of service (LOS)** provides an indication of the operation of the intersection in terms of the average overall delay per vehicle in seconds\(^7\). LOS ranges from A (representing free flow) to F (representing severely congested). Design Levels of Service usually range between C and D.

The results indicate that overall, the intersection of Alexander Drive and Central Avenue operates with a LOS C during the AM peak and LOS B during the PM peak. However, the right turn lane from Alexander Drive southern approach into Central Avenue is shown to operate at a LOS D during both the AM and PM peak periods with respective estimated queues of 7 and 9 vehicles.

During the AM peak, the estimated queue length for the through lane on the Alexander Street northern approach is 26 vehicles.

During the PM peak, the estimated queue length for the through lane on the Alexander Street southern approach is 19 vehicles.

For the intersection of Alexander Drive and Bradford Street, the results indicate that overall, the intersection operates with a LOS D during the AM peak and LOS C during the PM peak. However, the Bradford Street western approach is shown to operate at a LOS E during both the AM and PM peak periods with respective estimated queues of 9 and 4 vehicles.

The Alexander Drive north approach left turn into Bradford Street is also shown to operate at a LOS E during the AM peak period.

During the AM peak, the estimated queue length for the through lane on the Alexander Street northern approach (city inbound) is 68 vehicles.

During the PM peak, the estimated queue length for the through lane on the Alexander Street southern approach (city outbound) is 47 vehicles.

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\(^6\) SCATS counts at the signals were undertaken between 13 and 19 September 2001, sourced from Main Roads WA

\(^7\) Based on the USA Highway Capacity Manual (HCM) method
These results indicate that the intersections are currently congested during the AM and PM peak periods and therefore there is limited capacity to increase traffic volumes during peak periods.

9.2.3 Existing Infrastructure - Public Transport

Joondalup Campus

Joondalup Train Station is located approximately 550m (walk distance) from the corner of Kendrew Crescent and Grand Boulevard.

Trains run southbound from Currambine Station (the current northernmost station on the northern suburbs railway line) and northbound from Perth. The stations on route from Perth are Leederville, Glendalough, Stirling, Warwick and Whitfords. A number of trains operating from Perth run express to Warwick and there are also a number of trains which only run to Whitfords.

The railway line is planned to extend northwards, the first stage of which is the extension of the rail line to a proposed station at Clarkson. The current timing for the completion of the works is end of year 2004.

There are a number of existing bus services from the station which can be used to connect to the Joondalup campus.

Table 9.2.3(a) indicates the bus routes and also the travel time for the journey between Joondalup Station and the campus during the peak direction of travel.

The time indicated in brackets is the total journey time which is spent on the bus.

Table 9.2.3(a) Bus Services to ECU Joondalup

<table>
<thead>
<tr>
<th>Journey</th>
<th>Route (Start/ Finish)</th>
<th>Bus Service Numbers</th>
<th>Travel Time During Peak Direction of Travel</th>
<th>Time Peak of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joondalup Train Station to ECU Joondalup</td>
<td>Train Station/ Grand Boulevard after Kendrew Crescent</td>
<td>462, 463, 464, 465</td>
<td>14 Mins (1 Min)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Train Station/ Police Academy via Lakeside Drive</td>
<td>466</td>
<td>5 Mins (1 Min)</td>
<td></td>
</tr>
<tr>
<td>ECU Joondalup to Joondalup Train Station</td>
<td>Grand Boulevard after Kendrew Crescent/ Train Station</td>
<td>462, 463, 464, 465</td>
<td>15 Mins (2/3 Mins)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Police Academy via Lakeside Drive/ Train Station</td>
<td>466</td>
<td>6 Mins (5 Mins)</td>
<td></td>
</tr>
</tbody>
</table>

Figures E.1 and E.2 contained in Appendix E show the bus routes between Joondalup Station and the campus and indicate the approximate frequency of services for the journey to the campus (Figure E.1) and from the campus (Figure E.2).

The bus stops closest to Joondalup Campus are on Grand Boulevard south of Kendrew Crescent and on Lakeside Drive between Edgewater Drive and Grassbird Avenue. There is a shelter at the bus stop on Grand Boulevard, however, it is noted that the vegetation partly obscures the bus stop from the
footpath and it is considered that this creates an unsafe environment for pedestrians.

It is currently planned that after hours, buses will access a bus stop (to be provided) on Kendrew Crescent. This is discussed further in Section 11.2.3.

**Table 9.2.3(b)** shows the times of train arrivals at Joondalup Station and the next bus service which will connect to the Joondalup Campus. The waiting time between the train arrival and next available bus departure is shown. During the peak arrival times, there is only one bus for the service 466 (via Lakeside Drive) at 8.23am.

### Table 9.2.3(b) Train and Bus Times - Joondalup Station to ECU

<table>
<thead>
<tr>
<th>Train Arrival</th>
<th>Bus Service</th>
<th>Bus Departure</th>
<th>Minimum Wait Time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joondalup Station To ECU between 8:00 and 9:00 AM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:43</td>
<td>464</td>
<td>8:00</td>
<td>17</td>
</tr>
<tr>
<td>8:01</td>
<td>463 or 465</td>
<td>8:07</td>
<td>6</td>
</tr>
<tr>
<td>8:16</td>
<td>462</td>
<td>8:21</td>
<td>5</td>
</tr>
<tr>
<td>8:16</td>
<td>466</td>
<td>8:23</td>
<td>7</td>
</tr>
<tr>
<td>8:24</td>
<td>464</td>
<td>8:32</td>
<td>8</td>
</tr>
<tr>
<td>8:32</td>
<td>462 or 463</td>
<td>8:47</td>
<td>15</td>
</tr>
<tr>
<td>Joondalup Station To ECU between 10:00 and 11:00 AM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:53</td>
<td>464</td>
<td>10:09</td>
<td>16</td>
</tr>
<tr>
<td>10:08</td>
<td>463</td>
<td>10:22</td>
<td>14</td>
</tr>
<tr>
<td>10:23</td>
<td>462</td>
<td>10:37</td>
<td>15</td>
</tr>
<tr>
<td>10:38</td>
<td>464</td>
<td>10:54</td>
<td>16</td>
</tr>
</tbody>
</table>

*Note: This information is based on timetables which became effective on the 22/01/00 for the 463, 464 and 465 routes and 12/11/00 for the 462 Route.*

**Mount Lawley Campus**

The train stations which are closest to the Mount Lawley campus include Maylands Station (Midland line), Glendalough Station (northern suburbs line) and Perth.

The distances to the campus by road from Maylands and Glendalough stations are approximately 3km and 4km respectively.

There are no connecting bus services from either of these train stations to connect to the Mount Lawley campus.

However, there are a number of existing bus services from Perth which can be used to connect to the Mount Lawley campus. Therefore, students and staff travelling by rail (Midland, Armadale, Fremantle, northern suburbs and the future Perth to Mandurah rail services) can transfer at Perth to a bus service.

In considering the available bus services to and from Mount Lawley campus, those bus routes which serve Perth Central Business District (CBD) were
reviewed, i.e. Perth Train Station, Wellington Bus Station and also local bus stands, i.e. Barrack Street and William Street that people arriving at Perth Train Station can easily transfer to.

**Table 9.2.3(c)** indicates the bus routes and also the travel time for the journey between Perth Train Station and the campus during the peak direction of travel.

The time indicated in brackets is the total journey time which is spent on the bus.

- **Table 9.2.3(c) Bus Services to ECU Mount Lawley from Perth CBD**

<table>
<thead>
<tr>
<th>Journey</th>
<th>Route (Start/ Finish)</th>
<th>Bus Service Numbers</th>
<th>Travel Time During Peak Direction of Travel</th>
<th>Time of Peak of Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perth CBD to ECU Mount Lawley</td>
<td>Wellington Street Bus Station/ Alexander Drive north of Holmforth Street</td>
<td>886, 887, 889</td>
<td>18 Mins</td>
<td>7 Mins</td>
</tr>
<tr>
<td></td>
<td>Beaufort Street Museum Stand/ North Street north of Longroyd Street</td>
<td>16, 60</td>
<td>17 Mins</td>
<td>7 Mins</td>
</tr>
<tr>
<td></td>
<td>Barrack Street Stand/ Bradford Street east of Cone Place</td>
<td>17, 18, 19, 20</td>
<td>21 Mins</td>
<td>12 Mins</td>
</tr>
<tr>
<td>ECU Mount Lawley To Perth CBD</td>
<td>Alexander Drive south of Holmforth Street / Wellington Street Bus Station</td>
<td>886, 887, 889</td>
<td>23 Mins</td>
<td>13 Mins</td>
</tr>
<tr>
<td></td>
<td>North Street north of Longroyd Street/ William Street before James Street</td>
<td>16, 60</td>
<td>17 Mins</td>
<td>13 Mins</td>
</tr>
<tr>
<td></td>
<td>Alexander Drive south of Holmforth Street/ William Street before James Street (OR Blue Cat Stand)</td>
<td>17, 18, 19, 20</td>
<td>25 Mins</td>
<td>13-17 Mins</td>
</tr>
</tbody>
</table>

**Figures E.3 and E.4** contained in **Appendix E**, show the bus routes between Perth CBD and the campus and indicate the approximate frequency of services for the journey to the campus (**Figure E.3**) and from the campus (**Figure E.4**).

There is also a number of existing bus services from Morley Bus Station which can be used to connect to the Mount Lawley campus.
Table 9.2.3(d) indicates the bus routes and also the travel time for the journey between Morley Bus Station and the campus during the peak direction of travel.

The time indicated in brackets is the total journey time which is spent on the bus.

Table 9.2.3(d)  Bus Services to ECU Mount Lawley from Perth CBD

<table>
<thead>
<tr>
<th>Journey</th>
<th>Route (Start/ Finish)</th>
<th>Bus Service Numbers</th>
<th>Travel Time During Peak Direction of Travel</th>
<th>Time Peak of Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morley Bus Station to ECU Mount Lawley</td>
<td>Bus Station/ Alexander Drive north of Bradford Street</td>
<td>17, 20</td>
<td>21 mins (19 mins)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bus Station/ North Street north of Longroyd Street</td>
<td>60</td>
<td>29 mins (11 mins)</td>
<td></td>
</tr>
<tr>
<td>ECU Mount Lawley to Morley Bus Station</td>
<td>Alexander Drive north of Bradford Street/ Bus Station</td>
<td>17, 20</td>
<td>28 mins (25 mins)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Longroyd Street north of North Street/ Bus Station</td>
<td>60</td>
<td>36 mins (18 mins)</td>
<td></td>
</tr>
</tbody>
</table>

Figures E.5 and E.6 contained in Appendix E show the bus routes between Morley Bus Station and the campus and indicate the approximate frequency of services for the journey to the campus (Figure E.5) and from the campus (Figure E.6).

For the 886, 887 and 889, the bus stops closest to the Mount Lawley campus are on Alexander Drive south of Holmfirth Street (approximately 200m south of Bradford Street).

The 17 service stops on Alexander Drive at the bus stop north of Bradford Street and the 18, 19 and 20 services stop on Bradford Street east of Cone Place.

Transperth is planning to modify the existing 20 route from Perth to Morley Bus Station by deleting the part of the route between Perth and ECU, therefore the service would only run between Morley Bus Station and ECU. This is supported, as it will increase the frequency of services between Mount Lawley campus and Morley Bus Station.

For the 16 and 60 service, the bus stops closest to the campus are on North Street. The route to the campus is a walk distance of approximately 700m via Second Avenue and Hamer Park.

Although it is a longer walk distance to North Street than Alexander Drive, there is a better frequency of service during the day.

There is currently a bus stop on campus which is used by bus services after hours. The bus stop is located at the roundabout which is accessed via Bradford Street.

There are currently some issues relating to the use of the existing roundabout area. This mainly relates to cars being parked around the roundabout which then blocks the route for buses coming onto the campus.
Given that Transperth is agreeable to the modified No 20 bus service utilising the campus bus stop, there exists an opportunity to modify the existing bus stop layout at the roundabout access including the provision of a shelter and designated pick up and drop off bays which will not impact on bus access.

**Churchlands Campus**

The train stations which are closest to the Churchlands campus are Stirling Interchange Station and Glendalough Rail Station, both of which are on the northern suburbs line.

The distances to the campus by road from Glendalough Station and Stirling Station are approximately 4.2km and 4.7km respectively.

There are no connecting bus services from Glendalough Station, however, there are services from Stirling Station and also a service which runs close to Leederville Station. Stirling and Leederville Stations are also on the northern suburbs line.

**Table 9.2.3(e)** indicates the bus routes and also the travel time for the journey between Stirling Station and the campus and between Perth (via Leederville Station) and the campus during the peak direction of travel.

The time indicated in brackets is the total journey time which is spent on the bus.
Table 9.2.3(e)  Bus Services to ECU Churchlands

<table>
<thead>
<tr>
<th>Journey</th>
<th>Route (Start/ Finish)</th>
<th>Bus Service Numbers</th>
<th>Travel Time During Peak Direction of Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perth to ECU</td>
<td>Brisbane Street to Primary School via Herdsman Parade (City Busport to Stirling Train Station via Vincent Street)</td>
<td>401</td>
<td>25 mins (22 mins)</td>
</tr>
<tr>
<td></td>
<td>Wellington Street/ William Street to ECU (East Perth to City Beach via Cambridge Street)</td>
<td>92</td>
<td>33 mins (20 mins)</td>
</tr>
<tr>
<td>ECU to Perth</td>
<td>Pearson Street to Wellington Street via Herdsman Parade (Stirling Train Station to City Busport via Vincent Street)</td>
<td>401</td>
<td>30 mins (25 mins)</td>
</tr>
<tr>
<td></td>
<td>ECU to Wellington Street/ William Street (City Beach to East Perth via Cambridge Street)</td>
<td>92</td>
<td>32 mins (23 mins)</td>
</tr>
<tr>
<td></td>
<td>Train Station to ECU – Circle Route Anti-Clockwise (1 to 7 minute frequency between 8.05 and 8.38 am)</td>
<td>99</td>
<td>14 mins (9 mins)</td>
</tr>
<tr>
<td>Stirling Train Station to ECU</td>
<td>Train Station to Churchlands Primary School</td>
<td>401</td>
<td>(5-7 mins)</td>
</tr>
<tr>
<td>ECU to Stirling Train Station</td>
<td>ECU to Train Station – Circle Route Clockwise (5 to 10 minute frequency between 3.00 and 5.30pm)</td>
<td>98</td>
<td>19 mins (14 mins)</td>
</tr>
<tr>
<td></td>
<td>Churchlands Primary School to Train Station</td>
<td>401</td>
<td>13 mins (12 mins)</td>
</tr>
</tbody>
</table>

Figures E.7 and E.8 contained in Appendix E show the bus routes between Stirling Station and the campus and between Perth (via Leederville Station) and the campus and indicate the approximate frequency of services for the journey to the campus (Figure E.7) and from the campus (Figure E.8).

Transperth is planning to modify the existing 401 route from Perth to Churchlands (deleting the part of the route between Leederville and Perth and increasing the frequency of the service). This is supported as it will increase the frequency of services to and from Churchlands campus and the service can still be accessed by people travelling via Leederville Train Station.
9.2.4 Existing Infrastructure Cycling and Walking

**Joondalup Campus**

The pedestrian and cycle network in the vicinity of the campus is shown in the extract from the Stage 2 Perth Bicycle Network indicated in Figure F1 located in Appendix F.

The existing cycle network has fairly good north south links (NW1, NW2 and NE1 – blue routes on figure F1). There are no existing east west links, however, there are two routes planned as part of Stage 2 – NW27 and NW25 (pink routes on Figure F1).

The NW27 is planned to link into NE1 which runs north south to Lakeside Drive. There are good links from Lakeside Drive to the Joondalup campus and therefore, this provides a good route from the south and west.

From the north and west, the planned NW25 heads in a north east direction away from the campus. The route is planned to connect to Joondalup Station via Collier Pass.

There would be benefit in extending this route east of Joondalup Station to connect to the existing shared path along the east side of Grand Boulevard.

The City of Joondalup is currently reviewing its draft Local Area Bicycle Plan. This should be available for public viewing in early 2003.

**Mount Lawley Campus**

The pedestrian and cycle network in the vicinity of the campus is shown in the extract from the Stage 2 Perth Bicycle Network indicated in Figure F2 located in Appendix F.

The existing cycle network has fairly good north south routes (NE1 and NE8 – blue routes on Figure F2). There are existing south-east to north-west routes south of the campus (NE8) and east of the campus (NE6 and NE27) but poor east west connection north of the campus. However, the planned route NE10 (shown as pink route on Figure F2) will connect the existing NE6 route to a number of north south routes including NE6 to the east of the campus and NE8 to the west of the campus.

Another planned east west route is planned to the south which connects the Principal Shared Path along the Mitchell Freeway to the north south routes including NE1 and NE8.

With the two planned east west links, the cycle network provides reasonable access from most directions. However, to the north of the campus, the closest routes are located east and west of Alexander Drive. A link to the planned NE10 from the campus via Alexander Drive would improve access from the north.
The City of Stirling is currently reviewing its draft Local Area Bicycle Plan. This should be available for public viewing in early 2003.

Churchlands Campus

The pedestrian and cycle network in the vicinity of the campus is shown in the extract from the Stage 2 Perth Bicycle Network indicated in Figure F3 located in Appendix F.

The existing cycle network has fairly good routes in the vicinity of the campus (NW1 and NE12 – blue routes on Figure F3). There are existing routes which connect to the Principal Shared Path (PSP) which runs along the Mitchell Freeway (NE12 south of Lake Monger and NW23 north of Lake Monger. A further link to the PSP is planned along King Edward Road (NE11 denoted pink on Figure F3) and will connect to the existing NW9.

There is a planned route from the west (NW10 denoted pink on Figure F3) which will connect into the existing NW1 providing improved access from the west.

Although the NW1 provides a north south route on the east side of Herdsman Lake, it is located east of the campus. The access to the campus would be improved if there were a north south link located west of the campus (along Pearson Street). This could connect the existing NW9 at Stephenson Avenue in the north to NW12 in the south.
10 TRANSPORT OPPORTUNITIES AND CONSTRAINTS FOR ECU

10.1 Car Parking at Peak Periods

Constraints:

- Generally, peak period times for parking on campus are:
  - during the orientation (early February) and enrolment periods (up to end of March for 1st Semester), and up to 2 weeks into the beginning of the second semester;
  - on a weekly basis, Mondays to Thursdays being the busiest days; and,
  - on a daily basis: 8.30am to 9.00am, 12.30pm to 1.30pm, 2.30pm to 3.30pm (Tues, Wed), 4.30pm to 5.30pm (not Fri)

- Mount Lawley campus parking is close to capacity on most days. Campus area is limited for future parking expansion;

- Joondalup campus parking is adequate for most of the time. Campus area is limited for future parking expansion;

- Often there is parking available during peak periods in car parks that are considered by students/staff as being too far away from their lecture rooms/offices; and,

- Although people can use loading zones for equipment drop off, this is not utilised as well as it could be.

Opportunities:

To assist the demand of parking during peak periods:

- Make available, as is currently being done, overflow parking for peak periods., these are:
  - Mount Lawley Campus: Inglewood Oval
  - Joondalup Campus: Playing field near sports centre
  - Churchlands Campus: Hockey Oval

- Continue with providing the after hours security escort service that is available to people who may feel at risk, to assist them in getting from their building to their car. The service is broadcast as a reminder notice on lecture theatre’s video monitors in the evening;

- Also, improve information and communication about parking options, parking availability, loading bay availability, and security escort service availability for after hours; and,

- Peak demand for parking will be reduced through increased use of public transport achieved by the implementation of public transport incentives. (Refer Section 10.10).
10.2 Total Vehicle Parking Bay Provision

Constraints:

- The current provision for car parking at the metropolitan campuses cannot be sustained in the medium to long term, in terms of the built environment, capital cost, and ECU’s environmental guiding principles;

- The Target Ratio for ECU’s parking provision is suggested to be held at an average of 33 bays per 100 equivalent full time student units. This is not considered to be sustainable in the long term due to the level of funding it would require, the available space on campus and the Master Planning principles. An unrestricted growth of parking provision on campus would also breach the University’s environmental policy;

- The cost of providing additional parking at the current provision rate for the next 20 years would be in the order of $33 million at each campus, based on multi storey parking bays (at $20,000 per bay capital cost). This would cause serious lost opportunity cost to the university as this funding could be invested elsewhere in more valuable and sustainable initiatives;

- At Mount Lawley, the recent plans to use the campus’ hockey field for additional permanent parking bays (approx. 200-250 bays) will cause an undesirable loss of amenity for the Physical Education learning area, visual amenity, and possibly safety due to the proximity of vehicles and sporting activities; and,

- At Joondalup, the proposed option for additional at-grade parking opposite campus West will require people to cross over Grand Boulevard to access the campus. At present there is no signalised pedestrian crossing. If this proposal were to go ahead there would be a significant need for a new signalised pedestrian crossing as this road carries high volumes of traffic and is especially congested at peak periods. If this causes parking to be virtually ‘guaranteed’ in the short to medium term, it may not assist with the plan to gently change the culture of providing alternative transport modes.

Opportunities:

- Increase capacity for prioritised users (e.g. lecturers, part-timers, those who do not have alternative means of transport) through the TravelSmart officer in conjunction with Manager Parking by, for example, a special permit for particular days and times that people apply for; and,

- Rationalise existing parking layouts to gain additional at-grade bays – approximately 540 bays at Joondalup and 110 bays at Mount Lawley can be achieved.

As alternative modes of transport are rationalised, improved and encouraged, and the take up rate of alternative transport improves over time, the provision for parking is considered to be able to be reduced per student FTE from its current provision. It is recommended that the parking provision be capped at appropriate Master Plan levels. Specifically:
Mount Lawley:
- Cap parking levels at year 2010 Master Plan levels (2592 bays) which is expected to be the necessary requirement on the basis of a 7% reduction of cars driving and parking on campus in year 2013. Instead of allowing parking provision to grow for the next 20 years at the same provision, capping the parking at 2010 master plan levels equates to a $15M saving in capital costs. (Alternatively this capped level is the necessary requirement for year 2017 for a 12% reduction in cars parking on campus.);
- Deferring multi-storey parking construction by 1 year will result in a saved cost of $1.4M (i.e. 7% of $20M for 1 year) not including land cost; and,
- Instead of using the campus’ hockey oval for permanent additional parking, find small pockets of parking in and around the campus which will have less impact. From an initial review, the extra on-grade parking is limited at an additional 108 bays. Therefore, this may require that parking on campus is not available to 1st year students. These students could be provided with free (patrolled) parking at Inglewood Oval, with the City of Stirlings’ agreement.

Joondalup:
- Cap parking levels at year 2008 Master Plan levels (2294 bays) which is expected to be the necessary requirement on the basis of a 7% reduction of cars driving and parking on campus in year 2016. Instead of allowing parking provision to grow for the next 20 years at the same provision, capping the parking at 2010 master plan levels equates to a $6M saving in capital costs. Alternatively this capped level is the necessary requirement for year 2022 for a 12% reduction in cars parking on campus;
- Deferring multi-storey parking construction by 1 year will result in a saved cost of $826 000 (i.e.7% of $11.8M for 1 year) not including land cost;
- There is a current proposed option to provide a significant number of additional at-grade parking bays opposite Campus West. If it goes ahead, it is expected to relieve peak periods of demand for parking; and,
- From an initial review, it is expected that in the order of 500 additional on-grade parking bays can be achieved in areas adjacent to the existing car park areas.

10.3 Parking Management Strategy

Current proportions for the allocation of various parking bays (i.e. Reserved Parking, Zone A, Zone B, Visitors, Disabled, Motorcycle, Loading Zone, University Vehicles) is suitable for a permit fee system. The availability of parking is representative of the permit type fee.

Opportunities (General):
- Re-allocate bays by greatest priority (e.g. for lecturers, part-timers, those who cannot easily access alternative modes of transport);
use a parking system that creates the greatest turn-over of car bay use to achieve better utilisation of parking bays and thereby improving parking availability;

introduce a user pays system to encourage use of all alternative modes. The parking “Scratchie” ticket which was introduced during 2002 is a good starting point for a change over to a user pays system.

Constraints (General):

- resistance to change;
- a prioritised system for parking bay allocation may cause some groups to feel disadvantaged.

Regarding some specific opportunities for parking systems and payment of parking, the following options are presented:

**Opportunity (1) - Cover Maintenance Costs**

Base future parking permit fees, based on the current permit system, to cover maintenance costs only. If a 7% reduction in car driver mode split occurred, the permit fee for students would be in the order of $25 (JO) and $20 (ML) per year.

**Benefit (1):**
- Permit fees would be most competitive (lowest) of all local universities.

**Disbenefit (1):**
- Less than current permit fees. Inadequate revenue generated to assist campus growth; and,
- Would not help encourage finding alternative modes of transport thereby causing greater parking demand.

**Opportunity (2) - Full Cost recovery**

Base future parking permit fees, based on the current permit system, to be a self funding, full cost recovery system covering capital costs, parking inspector costs and maintenance costs. If a 7% reduction in car driver mode split occurred, the permit fee for students would be in the order of $300 (JO) and $530 (ML) per year.

**Benefit (2):**
- Would greatly encourage finding alternative modes of transport thereby causing reduced parking demand; and,
- Fee levels would fund current and future parking infrastructure and maintenance costs.
Disbenefit (2):
- Permit fees are not competitive when compared to other local universities and may deter potential future students.

Opportunity (3) - 20% Surplus Revenue
Base future parking permit fees, based on the current permit system, to be a surplus funding (to say 20%), full cost recovery system covering capital costs, parking inspector costs and maintenance costs. If a 7% reduction in car driver mode split occurred, the permit fee for students would be in the order of $370 (JO) and $655 (ML) per year.

Benefit (3):
- Would greatly encourage finding alternative modes of transport thereby causing reduced parking demand; and,
- Fee levels would fund current and future parking infrastructure and maintenance costs.

Disbenefit (3):
- Permit fees are very high and are not competitive when compared to other local universities. They may deter potential future students.

Opportunity (4) - 25% Provision for Permit and 75% Provision for Pay as you Stay
Base future parking system on a 25% permit based parking provision, and a 75% Pay As You Stay parking provision. Permits could be allocated on a means tested basis, such as:
- Students living in areas where public transport is not a viable alternative;
- The course enrolled in requires attendance outside peak times or in the evening;
- There is a need to bring bulky / heavy equipment on a regular basis; and,
- Student has special needs (disability).

If the fees are set to be a self funding, full cost recovery system covering capital costs, parking inspector costs and maintenance costs and a 7% reduction in car driver mode split occurred, the permit fee for students would be in the order of:

J oondalup:
- $140/year permit fee and $1.25 hourly rate fee, or
- $300/year permit fee and $1.10/hour for a balanced fee structure

Mount Lawley:
- $140/year permit fee and $2.00 hourly rate fee, or
- $600/year permit fee and $1.55/hour for a balanced fee structure
Benefit (4):
- A permit fee of $140/year is considered to be competitive in comparison to other local university fee levels;
- The fees (especially the ‘balanced fee system’) would greatly encourage finding alternative modes of transport thereby causing reduced parking demand; and,
- Would fund current and future parking infrastructure and maintenance costs.

Disbenefit (4):
- ‘The balanced fee’ system fees are not competitive when compared to other local universities and may deter potential future students; and,
- The means tested basis for allocation of permits may cause controversy and be contested.

Opportunity (5) – Capped Provision and Loan Commitment and 50% Capital Costs

Base future parking permit fees, on:
- The current permit system,
- To support a $5 million loan costing around $515K per annum over a 15 year period (principal and interest basis);
- Parking fees also generate 50% of the capital development costs of parking infrastructure;
- Capping parking provision at master Planning levels of 2294 bays at Joondalup (year 2008 Master Plan) and 2592 bays at Mount Lawley (year 2010 Master Plan); and,
- A 7% reduction in car driver mode split.

This would result in annual parking permit fees in the order of $145 for Students (Zone B), $200 for Staff (Zone A), and $280 for Reserved.

Benefit (5):
- Permit fee levels remain reasonably competitive with other local universities;
- Higher fees would greatly encourage finding alternative modes of transport thereby causing reduced parking demand;
- Could consider subsidising/ part funding / providing incentives for utilising alternative modes of transport; and,
- Fee levels would fund current $5 million load and 50% of future parking infrastructure costs.
Disbenefit (5):
- Permit fees are increased significantly from current permit fee levels and may not be well received in particular by academics and staff;
- Parking is capped at master Plan levels for year 2008 at Joondalup and year 2010 at Mount Lawley. No further parking is provided after that time on campus; and,
- Those who have no suitable alternative means of transport are paying more to park their cars on campus than current fee levels.

Opportunity (6) - All Parking is on a Pay as You Stay basis

Have all future parking on a pay-as-you-use-basis. Set hourly rate fees at a level to support a $5 million loan costing around $515,000 per annum over a 15 year period (P&I) and to generate 50% of the capital development costs of parking infrastructure.

Benefit (6):
- Would encourage finding alternative modes of transport thereby causing reduced parking demand;
- Would encourage those with parked cars to leave the campus as soon as their business is complete, thus freeing up additional car bays; and,
- Fee levels would fund current and future parking infrastructure and maintenance costs.

Disbenefit (6):
- Hourly rate fee may not be considered competitive when compared to other local universities and may deter potential future students;
- Not always possible to know how long parking will be required; and,
- Needing / carrying large quantities of coins.

10.4 Smart Card technology

Use ‘Smart’ card technology as the basis of a pay-as-you-stay system for parking on campus, where an hourly fee rate for parking applies.

Opportunities:
- Allows great flexibility in setting fee levels;
- Simplifies the parking system;
- Can add other university based functions to a single card (e.g. ID, photocopying, printing, library, security/access, bookshop, campus vending machines, cafeteria, parking). Multiple applications;
- Transperth (public transport) function can be added to the card;
- Cards can also incorporate a magnetic strip and bar code if needed;
Could have same or different parking per hour rates in different zones, or have a general parking zone only;

Would encourage those with parked cars to leave the campus as soon as their business is complete, thus freeing up additional car bays;

Card technology could be used to build in incentive schemes / reward schemes / subsidy to promote use of alternative modes of transport, thereby causing reduced parking demand;

Fee levels would fund current and future parking infrastructure and maintenance costs;

Have a swipe or proximity (contactless) system for activating and deactivating parking period. Proximity cards last longer and are less likely to get lost (as they do not need to be inserted into any machines);

A SmartCard system would alleviate the problem of not knowing in advance how long parking is required for; and,

Not needing to carry quantities of coins/notes to pay for parking (machine); and,

Forward thinking in keeping with ECU’s ethos.

Constraints:

Possibly high set up costs;

Resistance to change; and,

If a system for activating/deactivating parking period is used it may be considered inconvenient if a ticket is required to be issued from a machine to give proof of activation of card for parking, or if boom gates are used at entry/exit points of car parks – not recommended due to potential queuing and congestion problems.

10.5 Travel Pass

A program for full time students that requires the compulsory purchase (after assessment) of a travel pass for a fee, each semester. In return each student is entitled to a special public transport pass that allows them full unlimited access to available public transport services during that period of time. The Travel Pass is a validation sticker that is part of the University ID card.

Opportunities:

Prepaid use of public transport thereby giving the incentive to use it as much as possible to get ‘value for money’;

Travel Pass is valid for all (or some specific) public transport trips, not just to and from ECU;

Reduces demand for parking on campus;

A cheaper option to driving;
A cheaper option to the university than providing additional parking (multi-storey); and,

The scheme will become more practical when the SmartCard is introduced by Transperth.

Constraints:

- Fee levels may need to be high to ensure that the required subsidisation from ECU is not excessive or unsustainable;
- Considered as another cost/fee to attend the university;
- Some students may have no intention of using the system;
- Transport service providers (Transperth) need to be able to cater for the system; and,
- Setting up and implementation costs.

10.6 Ride Sharing (e.g. Car Pooling)

Opportunities:

- Car pooling (ride sharing) for people who in particular, live at distance from the campus;
- Provide special car pooling permits and bays;
- Reduces number of cars being driven to campus and needing parking; and,
- Have a ‘ride match’ system where a list is sent to those who register and includes information for people who would like to drive or share the ride.

Constraints:

- Catchment area which staff and students are travelling from is very broad;
- Students’ and Staff’s timetables are likely to vary considerably from one another and may result in limited ridesharing opportunities;
- Lack of flexibility for those involved in ridesharing;
- Difficult to monitor legitimate ride sharing trips; and,
- If ride sharing in one direction only, those not driving need a good alternative form of transport to do the return journey.

10.7 Inter-Campus Travel

In reviewing inter-campus travel, it was agreed that the cost to operate a direct bus service between the Joondalup and Mount Lawley campuses when there is an existing rail link along the northern corridor is prohibitive. Therefore, the proposals for improving travel between the Joondalup and Mount Lawley (and to some extent Churchlands) has focussed on improving travel links between each of the campuses and the northern rail line stations. Thus, the possibility
of providing bus links between Glendalough Station and Mount Lawley campus and Joondalup Station and the Joondalup campus have been investigated.

The reason for choosing Glendalough Station over Stirling Station as the connecting link to the Mount Lawley campus is that the distance from Mount Lawley to Glendalough Station is less than that to Stirling Station. Hence, there is less cost and less travel time associated with running a shuttle bus service to Glendalough Station than Stirling Station.

Churchlands campus has an existing bus service between the campus and Stirling Station, which provides an adequate service for inter-campus travel to Mount Lawley and Joondalup via the northern suburbs rail line (on the basis that the Mount Lawley to Glendalough Station and Joondalup to Joondalup Station shuttle bus services are implemented).

Hence no further investigations for improving the link between Churchlands and Stirling Station have been undertaken.

It should be noted that the provision of the bus shuttle bus services would not only improve inter-campus travel but access to the campuses in general for those students and staff travelling on the northern suburbs rail line (refer item 10.10).

Opportunities:

- Use the northern suburbs rail line as the connector between Mount Lawley (via Glendalough Station), Churchlands (via Stirling Station) and Joondalup (via Joondalup Station);

- Provision of shuttle bus service (using Transperth services) between Mount Lawley campus and Glendalough Station (see associated costs in Table 10.7(a) below). This service is primarily for access to campus, not just inter-campus travel. If the inclusion of the shuttle bus service results in a change to other modes of transport (including using the shuttle bus service) by those staff and students who currently travel to and from campus by car, the service will pay for itself by deferring the need to build additional parking bays:
  - Option A: 113 people per year or 45 parking bays per year deferred
  - Option B: 200 people per year or 80 parking bays per year deferred
  - Option C: 172 people per year or 69 parking bays per year deferred

- Provision of shuttle bus service (privately operated service) between Joondalup campus and Joondalup Station (see associated costs in Table 10.7(b) below). If the inclusion of the shuttle bus service results in a change to other modes of transport (including using the shuttle bus service) by those staff and students who currently travel to and from campus by car, the service will pay for itself by deferring the need to build additional parking bays:
  - Option A: 71 people per year or 29 parking bays per year deferred
  - Option B: 68 people per year or 27 parking bays per year deferred

- Improved communication and information about inter-campus travel options;
- Encourage better travel planning to allow adequate time to find parking on campus (use of TravelSmart program / TravelSmart officer, see Section 10.9 for more details about TravelSmart officer);
- Provision of a number of dedicated parking bays specifically for inter-campus travel for staff; and,
- Campus consolidation.

**Constraints:**

- Random nature of majority of trips in their frequency, time of day, period at other campus, starting and/or ending point of journey (e.g. home);
- Limited opportunities to influence train times to improve connections;
- Cost for shuttle bus service between Mount Lawley campus and Glendalough Station (Transperth);
- Cost to operate shuttle bus service between Joondalup campus and Joondalup Station.
- A Transperth bus is not suitable for a Joondalup shuttle bus due to it being too long to negotiate the right hand turn needed from Kendrew Ave into Grand Boulevard. A smaller bus size is needed (private operator), about a 20 seater; and, Not possible to timetable services to suit all needs.

- **Table 10.7(a) - Costs for provision of shuttle bus service Mount Lawley to Glendalough Station**

<table>
<thead>
<tr>
<th>Times and Frequency</th>
<th>Estimated cost per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option A - 4 hours service, 15 minute frequency</strong></td>
<td></td>
</tr>
<tr>
<td>8:00 - 9:00am @ 15 min</td>
<td></td>
</tr>
<tr>
<td>12:00 - 1:00pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td><strong>Option B - 8 hours service, 15 minute frequency</strong></td>
<td></td>
</tr>
<tr>
<td>8:00am – 2:00pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td><strong>Option C - 8 hours service</strong></td>
<td></td>
</tr>
<tr>
<td><strong>4 hours service, 15 minute frequency and 4 hours service, 30 minute frequency</strong></td>
<td></td>
</tr>
<tr>
<td>8:00 - 9:00am @ 15 min</td>
<td></td>
</tr>
<tr>
<td>12:00 – 1:00pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td>9:00am – 12:00pm @ 30 min</td>
<td></td>
</tr>
<tr>
<td>1:00 – 2pm @ 30 min</td>
<td></td>
</tr>
</tbody>
</table>

Costs are based on operating for 165 days of the year
Table 10.7 (b) – Costs for provision of shuttle bus service Joondalup to Joondalup Station

<table>
<thead>
<tr>
<th>Times and Frequency</th>
<th>Estimated cost per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option A - 8 hours service, 10 minute frequency or on demand (Transperth)</strong></td>
<td></td>
</tr>
<tr>
<td>8:00am – 2:00pm @ 10 min</td>
<td>$60 000 or $350/day</td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 10 min</td>
<td></td>
</tr>
<tr>
<td><strong>Option B - 8 hours service, 15 minute frequency (Private Operator)</strong></td>
<td></td>
</tr>
<tr>
<td>8:00am – 2:00pm @ 15 min</td>
<td>$56 700 or $343/day</td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td>(based on an 18 – 19 seater bus)</td>
<td></td>
</tr>
</tbody>
</table>

Costs are based on operating for 165 days of the year

10.8 Timetabling

**Opportunities:**

- Consider improving class scheduling to achieve a smoothing of peak periods to assist in managing the demand for car parking;
- Make more use of Fridays; and.
- Consider staggering class change-over times to assist with alleviating parking congestion (say 15 – 20 min).

**Constraints:**

- Timetabling is complex, a grid system is used to avoid class schedules clashing;
- Lecturers organise their lectures for the beginning of the week to maximise students’ opportunities to choose suitable times for tutorials and laboratory sessions for the remainder of the week. Some of the 1st year classes are especially large and require in the order of 15 tutorials to be scheduled in the same week following the lecture. Therefore achieving more classes on a Friday is not necessarily possible; and,
- Staggering class times is not an efficient use of room utilisation. 15 to 20 minutes is not likely to be sufficient to alleviate the car parking congestion at change over times.
10.9 Communication / Information

Opportunities:

- Improve communication / information to encourage use of alternative modes of transport and raise awareness of existing facilities and services on campus by the following means:
  
  (a) Publication of an “Access and Facilities Guide” which shows all bus routes and stops from closest train stations and bus stations, cycle and pedestrian network (external and internal) and location of bicycle parking and shower facilities on campus;
  
  (b) Potential funding contribution from Transperth for ECU specific timetable which provides detailed information for train and bus services to ECU and inter-campus travel and information display stands;
  
  (c) Continue to support the ECUBUG in promoting cycling and raising awareness of cycling related issues;
  
  (d) Undertake active promotions for public transport, walking and cycling at student enrolment and start of new term. Includes distribution of an Access and Facilities Guide and providing opportunities to register for “ride match” and to join ECUBUG;
  
  (e) Run promotional events, such as the ECUBUG “Bike to Breakfast”; and,
  
  (f) Provide adequate and legible signing on campus for site orientation, disabled access routes and bicycle parking and shower/locker facilities.

- Run a TravelSmart program with students and staff of ECU;

- Appoint a TravelSmart officer (as a specific resource for all ECU campuses) or other resource to ensure that students and staff have access to all relevant transport access information and resources. The cost of a full-time TravelSmart officer, shared between Mount Lawley and Joondalup campuses, would be in the order of $60 000 per year. This would be a cost to ECU. To ensure that the cost of a TravelSmart officer pays for itself each year, the TravelSmart officer service needs to defer the construction of 29 parking bays (total, across the 2 campuses) per year by getting 73 people, who would normally drive to campus, take alternative modes of transport. In terms of total parking bay provision, if the TravelSmart officer achieves freeing up 1% of parking on campus, he/she has paid for him/herself for the year. Additional benefits include, less pollution and noise, and if drivers change to cycling/walking, increased health benefits (reduced sick leave impacting on productivity). Refer to Appendix I for more details; Business Case for the appointment of a TravelSmart officer; and,

(This simplistic calculation is based on a utilisation rate of 2.5 cars per day per parking bay, $20,000 capital cost per new multi-storey bay, an assumed 10% P&I annual loan repayment plus $100 per bay annual maintenance cost).
Provide a link to “Transport Access” on the ECU website home page including a link to the “Access and Facilities Guide” information and timetables.

Constraints:

- Cost of producing Access and Facilities Guide and timetable information/display stands (dependent on available funding from Transperth and the Department for Planning and Infrastructure (DPI)). However, DPI has agreed that funding will be its responsibility;
- Current behavioural attitudes of some people being receptive to considering alternative transport options;
- Key people are required to champion the causes, dedicated staff member(s) or student(s);
- Costs and resources to run promotions and events; and,
- Resources and funds to implement TravelSmart program and TravelSmart officer.

10.10 Public Transport

Opportunities:

- Rationalise existing public transport services – bus services to improve frequency and timing of services;
- Provision of new bus services to improve access – more bus services on an existing routes at peak times;
- Provision of shuttle bus services between Mount Lawley and Glendalough Station and Joondalup and Joondalup Station to improve access and inter-campus travel (refer to Section 10.7);
- Provision of new bus link (shuttle bus service) between Maylands and Mount Lawley campus. This would be an extension of the Mount Lawley to Glendalough service (see associated costs in Table 10.10 below); and,
- Modify the existing bus stop layout at the roundabout access (Mount Lawley campus) including the provision of a shelter and designated pick up and drop off bays which will not impact on bus access.

Constraints:

- Unlikely potential to change current rail times;
- Limited potential to change current bus times and frequencies;
- Cost to provide additional and new bus services;
- Current behavioural attitudes of some people being receptive to considering alternative transport options (in spite of improvements); and,
Key people required to champion the causes, dedicated staff member(s) or student(s).

Table 10.10 - Costs for provision of bus service Maylands Station to Glendalough Station

<table>
<thead>
<tr>
<th>Times and Frequency</th>
<th>Estimated cost per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option A – 4 hours service 15 minute frequency</strong></td>
<td></td>
</tr>
<tr>
<td>8:00 - 9:00am @ 15 min</td>
<td>$180,000</td>
</tr>
<tr>
<td>12:00 – 1:00pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td><strong>Option B – 8 hours service 15 minute frequency</strong></td>
<td></td>
</tr>
<tr>
<td>8:00am – 2:00pm @ 15 min</td>
<td>$320,000</td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 min</td>
<td></td>
</tr>
<tr>
<td><strong>Option C – 8 hours service 4 hours 15 minute frequency and 4 hours 30 minute frequency</strong></td>
<td></td>
</tr>
<tr>
<td>8:00 - 9:00am @ 15 mins</td>
<td>$273,500</td>
</tr>
<tr>
<td>12:00 – 1:00pm @ 15 mins</td>
<td></td>
</tr>
<tr>
<td>3:30 – 5:30pm @ 15 mins</td>
<td></td>
</tr>
<tr>
<td>9:00am – 12:00pm @ 30 mins</td>
<td></td>
</tr>
<tr>
<td>1:00 – 2pm @ 30 mins</td>
<td></td>
</tr>
</tbody>
</table>

Costs are based on operating for 165 days of the year

10.11 Walking and Cycling

Opportunities:

- The current planned new routes and upgrades of the Perth Bicycle Network (Stage 2);
- Improvements to the local pedestrian and cycle network through the current review of the Local Area Bicycle Plans by the City of Stirling (Churchlands and Mount Lawley campuses) and the City of Joondalup (Joondalup campus);
- Improved internal campus facilities including bicycle parking (recognising needs for short stay and long stay parking);
- Improved legibility through signing for pedestrians and cyclists to various buildings, disabled access routes and facilities (such as showers and lockers for cyclists);
- Improved communication to all regarding bicycle parking, access and shower facilities;
- Future building guidelines to include guidance on provision of appropriate end of trip facilities for cyclists (showers, lockers, short stay and long stay parking);
- Provision of sheltered walkways at key access points into the campus from public transport and external pedestrian network
- Promotion of walking and cycling as healthy and helping to save the environment
- Improve pedestrian safety through introduction of pedestrian signalised crossings on busy roads adjacent to campuses;
- With better/ improved public transport services, encourage walking to and from bus stops (the “Find 30” campaign aimed to encourage 30 minutes exercise a day); and,
- ECUBUG initiatives and promotion campaigns to encourage cycling.

Constraints:
- Potential to influence local area bicycle plans may be limited – council funds limited in any case;
- May be difficult to gain approvals for signalised pedestrian crossings on the existing congested road network (peak periods);
- If approvals are given, need funding for signalised pedestrian crossings;
- Cost to provide bike parking to meet short stay and long stay needs signing and end of trip facilities;
- Current behavioural attitudes of some people being receptive to considering alternative transport options (in spite of improvements);
- Key people required to champion the causes, dedicated staff member(s) or student(s); and,
- Application of design guidelines for end of trip facilities may be limited by resources and funding.
11 FUTURE DIRECTIONS

11.1 General Metro Campuses Recommendations
The following are recommendations which are applicable to the metropolitan campuses.

11.1.1 Travel Demand Survey
Undertake a travel demand survey to identify the following:

(a) Existing mode split of travel – private vehicle (driver/ passenger), public transport (bus / train), walking and cycling;
(b) Better establish travel needs – travel to campus (day and night) and inter-campus travel including potential use of shuttle bus services (Maylands to Mount Lawley, Mount Lawley to Glendalough Station and Joondalup Station to J oondalup); and,
(c) Better determine existing constraints to using public transport, walking and cycling.

11.1.2 Car Parking at Peak Periods
(a) Make current overflow parking available at peak periods in the future;
(b) Continue providing after hours security escort service;
(c) Advise and encourage use of drop off zones (loading bays) so that people will look for parking on the campus at distances greater than they are currently prepared to because of the need to carry bulky/heavy equipment;
(d) Improve information about parking options and availability; and,
(e) At the Mount Lawley campus provide security patrols at Inglewood oval and signage with good legibility to/from campus.

11.1.3 Total Vehicle Parking Bay Provision
(a) Cap parking provision at appropriate master plan levels as defined in Section 10.2;
(b) Carry out a travel demand survey for Mount Lawley and J oondalup to determine current Modal split to establish a benchmark so that this can be used for to evaluate effectiveness of new transport initiatives;
(c) Increase capacity for prioritised users (e.g. lecturers, part-timers, those who do not have alternative means) through the TravelSmart officer in conjunction with Manager Parking by, for example, a special permit for particular days and times that people apply for;
(d) Defer construction of multi-storey parking by making best use of existing parking and giving a saved cost; and,

(e) Rationalise existing parking areas to gain additional parking bays.

11.1.4 Parking Management Strategy

- Set appropriate levels for parking permit fees to at least meet the current parking loan commitment and to meet at least 50% of all future capital development costs of future parking;
- Whilst using the parking permit system, keep parking permit fees at competitive rates compared with other local universities;
- With the introduction of SmartCard technology by Transperth in 2004 (anticipated) change over to a Pay as You Use/Stay basis of payment for parking on campus for all or for the majority of parking bays. Set appropriate hourly fees (with peak and off-peak rates) to cover at least the commitments stated in point ‘a)’ above, and to contribute towards incentive schemes, where considered appropriate, to encourage use of alternative modes of transport;
- Allocate bays by greatest priority;
- Use a system that creates the greatest turn-over of car bay use;
- Ensure availability of car bays,
- User pays system to encourage use of all alternative modes; and,
- Need key person(s) to champion this change in culture to drive the implementation process.

Further options for the Parking Management strategy are being considered. The strategy will be developed further by the team in a workshop in January 2003.

11.1.5 SmartCard

(a) Set an ECU “SmartCard” working group immediately to develop the University’s requirements for SmartCard applications and card type;

(b) Introduce a University ID SmartCard in 2005 to link in with Transperth’s timing of its transport SmartCard. Have the Transperth application as a component of the university card. A stored-value, proximity card;

(c) Parking Inspectors audit compliance; and,

(d) Build in incentive schemes in the SmartCard to encourage use of alternative modes of transport.
11.1.6 Travel Pass  
(a) Investigate further a Travel Pass program in greater detail as a scheme in conjunction with the SmartCard system. Trial the Travel Pass program.

11.1.7 Ride Sharing (e.g. Car Pooling)  
(a) Determine potential opportunity based on students’ and staff’s address and timetable. Include a register at enrolment on campus for people to register their interest and to gauge an overall level of interest and set up a database (TravelSmart officer could do this); and,

(b) Trial the RideShare program where the level of interest determined from the register (by the TravelSmart officer) is considered sufficient. Review after 1 year.

11.1.8 Inter-Campus Travel  
(a) Improve timetable connectivity for public transport mode;

(b) Improve information/communication of available options and travel planning;

(c) Trial the shuttle bus service from Joondalup to Joondalup Station for 1 year, start immediately.

(d) Trial the shuttle bus service from Mount Lawley to Glendalough Station for 1 year (medium term); and,

(e) If shuttle bus service proves to be successful after the trial period, construct shelter and layover area.

11.1.9 Class Scheduling/ Timetabling  
(a) Carry out detailed analysis of class scheduling to determine if there is scope to make more even utilisation of classes throughout the week.

11.1.10 Communication / Information  
Communicate to staff and students about:

(a) Alternative access options (including public transport, cycling, walking) and information on routes, facilities, incentives, using the following resources;

- Appoint TravelSmart Officer/ other similar resource within 1 year to: (i) provide advice on access travel and options, (ii) co-ordinate surveys, (iii) drive and coordinate the implementation;

- Production of ECU specific timetables and information display stands; and,

- Production of “Access and Facilities Guide”.
(b) Parking associated measures such as:

- alternative parking available at peak (proposed);
- after hours security escorting service (existing);
- the availability and use of loading zoned for dropping off/picking up heavy/bulky equipment; and,
- The above can be achieved using the following means of communication:
  - notices;
  - campus travel information days;
  - web page;
  - email;
  - Club days for user groups (e.g. ECUBUG);
  - Information kiosk at each campus;
  - Information stand at enrolment and enrolment information packs; and,
  - “Access and Facilities Guide” distributed at enrolment/orientation days or separately.

11.1.11 Public Transport

(a) Rationalise existing services and opportunities;
(b) Provide new services on existing bus routes; and,
(c) Provide new shuttle bus services to link campuses to nearest train stations.

Sections 11.2.3, 11.3.3 and 11.4.3 outline a series of recommendations for rationalisation of the existing services and bus provision to the Joondalup campus, Mount Lawley campus and Churchlands campus respectively.

Comments are provided which explain the rationale for the recommendations and indicate the likely improvements to the services will be achieved as a result of implementation. Each of the recommendations has been given a priority rating described as follows (Note, these priorities are for public transport recommendations only and are independent of implementation priorities in Section 12):

- High Priority (1)
  These recommendations are considered to provide significant benefits and/or are essential to providing good service.
- **Medium Priority (2)**
  These recommendations are considered high priority but are not worth recommending for immediate implementation due to timing (dependent on other recommendations) or cost. They are considered to provide less significant benefits and are not considered critical to providing good service.

- **Low Priority (3)**
  These recommendations are considered to provide benefits for travel but are not essential or critical in the short term or are of higher priority but not achievable in the short term.

- **No Priority (4)**
  This priority is allocated to opportunities that have been investigated but are not worth pursuing.

A meeting was held with Transperth to discuss the recommendations in detail. The outcome of the discussions with Transperth in regard to each recommendation are noted in bold text in the relevant sections referred *(Sections 11.2.3, 11.3.3 and 11.4.3)*.

### 11.1.12 Walking and Cycling

(a) Review provision of existing pedestrian signalised crossing at major intersections with local Government and Main Roads WA;

(b) Review and comment on draft Local Area Bicycle Plans with Local Government to identify any shortfalls for bicycle access to ECU;

(c) Improve signing and legibility for pedestrians on campus;

(d) Provide adequate and legible signing to disabled access ramps;

(e) Incorporate pedestrian/ cyclist desire lines in the current Master Plan;

(f) Provide bicycle parking for short stay and long stay needs (secure enclosures) in vicinity of end of trip facilities;

(g) Investigate further the provision of perimeter paths around campuses;

(h) Ongoing upgrade of pedestrian and cycling facilities including the provision of adequate signing of bicycle facilities – parking and showers/ lockers;

(i) Ensure that adequate storage (lockers) and showering facilities are provided at key points on campus;

(j) Sell “Kryptonite” bike locks on campus;

(k) Ensure future building guidelines to include guidance on provision of appropriate end of trip facilities for cyclists (showers, lockers, short stay and long stay parking); and,
(l) Continue support for ECUBUG.

11.2 Joondalup Campus

The following are recommendations specific to the Joondalup campus.

11.2.1 Car Parking at Peak Periods

(a) Make current overflow parking at the playing field near the Sports Centre available at peak periods in the future.

11.2.2 Total Vehicle Parking Bay Provision

(a) Cap parking provision at year 2008 Master Plan levels, a provision of a total of 2294 bays.

(b) Build additional parking between service roads.

(c) Defer construction of multi-story car parking for as long as possible.

(d) Rationalise parking around the existing campus area to gain an additional 536 bays – refer to plans 1A and 1B in Appendix G.

11.2.3 Public Transport

The series of recommendations for public transport services to the Joondalup campus and their current status are included in Table 11.2.3 over page.
Table 11.2.3 - Joondalup Campus Public Transport Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Services Affected</th>
<th>Comment</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationalise bus service 465 in discussions with Transperth</td>
<td>No 465 service between Joondalup Train Station and ECU</td>
<td>Move the existing 465 service which travels on Grand Boulevard to match the existing 466 service which travels on Lakeside Drive. This will increase frequency to the Lakeside Drive end of the campus with no significant reduction in frequency to the services to and from Grand Boulevard (served by the 462, 463 and 464 services).</td>
<td>1</td>
</tr>
<tr>
<td>Provision of bus shelters (Nth bound on Grand Boulevard) and good pedestrian access to bus stops on Lakeside Drive and Grand Boulevard</td>
<td>All services to and from ECU Joondalup</td>
<td>Bus shelters and good pedestrian access are critical to the use of public transport Note: recommendation to cut back vegetation at existing bus stop on Grand Boulevard to improve pedestrian safety</td>
<td>1</td>
</tr>
<tr>
<td>Provision of bus shelters and good pedestrian access to bus stops on Kendrew Crescent for after hours service</td>
<td>All services to and from ECU Joondalup</td>
<td>Bus shelters and good pedestrian access are critical to the use of public transport</td>
<td>1</td>
</tr>
<tr>
<td>Produce timetable for ECU which is displayed at Joondalup Train Station (and also at ECU bus stops, noticeboards and/ or website)</td>
<td>All services to and from ECU Joondalup</td>
<td>A timetable listing all services and times to ECU Joondalup will inform students when the next service is due to leave the station - a timetable should also be readily available for students travelling to the station from ECU Joondalup</td>
<td>1</td>
</tr>
<tr>
<td>Shuttle bus service between Joondalup Station to Joondalup campus</td>
<td>Privately run operation</td>
<td>Costs and operation of shuttle bus service have been investigated for 15 minute frequency.</td>
<td>1</td>
</tr>
<tr>
<td>Rationalise bus services to improve frequency</td>
<td>No 462, 463 and 464 services</td>
<td>The flexibility to move these services is likely to be constrained as these services are timed to train arrivals and departures at Warwick Train Station.</td>
<td>4</td>
</tr>
</tbody>
</table>
11.2.4 Walking and Cycling
Refer Figure H1 in Appendix H Review provision of pedestrian signalised crossing on Grand Boulevard at Collier Pass and Kendrew Crescent with City of Joondalup and Main Roads WA;

(a) Investigate possibility of providing sheltered walkway to provide linkage from the key access point to centre of campus (refer Figure H1).

(b) Provide links from car park “1a” to “2a” and from road south of car park “5e” to Lakeside path to create a perimeter route for pedestrians/ cyclists (refer Figure H1).

11.3 Mount Lawley Campus
The following are recommendations specific to the Mount Lawley campus.

11.3.1 Car Parking at Peak Periods
(a) Make current overflow parking at Inglewood Oval available at peak periods in the future, with security patrols and signage and good legibility to/ from campus.

11.3.2 Total Vehicle Parking Bay Provision
(a) Cap parking provision at year 2010 Master Plan levels, a total provision of 2592 bays.

(b) Defer the decision to use the campus’ hockey oval for additional permanent parking. Find alternative opportunities for parking in and around the campus. Provide free (security patrolled) parking at the Inglewood Oval.

(c) Rationalise parking around existing campus areas to gain an additional 108 bays – refer plans 2A and 2B in Appendix G.

11.3.3 Public Transport
The series of recommendations for public transport services to the Mount Lawley campus and their current status are included in Table 11.3.3 over page.
Table 11.3.3 - Mount Lawley Campus Public Transport Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Services Affected</th>
<th>Comment</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationalise services in discussions with Transperth</td>
<td>No 886, 887 and 889 services between Perth CBD and ECU</td>
<td>Provide 2 additional services departing Perth CBD at 8.20 and 8.40am. This provides a 10 minute service to ECU in the 30 minute period from 8.10 to 8.40am. It is suggested that these additional services are “ECU EXPRESS/SPECIAL” services. Approximate cost is $5,500 per annum for both services (based on two services operating 165 days of the year).</td>
<td>1</td>
</tr>
<tr>
<td>Rationalise services in discussions with Transperth</td>
<td>No 17, 18, and 19 services between Perth CBD and ECU</td>
<td>Reschedule the 18 and 19 services to provide an overall frequency of 10 mins when combined with the 886, 887 and 889 services. Adamant cost is $5,500 per annum for both services (based on two services operating 165 days of the year).</td>
<td>1</td>
</tr>
<tr>
<td>Move bus stops to south of Bradford Street</td>
<td>All services to and from ECU Mount Lawley</td>
<td>Reduces distance from bus stops to ECU by 100m. Cost sharing proposed.</td>
<td>1</td>
</tr>
<tr>
<td>Rationalise bus service 20 in discussions with Transperth</td>
<td>No 20 service between Morley Bus Station and ECU</td>
<td>The existing 20 service between Morley Bus Station and Perth may be modified to run between Morley Bus Station and ECU only – this may double the existing frequency of this service between Morley and ECU.</td>
<td>1</td>
</tr>
<tr>
<td>Modify roundabout access from Bradford Street to provide bus stop, shelter, timetable information and designated pick up and set down bays</td>
<td>No 20 service and 18, 10 after-hours services</td>
<td>As part of the above recommendation, it is proposed that the No 20 service is brought into the campus via Bradford Street. Therefore, the roundabout access should be modified to create a permanent bus stop and shelter and resolve the issue of parked cars blocking bus access</td>
<td>1</td>
</tr>
<tr>
<td>Bring forward existing 8.50am service by 5 minutes</td>
<td>No 60 service from Morley to ECU</td>
<td>This improves the AM peak period service to 3 buses leaving at 8.25, 8.35 and 8.45. Therefore, improves frequency to a 10 minute service.</td>
<td>4</td>
</tr>
<tr>
<td>Shuttle bus service between Glendalough Station and Mount Lawley campus</td>
<td>Transperth service funded by ECU</td>
<td>Travel survey should be undertaken to identify travel demand and determine times of operation and frequency of service. Implement a trial period.</td>
<td>2</td>
</tr>
<tr>
<td>Shuttle bus service between Maylands Station and Mount Lawley campus</td>
<td>Transperth service funded by ECU</td>
<td>Travel survey should be undertaken to identify travel demand and determine times of operation and frequency of service before operating for a trial period.</td>
<td>3</td>
</tr>
</tbody>
</table>
11.3.4 Walking and Cycling

- Refer Figure H2 in Appendix H

(a) Review provision of pedestrian crossing facility at the intersection of Alexander Drive and Bradford Street.

(b) Provide shelter at security phones for people waiting to be collected (Bradford Street entry).

(c) Continue upgrade of short stay (U rail) bicycle parking at appropriate locations around campus.

(d) Provide long stay bicycle parking (secure enclosure) in vicinity of existing shower and locker facilities.

(e) Incorporate appropriate bicycle parking and end of trip facilities as part of campus redevelopment.

(f) Provide links as shown in Figure H2 to link various car parks and path network to complete a perimeter path for pedestrians and cyclists.

(g) Review City of Stirling’s Local Area Bicycle Plans (when available) and identify any shortfalls for ECU access.

11.4 Churchlands Campus

The following are recommendations specific to the Churchlands campus.

11.4.1 Car Parking at Peak Periods

(a) Make current overflow parking at the Hockey Oval available at peak periods in the future.

11.4.2 Total Vehicle Parking Bay Provision

(a) Re-assess parking requirements at each stage of the redevelopment process to ensure that there are suitable proportions of various parking bays, and that access to the parking areas is maintained.

11.4.3 Public Transport

(a) Write to Transperth to support the planned modification of the existing 401 route from Perth to Churchlands (deleting the part of the route between Leederville and Perth and increasing the frequency of the service).

11.4.4 Walking and Cycling

(a) Replace existing toast rack style bicycle parking with U rails and review need for long stay parking (secure enclosures).
(b) Re-assess parking requirements at each stage of the redevelopment process.

(c) Re-assess pedestrian and cyclist access and facilities and needs at each stage of the redevelopment process.

(h) Review City of Stirling’s Local Area Bicycle Plans (when available) and identify any shortfalls for ECU access.
12 IMPLEMENTATION

The recommendations in this section have been developed in accordance with the agreed transport goals and objectives set out in Section 6 and ECU’s vision and policy (Section 5).

They are set out in this section based on various time frames in order to achieve a suggested implementation plan for the campuses in general, and for the individual campuses.

The recommendations have been divided into three time frames:

- Short term (within one year);
- Medium term (within 2 to 3 years); and,
- Long term (within 5 years).
12.1 Short-Term Recommendations

<table>
<thead>
<tr>
<th>Short Term Recommendations</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommendation:</strong></td>
<td></td>
</tr>
<tr>
<td>General - All campuses</td>
<td></td>
</tr>
<tr>
<td>Carry out Travel demand survey to use as benchmark for modal split and better determine travel demand for staff and students</td>
<td>$8 000</td>
</tr>
<tr>
<td>Introduce Ride-share scheme and review after 1 year</td>
<td>$5 000</td>
</tr>
<tr>
<td>Improve class scheduling</td>
<td>$10 000</td>
</tr>
<tr>
<td>Devise appropriate communication strategy to inform staff and students about alternative transport options, use of current and planned facilities (on going)</td>
<td>$20 000/yr</td>
</tr>
<tr>
<td>Set an ECU “SmartCard” working group immediately to develop the University’s requirements for its SmartCard applications and card type.</td>
<td></td>
</tr>
<tr>
<td>Investigate SmartCard technology applications for ECU in conjunction with Transperth.</td>
<td>$15 000</td>
</tr>
<tr>
<td>Appoint TravelSmart Officer</td>
<td>$60 000/yr (THIS HAS BEEN IMPLEMENTED)</td>
</tr>
<tr>
<td>Provide long stay parking for cyclists (provide secure lockers and/or enclosures) in appropriate locations in vicinity of end of trip facilities</td>
<td></td>
</tr>
<tr>
<td><strong>Short Term Recommendations to revisited periodically</strong></td>
<td></td>
</tr>
<tr>
<td>Carry out Travel demand survey to identify travel demand for shuttle bus services and determine times of operation and frequency of service before operating for a trial period</td>
<td></td>
</tr>
<tr>
<td>Produce an Access and Facilities Guide to show public transport routes and pedestrian and cycle network and facilities</td>
<td>$25 000 funded by DPI</td>
</tr>
<tr>
<td>Review and comment on Local Area Bicycle Plans from Local Government (in 2003) and identify any shortfalls for ECU access</td>
<td></td>
</tr>
<tr>
<td>Provide adequate and legible signing for:</td>
<td></td>
</tr>
<tr>
<td>- Site orientation,</td>
<td></td>
</tr>
<tr>
<td>- Disabled access routes,</td>
<td></td>
</tr>
</tbody>
</table>
## Short Term Recommendations (within 12 months, before end 2003)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>End of trip facilities for cyclists</td>
<td></td>
</tr>
<tr>
<td>Ensure that all future building guidelines to include guidance on provision of appropriate end of trip facilities for cyclists (showers, lockers, short stay and long stay parking).</td>
<td></td>
</tr>
<tr>
<td>Sell “Kryptonite” bike locks on campus</td>
<td>Cost recovery</td>
</tr>
<tr>
<td>Plan for extension of parking into under-utilised spaces of existing car parks immediately at Mount Lawley and when required at Joondalup</td>
<td></td>
</tr>
</tbody>
</table>

### Joondalup Campus

- Operate shuttle bus service between Joondalup Station and Joondalup campus for a trial period of one year
  - Cost: $60 000/yr
- Defer construction of multi storey parking bays for as long as possible.
- Liaise with Transperth to rationalise the existing bus services by moving the existing 465 service which travels on Grand Boulevard to match the existing 466 service which travels on Lakeside Drive
  - Operating costs
- Liaise with the City of Joondalup to provide bus shelters (Nth bound on Grand Boulevard) and good pedestrian access to bus stops on Lakeside Drive and Grand Boulevard (cut back vegetation at existing bus stop on Grand Boulevard)
  - Cost: $15 000
  - (Joondalup City)
- Liaise with Transperth to produce ECU specific timetable which is displayed at Joondalup Train Station (and also at ECU bus stops, noticeboards and/ or website)

### Mount Lawley Campus

- Defer construction of multi storey parking bays for as long as possible.
- Liaise with Transperth to provide 2 additional services (886, 887 and 889 services) departing Perth CBD at 8:20 and 8:40am to improve frequency to a 10 minute service to ECU in the 30 minute period from 8:10 to 8:40am.
  - Cost: $5,500 operating costs per annum*
  - (THIS HAS BEEN IMPLEMENTED)
- Approach Transperth to reschedule the 18 and 19 services to provide an overall frequency of 10 min between Perth and Mount Lawley campus when combined with the 886, 887 and
### Short Term Recommendations (within 12 months, before end 2003)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>889 services (as a result of removing the No 20 service).</td>
<td></td>
</tr>
<tr>
<td>Liaise with DPI and Council to move bus stops to south of Bradford Street. (Shared funding proposal between DPI, Council and ECU, $25 000 each)</td>
<td>$75 000</td>
</tr>
<tr>
<td>Liaise with Transperth in support of modifying the existing 20 service to run between Morley Bus Station and ECU only and thus increase frequency of service</td>
<td></td>
</tr>
<tr>
<td>Modify internal roundabout access from Bradford Street to provide bus stop, shelter, and timetable information for the modified No 20 service and after-hours access for No. 18 and 19</td>
<td></td>
</tr>
<tr>
<td>Continue to upgrade bicycle parking to U rail facilities and provide long stay parking for cyclists (secure enclosures) in appropriate locations in the vicinity of end of trip facilities.</td>
<td></td>
</tr>
<tr>
<td>Review City of Stirling Local Area Bicycle Plans (in 2003) and identify any shortfalls for ECU access.</td>
<td></td>
</tr>
</tbody>
</table>

**Churchlands Campus**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-assess parking requirements at each stage of the redevelopment process</td>
<td>$2 000/yr</td>
</tr>
<tr>
<td>Liaise with Transperth in support of the planned modification of the existing 401 route from Perth to Churchlands by deleting the part of the route between Leederville and Perth and increasing the frequency of the service.</td>
<td></td>
</tr>
<tr>
<td>Re-assess pedestrian and cyclist access and facilities at each stage of the redevelopment process</td>
<td></td>
</tr>
<tr>
<td>Review City of Stirling Local Area Bicycle Plans (when available) and identify any shortfalls for ECU access.</td>
<td></td>
</tr>
</tbody>
</table>

* Based on 165 operating days per year
12.2 Medium-Term Recommendations

**Medium Term Recommendations** *(within 2 to 3 years, i.e. 2004 - 2005)*

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General - All campuses</strong></td>
<td></td>
</tr>
<tr>
<td>Introduce SmartCard technology incorporating a Transperth transit component</td>
<td>Further investigation needed.</td>
</tr>
<tr>
<td>Investigate possibility of introducing a Travel Pass program</td>
<td>$5 000</td>
</tr>
<tr>
<td>Prepare incentive schemes to encourage use of SmartCard (ECU’s SmartCard committee)</td>
<td>$5 000</td>
</tr>
<tr>
<td>Review access modes against Travel demand survey benchmark</td>
<td></td>
</tr>
<tr>
<td>Review and update Campus “Access and Facilities Guide”</td>
<td></td>
</tr>
<tr>
<td><strong>Joondalup Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Build additional parking between service roads</td>
<td></td>
</tr>
<tr>
<td><strong>Mount Lawley Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Operate shuttle bus service to and from Glendalough Station for a trial period of one year.</td>
<td>See Table 10.7(a) for indicative cost options</td>
</tr>
</tbody>
</table>

---

---
### 12.3 Long Term Recommendations

#### Long Term Recommendations (2006 on).

<table>
<thead>
<tr>
<th>Recommendation:</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General - All campuses</strong></td>
<td></td>
</tr>
<tr>
<td>Review access modes against Travel demand survey benchmark</td>
<td></td>
</tr>
<tr>
<td>Liaise with Local Authority for next review of Local Area Bicycle Plans</td>
<td></td>
</tr>
<tr>
<td><strong>Joondalup Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Cap parking provision at year 2008 Master Plan levels to provide total of 2294 parking bays *(based on 985 new bays, 480 bays at-grade (at $3.5k/bay capital cost), 505 bays multistorey (at $20k/bay capital cost) as at Feb 2002)</td>
<td>$11.8 million *</td>
</tr>
<tr>
<td>Liaise with Transperth for the rationalisation of bus services to improve spread of the No 462, 463, 464 services (based on the assumption that service 465 is moved to Lakeside Drive) Note that the flexibility to move these services is likely to be constrained as these services are timed to train arrivals and departures at Warwick Train Station</td>
<td></td>
</tr>
<tr>
<td>Liaise with City of Joondalup for subsequent review of Local Area Bicycle Plan</td>
<td></td>
</tr>
<tr>
<td><strong>Mount Lawley Campus</strong></td>
<td></td>
</tr>
<tr>
<td>Operate a trial run for shuttle bus service between Maylands Station and Mount Lawley campus</td>
<td>Transperth service funded by ECU See Table 10.10 for indicative costs</td>
</tr>
<tr>
<td>Cap parking provision at year 2010 Master Plan levels to provide total of 2592 parking bays **(based on 1004 new bays, all multi storey (at $20k/bay capital cost) as at Feb 2002)</td>
<td>$20 million**</td>
</tr>
<tr>
<td>Liaise with City of Stirling for subsequent review of Local Area Bicycle Plan</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX A

TRANSPORT REFERENCE GROUP (TRG)
STAKEHOLDER PARTICIPANTS
## ECU METROPOLITAN CAMPUS INTEGRATED TRANSPORT PLAN

### Transport Reference Group Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>E-mail / Contact</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Name</td>
<td>Organisation</td>
<td>E-mail / Contact</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------</td>
<td>-----------------------------------</td>
</tr>
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</tr>
</tbody>
</table>

**Project Team Members**

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<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>E-mail / Contact</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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</tr>
</tbody>
</table>
APPENDIX B

MODE SPLIT MTS TRENDS AND TARGETS

(Source: TravelSmart 2010 A Ten Year Plan)
MTS Trends and Targets

![MTS Trends and Targets graph](image)

**Source:** TravelSmart 2010 A Ten Year Plan
APPENDIX C

MASTER PLAN STAGING MAPS

for

JOONDALUP CAMPUS

and

MOUNT LAWLEY CAMPUS
APPENDIX D

CAMPUS ATTENDANCE

BY LOCATION OF STAFF & STUDENTS BY PARKING PERMIT
ECU Joondalup Campus
Student Attendance by parking permit

Legend
- Staff/Student Address
- Suburb Boundary

Statistics
- Average Distance from University - 18 km
- Percentage of Staff/Students within 1.5 km - 1.3%
- Percentage of Staff/Students within 5 km - 18.5%
- Total Estimated Number of Staff/Students within 1.5 km - 55
- Total Estimated Number of Staff/Students within 5 km - 787
- All totals based on Sample size of 2303 of 4233 (54.4%)

Note: All residential addresses have been randomised by house number.
APPENDIX E

PUBLIC TRANSPORT ROUTES
for
JOONDALUP CAMPUS,
MOUNT LAWLEY CAMPUS
CHURCHLANDS CAMPUS
and
SUGGESTED SHUTTLE SERVICE ROUTE
FOR JOONDALUP CAMPUS
Map Source: DOLA Street Express 2001

EDITH COWAN UNIVERSITY EXISTING BUS ROUTES

JOONDALUP TRAIN STATION TO ECU JOONDALUP CAMPUS
Map Route for Bus Services 462, 463, 464, 465 and 466

FIGURE E.1

**Route 466**

JOONDALUP to ECU
6:00am-9:00am   every 20-30 minutes
9:00am-3:30pm   every 45 minutes
3:30pm-5:40pm   every 20-30 minutes

**Combined Routes 462, 463, 464, 465 and 466**

JOONDALUP to ECU
6:30am-6:00pm   every 10-15 minutes
6:00pm-12:00am  every 60 minutes

**Routes 462, 463, 464 and 465**

JOONDALUP to ECU
5:00am-6:00pm   every 5-15 minutes
6:00pm-12:00am  every 60 minutes

**COMBINED ROUTES 462, 463, 464, 465 and 466**

JOONDALUP to ECU
5:00am-6:00pm   every 5-15 minutes
6:00pm-12:00am  every 60 minutes
Map Source: DOLA Street Express 2001

EDITH COWAN UNIVERSITY EXISTING BUS ROUTES
ECU JOONDALUP CAMPUS TO JOONDALUP TRAIN STATION
Map Route for Bus Services 462, 463, 464, 465 and 466

**FIGURE E.2**

<table>
<thead>
<tr>
<th>ROUTE 466</th>
<th>ECU to JOONDALUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30am-3:30pm</td>
<td>every 45-50 minutes</td>
</tr>
<tr>
<td>3:30pm-6:00pm</td>
<td>every 20-30 minutes</td>
</tr>
</tbody>
</table>

- **ROUTE 466**
  - ECU to JOONDALUP
  - 7:30am-3:30pm every 45-50 minutes
  - 3:30pm-6:00pm every 20-30 minutes

- **ROUTES 462, 463, 464 and 465**
  - ECU to JOONDALUP
  - 7:30am-9:30am every 10-15 minutes
  - 9:30am-3:00pm every 15-25 minutes
  - 3:00pm-7:00pm every 5-10 minutes
  - 7:00pm-12:00am every 60 minutes

- **COMBINED ROUTES 462, 463, 464, 465 and 466**
  - ECU to JOONDALUP
  - 7:30am-9:30am every 5-10 minutes
  - 9:30am-3:00pm every 10-20 minutes
  - 3:00pm-7:00pm every 5-10 minutes
  - 7:00pm-12:00am every 60 minutes
**EDITH COWAN UNIVERSITY EXISTING BUS ROUTES**

**PERTH TO ECU MT LAWLEY CAMPUS**

**MAP ROUTE FOR BUS SERVICES 16, 17, 18, 19, 20, 60, 886, 887 AND 889**

**COMBINED ROUTES 17,18,19,20,886,887 and 889**

(Excluding Routes 16 and 60)

**PERTH TO ECU**

6:30am-8:00am every 30 minutes
8:00am-6:30pm every 10-15 minutes
6:30pm-11:30pm every 20-30 minutes

**ROUTES 17,18,19 and 20**

PERTH TO ECU

6:30am-8:00am every 30 minutes
8:00am-11:00am every 15 minutes
11:00am-1:30pm every 25-30 minutes
1:30pm-3:30pm every 15-20 minutes
3:30pm-6:30pm every 10-15 minutes
6:30pm-11:30pm every 30-40 minutes

**ROUTES 16 and 60**

PERTH TO ECU

6:30am-3:30pm every 20-30 minutes
3:30pm-6:30pm every 10-15 minutes
6:30pm-11:30pm every 30 minutes

**ROUTES 886,887 and 889**

PERTH TO ECU

7:30am-2:30pm every 20 minutes
2:30pm-6:30pm every 10 minutes
6:30pm-12:00am every 30 minutes

**COMBINED ROUTES 17,18,19,20,886,887 and 889**

(Excluding Routes 16 and 60)

PERTH TO ECU

6:30am-8:00am every 30 minutes
8:00am-6:30pm every 10-15 minutes
6:30pm-11:30pm every 20-30 minutes

**MAYLANDS TRAIN STATION**

**EDITH COWAN UNIVERSITY**

**MORLEY BUS STATION**

**PERTH RAILWAY STATION**

Map Source: DOLA Street Express 2001

Map Route for Bus Services 16, 17, 18, 19, 20, 60, 886, 887 and 889

FIGURE E.3
COMBINED ROUTES 17, 18, 19, 20, 886, 887 and 889 (Excluding Routes 16 and 60)

ECU to PERTH
6:00am-11:00am every 5-10 minutes
11:00am - 3:30pm every 20 minutes
3:30pm-6:30pm every 10-15 minutes
6:30pm-11:30pm every 20-30 minutes

ECU MT LAWLEY CAMPUS TO PERTH
6:30am-11:00am every 5-10 minutes
11:00am - 3:30pm every 20 minutes
3:30pm-6:30pm every 10-15 minutes
6:30pm-11:30pm every 20-30 minutes

MAP ROUTE FOR BUS SERVICES 16, 17, 18, 19, 20, 60, 886, 887 AND 889

FIGURE E.4

ROUTES 17, 18, 19 and 20
ECU to PERTH
6:30am-9:30am every 10-15 minutes
9:30am-6:30pm every 20 minutes
6:30pm-11:30pm every 30 minutes

ROUTES 886, 887 and 889
ECU to PERTH
6:30am-9:30am every 10-15 minutes
9:30am-6:30pm every 20 minutes
6:30pm-11:30pm every 30 minutes

COMBINED ROUTES 17, 18, 19, 20, 886, 887 and 889 (Excluding Routes 16 and 60)

PERTH TO ECU
6:00am-11:00am every 5-10 minutes
11:00am - 3:30pm every 20 minutes
3:30pm-6:30pm every 10-15 minutes
6:30pm-11:30pm every 20-30 minutes

ROUTES 16 and 60
ECU to PERTH
6:00am-6:00pm every 10-20 minutes
6:00pm-11:30pm every 25-30 minutes

MORLEY BUS STATION

MAYLANDS TRAIN STATION

EDITH COWAN UNIVERSITY

PERTH RAILWAY STATION

Map Source: DOLA Street Express 2001
EDITH COWAN UNIVERSITY EXISTING BUS ROUTES
ECU MT LAWLEY CAMPUS TO PERTH
Map Route for Bus Services 16, 17, 18, 19, 20, 60, 886, 887 and 889

FIGURE E.4
EDITH COWAN UNIVERSITY EXISTING BUS ROUTES
MORLEY BUS STATION TO ECU MT LAWLEY CAMPUS
Map Route for Bus Services 17, 20 and 60

FIGURE E.5

ROUTES 17 and 20
MORLEY to ECU
6:30am-9:30am every 20-30 minutes
9:30am-8:30pm every 60-90 minutes

ROUTE 60
MORLEY to ECU
6:00am-8:30am every 10 minutes
8:30am-11:15pm every 20-30 minutes

COMBINED ROUTES 17, 20 and 60
MORLEY to ECU
6:00am-9:00am every 5-10 minutes
9:00am-11:15pm every 20-30 minutes
Map Source:
DOLA Street Express 2001

EDITH COWAN UNIVERSITY EXISTING BUS ROUTES
ECU MT LAWLEY CAMPUS TO MORLEY BUS STATION
Map Route for Bus Services 17, 20 and 60

FIGURE E.6

ROUTES 17 and 20
ECU to MORLEY
7:30am-1:00pm every 60-90 minutes
1:00pm-6:30pm every 40-60 minutes
6:30pm-11:30pm every 60-90 minutes

ROUTE 60
ECU to MORLEY
6:30am-3:00pm every 20-30 minutes
3:00pm-6:30pm every 10-15 minutes
6:30pm-11:30pm every 20-30 minutes

COMBINED ROUTES 17, 20 and 60
ECU to MORLEY
6:30am-7:30am every 30 minutes
7:30am-4:00pm every 15-20 minutes
4:00pm-6:30pm every 10 minutes
6:30pm-11:30pm every 20-30 minutes
EDITH COWAN UNIVERSITY EXISTING BUS ROUTES
PERTH AND STIRLING TRAIN STATION TO ECU CHURCHLANDS CAMPUS
Map Route for Bus Services 92, 99 and 401

**ROUTE 401**
PERTH to ECU
6:05am-8:15am every 80 minutes
8:15am-9:40am every 45 minutes
9:40am-3:20pm every 60-120 minutes
3:20pm-5:20pm every 30 minutes
5:20pm-6:10pm every 45 minutes
6:10pm-6:30pm every 25 minutes

**平均公交行程时间：**
路线401 27分钟

**ROUTES 99 and 401**
STIRLING STATION to ECU
6:00am-6:30pm every 10-15 minutes
6:30pm-8:30pm every 30 minutes
8:30pm-9:15pm every 40 minutes
9:15pm-9:45pm every 30 minutes

**平均公交行程时间：**
路线99 9分钟
路线401 7分钟

**ROUTE 92**
PERTH to ECU
7:10am-9:00am every 20-25 minutes
9:00am-1:00pm every 60 minutes
1:00pm-3:00pm every 120 minutes
3:00pm-5:00pm every 20-25 minutes
5:00pm-6:00pm every 20 minutes

**平均公交行程时间：**
路线92 19分钟

Map Source:
DOLA Street Express 2001
EDITH COWAN UNIVERSITY EXISTING BUS ROUTES
ECU CHURCHLANDS CAMPUS TO PERTH AND STIRLING
Map Route for Bus Services 92, 98 and 401

**EDITH COWAN UNIVERSITY**

**STIRLING STATION**

**TO MORLEY STATION**

**ROUTE 98 and 401**

**ECU to STIRLING STATION**

- 7:00am-10:00am every 15-20 minutes
- 10:00am-3:00pm every 15 minutes
- 3:00pm-5:30pm every 5-10 minutes
- 5:30pm-7:20pm every 10-15 minutes
- 7:20pm-9:10pm every 30 minutes

Average Bus Trip Duration:
- Route 98 14 minutes
- Route 401 11 minutes

**ROUTE 401**

**ECU to PERTH**

- 6:15am-7:00am every 45 minutes
- 7:00am-8:00am every 20 minutes
- 8:00am-11:40am every 45-60 minutes
- 11:40am-5:20pm every 120 minutes
- 5:20pm-5:50pm every 30 minutes

Average Bus Trip Duration:
- Route 401 30 minutes

**ROUTE 92**

**ECU to PERTH**

- 6:30am-7:30am every 30 minutes
- 7:30am-8:15am every 15 minutes
- 8:15am-4:00pm every 60 minutes
- 4:00pm-5:00pm every 20 minutes

Average Bus Trip Duration:
- Route 92 24 minutes
APPENDIX F

PERTH BICYCLE NETWORK EXTRACTS
for
JOONDALUP CAMPUS
MOUNT LAWLEY CAMPUS
and
CHURCHLANDS CAMPUS
Figure F1 – Perth Bicycle Network in vicinity of ECU Joondalup Campus
Figure F2 – Perth Bicycle Network in vicinity of ECU Mount Lawley Campus
Figure F3 – Perth Bicycle Network in vicinity of ECU Churchlands Campus
APPENDIX G

RATIONALISATION OF CAR PARKING LAYOUTS

for

JOONDALUP CAMPUS

MOUNT LAWLEY CAMPUS
NOTES: 1. POST 30KPH LIMIT SIGNS.
2. MARK EDGES TO REDUCE PERCEIVED CARRIGEAY WIDTHS

AREA CLOUDED DOES NOT REPRESENT AS-BUILT LAYOUT

POSSIBLE OPTION FOR SHORT TERM VISITOR PARKING 26 BAYS
NEW LAYOUT  176 BAYS
OLD LAYOUT  140 BAYS
ADDITIONAL BAYS  36 BAYS

NOTE: SOME BAYS MAY BE LOST TO RETAIN LARGE TREES
APPENDIX H

CAMPUS PLANS
SHOWING
EXISTING AND RECOMMENDED
PEDESTRIAN AND CYCLIST FACILITIES
for
JOONDALUP CAMPUS
and
MOUNT LAWLEY CAMPUS
Provision of secure enclosures in buildings for long term bicycle parking to be reviewed by facilities management.

Additional signage required to bicycle parking locations and showers.

Sell “Kryptonite” locks on site (reduced rate).

Provision for covered car bays to be considered.

1. Provision of secure enclosures in buildings for long term bicycle parking to be reviewed by facilities management.
2. Additional signage required to bicycle parking locations and showers.
3. Sell “Kryptonite” locks on site (reduced rate).
4. Provision for covered car bays to be considered.
Large pedestrian demand to/from bus stops

Lesser pedestrian demand to Hamer Park

ECU Mt Lawley
Campus Site Plan

PEDESTRIAN AND CYCLIST ACCESS
FIGURE H2

NOTES

1. Pedestrian and vehicle entry from Bradford Street leads people to Building 3. Site orientation information should be available at this location.

2. Provision of secure enclosures in buildings for long term bicycle parking to be reviewed by facilities management.

3. Additional signage required to bicycle parking locations and showers.

4. Sell “Kryptonite” locks on site (reduced rate).
APPENDIX I

BUSINESS CASE FOR THE APPOINTMENT OF A TRAVELSMART OFFICER FOR ECU
Business Case for appointment of a TravelSmart Officer for Edith Cowan University – 6th February 2003

1. Outline of Resource

The appointment of a TravelSmart officer is a recommendation of the ECU Metropolitan Campuses Integrated Transport Plan.

The key principle in appointing a TravelSmart officer is to produce a change in travel behaviour by promoting alternative modes of transport as opposed to the private car.

Recent TravelSmart programs have shown that the most successful means of effecting travel behaviours is accomplished through individualised marketing programs, as has been done in South Perth and Cambridge.

The appointment of a TravelSmart officer as a dedicated resource to ECU aims to achieve the change in travel behaviour (ie. switch from private car to other transport modes) identified in the ECU Integrated Transport Plan in alignment with the other strategies recommended in the study.

Achieving a change in travel demand has both financial and non-financial benefits.

2. Outline of some Financial Benefits

Parking.
The following uses the costing figures in Section 10.

If a Travelsmart officer helped defer the construction of the planned multi story car park at Mount Lawley for one year then enough money would be saved to pay the TravelSmart officers wages for 23 years. (based on $1.4M being 7% of $20M for 1 year) Looked at another way, a years wages and costs ($60,000) would be saved by deferring the construction of multi story parking at Mount Lawley for just over two weeks.

Similar benefits would be obtained by deferring multi story parking at Joondalup.

In more simplistic financial terms the per annual cost of $60,000 represents the capital cost (not including land, maintenance, etc) of constructing three multi story parking bays that would accommodate the average parking requirements for 8 students.

Health

Staff who switch to cycle reduce sick leave by 40% (ECU will need to get their own salary and sick figures for this, but say 5 days sick reduced to 3 at $200 per day = $400 per new cyclist). That is 150 staff switching to walking, cycling and or a significant walk to public transport would pay for the position ongoing.

There will also be health benefits impacting actual productivity, but these are difficult to quantify.
Additional Students
The availability and awareness of cheaper and more universally available travel choices than the private car would need to attract six extra students per year to attract an equivalent amount of income from the Federal Government to equate to the full cost of a TravelSmart officer. (That is $10,000 per student).

3. Outline of Non-Financial Benefits

The non financial or indirect benefits to ECU and the community as a whole include:

Health benefits
Cycling and walking provides health benefits for staff and students in terms of general fitness but also for productivity, general wellbeing and reduced sick leave.

Improved Environment
Reducing congestion, pollutants, noise and resource use reflects ECU as a good corporate citizen.

Sustainable development
Reducing car usage acknowledges that the road network is not an infinite resource.

Marketing tool for ECU
- ECU promotes its pro-activeness to effect change in travel behaviour to influence future travel demand – provides an opportunity to influence others.
- ECU promotes itself as being accessible to those that can not or do not wish to afford private car travel.

4. Support from the Department for Planning and Infrastructure (DPI)

To assist ECU in employing a TravelSmart officer and implementing the Integrated Transport Plan, the Department for Planning and Infrastructure (DPI) has committed to providing support as follows:

a) Development and production of TravelSmart Access and Facilities Guides for the Joondalup and Mount Lawley Campus’ (cost $25,000 plus significant staff time).

b) Assistance with the officer selection process.

c) Provision of training for successful candidate in parallel with the Local Government TravelSmart officers.

d) Facilitated networking with other TravelSmart officers and DPI staff advice as required.
SWITCHBOARD
Located on Joondalup Campus
Within Australia: 134 328
From overseas: (61 8) 6304 0000

CHURCHLANDS CAMPUS
Pearson Street, Churchlands, Western Australia 6018.
Facsimile (61 8) 9387 7095.

JOONDALUP CAMPUS
100 Joondalup Drive, Joondalup, Western Australia 6027.
Facsimile (61 8) 9300 1257.

MOUNT LAWLEY CAMPUS
2 Bradford Street, Mt Lawley, Western Australia 6050.
Facsimile (61 8) 9370 2910.

SOUTH WEST CAMPUS (BUNBURY)
Robertson Drive, Bunbury, Western Australia 6230.
Telephone (61 8) 9780 7777. Facsimile (61 8) 9780 7800.
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