WESTON CREEK COMMUNITY COUNCIL

- Your Local Voice -

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An open letter to all residents of Canberra regarding the future of public transport

The Weston Creek Community Council (WCCC) is a non-political, voluntary community lobby group for the residents of Weston Creek. The Council was founded in 1991.

The WCCC believes that adequate and cost-effective public transport should be in place for all residents of Canberra and for residents of regions surrounding the ACT who commute to Canberra.

Members of the WCCC have conducted extensive research of publicly available information concerning the advantages and disadvantages of a wide variety of transport options and the attached discussion paper has been prepared to evaluate this information. It is our belief that an Integrated Transport Plan will need to be developed that will significantly reduce the number of commuter vehicles using our road network without significantly reducing the quality of people's lives.

The WCCC believes that no single transport mode will achieve these reductions. Current suggestions have been restricted to proposed improvements in buses, new tramways, or various anti-car measures. However, there are other transport options which have not yet been considered, such as carpools.

The WCCC invites all residents of Canberra to review our paper and make their own judgement on the issues raised. Any comments on our paper can be forwarded to the WCCC Chairperson at one of the above contacts.

Yours faithfully

Jeff Carl
Chairperson, Weston Creek Community Council

A Discussion Paper on Commute Trip Reduction
by
the Weston Creek Community Council

SUMMARY

The future of public transport is a major focus of the current ACT Government and is an issue that impacts in some way on the lives of most residents of Canberra and the regions surrounding the ACT. One of the topics being investigated within the current overarching planning review entitled "The Canberra Spatial Plan" is transport, and issues such as its convenience, sustainability, cost-effectiveness and environmental impact are being considered.

The recently announced Public Transport Futures Feasibility Study, a formal review of Canberra's future transport options by the Minister for Planning, Mr Simon Corbell MLA, is welcomed. The WCCC believes that this review will enable an Integrated Transport Plan (ITP) to be developed which will encompass all viable transport options that will allow Canberrans to travel around their city and will also assist residents of regions surrounding the ACT who commute to Canberra. The ITP may involve structural changes or encourage behavioural changes.

Weston Creek has a high proportion of daily commuters. The Weston Creek Community Council (WCCC) is well aware of this fact since we are quickly alerted by residents of any changes to bus timetables or traffic flows.

Regular commuters on major arterial roads, such as Northbourne Avenue and the Tuggeranong Parkway, know that these roads are fast approaching their vehicle carrying capacity. Hence strategies will need to be developed that significantly reduce the number of commuter vehicles using our road network.

Various options to achieve this have been discussed at recent public meetings, including bus transit systems and a tramway to link Gungahlin with Civic. Another option that has so far been ignored is carpooling.

Carpools have been successfully implemented in a number of cities in the United States and Canada. The European Commission is also encouraging their use. Carpools have very low costs per passenger-kilometre because they make use of seats that would otherwise be empty. They can provide participants with both financial and time savings when compared to driving themselves to work. Carpools also reduce the amount of greenhouse gas emissions and reduce road maintenance costs.

Experience in the United States indicates that carpools can reduce personal car usage by 15-20 percent. However, most carpools have some form of incentive program. Would Canberrans consider similar reductions in commuter car use be worth the cost of the incentives?

INTRODUCTION

This paper is designed to briefly raise some of the important issues regarding Commute Trip Reduction (CTR) which will need to be considered as part of an Integrated Transport Plan in the Feasibility Study. Commute Trip Reduction is a very complex subject and we can merely mention some of the concerns that need to be addressed. A short bibliography has been included at the end of this paper so that those interested can follow up on our comments which have been drawn from publicly available material.

The present paper is designed to complement an earlier WCCC discussion paper[1] regarding the proposed Gungahlin-Civic Tramway which was published on our web site on 2 July 2002.

The WCCC will be making a more detailed submission on future transport options to the Public Transport Futures Feasibility Study in due course.

REASONS FOR PARTICPATING IN THE DISCUSSIONS

If the present rate of road traffic increase continues in Canberra, then it is expected that this increase in traffic congestion will cause a lengthening of the peak commuting periods resulting in workers having to spend more time away from their families. It certainly appears at the present time that major arterial roads, such as Northbourne Avenue and the Tuggeranong Parkway, are fast approaching their vehicle carrying capacity during peak commuting periods. As a result of this, some measures will need to be taken in the near future to reduce the numbers of vehicles travelling on these roads, especially during the workday morning and afternoon peak commuting periods.

Some participants in the discussions have advocated very restrictive anti-car measures which are intended to force commuters out of their private vehicles and onto public transport or onto bicycles. Other participants have directed their comments to the suitability or otherwise, of a proposed tramway linking Gungahlin to Civic and whether this link would be better served by various types of bus transit systems.

The WCCC believes that the present discussion on future transport options is not investigating all of the available options relating to CTR.

PARTICULAR TRANSPORT DIFFICULTIES FACING WESTON CREEK RESIDENTS

Weston Creek residents, like those other Canberra residents who live beyond bus interchanges, have inconvenient public transport. Sometimes even the smallest journey, for example, from Cooleman Court to the Canberra Hospital requires a change of bus. On small journeys having to change buses has the effect of considerably reducing public transport usage. Either people wait until they can go by car or they decide not to go at all. This difficulty highlights the present limited nature of bus services in Canberra. By concentrating on interchanges, officials have "compartmentalised" Canberra into areas located near bus interchanges. There are no direct services, for example, from Tuggeranong to Manuka or Fyshwick. This has the effect of severely reducing journey options for public transport users.

The Canberra Spatial Plan envisages a greater reliance on public transport in future years and there have been suggestions to reduce peoples' dependence on the use of their private vehicle. This is likely to worsen the situation for people living beyond a bus interchange.

For people living beyond the bus interchanges CTR, including carpooling and vanpooling becomes a much more attractive option. As outlined in this paper there are a number of difficulties to be overcome before these schemes can be introduced including opposition from the present public transport operators because of likely competition; possible insurance difficulties; and the need to change legislation to allow car owners in carpool operations to charge a fee for the service they provide. However, the benefits are very worthwhile and include reducing the need for carparking spaces and reducing greenhouse gas emissions.

WHAT IS COMMUTE TRIP REDUCTION?

Commute Trip Reduction (CTR) is an American term that can be used to describe a series of alternative commuting modes designed to reduce the number of individual commuters using their private vehicle to commute to their workplace. That is, CTR reduces urban traffic problems. These alternative commuting modes include walking, cycling, buses, trams, taxis, carpools and vanpools.

BENEFITS OF CTR

The benefits of CTR include reductions in traffic congestion, road maintenance and contruction costs, carparking requirements, motor vehicle crash risks and motor vehicle emissions.

These reductions occur because there are fewer vehicles on the road. An ancillary benefit of fewer vehicles using individual roads is that there is the potential for trip times to reduce during the peak commuting periods. This occurs because the roads are no longer as congested and average vehicle speeds can increase towards the signposted maximum speed. Such measures would clearly benefit bus operators which share the existing road network with all other vehicles.

Additional flow on affects are reduced insurance premiums for private car owners, less demand on public emergency services and facilities, and a reduction in the impact of transport on our environment.

CAN CANBERRA MAKE USE OF CTR?

In Canberra's planning framework set-up under the Y-plan of 1967, town centres such as Belconnen and Woden were intended to provide work for people who lived around the nearby group and local centres[2]. This was to result in relatively self-contained districts with populations of 60,000-100,000 people requiring comparatively short commuting trips to work. This planning concept started to unravel when Tuggeranong was being developed since a large employment base was not established within the district. Thus only 9 percent of Canberra's workers were employed in Tuggeranong in 1998, but 79 percent of workers were employed in the four older areas of Belconnen, Woden, and North and South Canberra[2].

The concept has further degenerated with the development of Gungahlin.

The Canberra of today is a specially designed city with a network of major arterial roads (some up to 6 lanes wide) linking the various town centres together. There are about 5,700 lane kilometres of roads and over 36,000 carparking spaces in Canberra, with all districts except Gungahlin having comparatively easy road access[2]. The present population is over 322,600 people[2] extending over an area of more than 300 square kilometres, resulting in a very low average population density. This urban sprawl has contributed to Canberra having a very high level of car ownership and car use, particularly for daily commuting to work. By way of example, on Census Day, 7 August 2001, 112,430 people (or 69.9 percent of Canberra's workers) travelled to work by car, either as the driver or as a passenger[3].

This planning framework has also resulted in a public transport system that is increasingly unviable to operate at the levels of service expected by Canberra's commuters as distances increase from the slowly depopulating established town centres. The result of this planned development is a public transport system that requires a significant level of Government subsidy and one that only really works well during the morning and afternoon peak periods.

Residents of Belconnen and North Canberra districts, as well as other interested community groups, are presently exerting considerable pressure on the ACT Government to drop plans to build the Gungahlin Drive Extension which is intended to improve road access to Gungahlin. Similarly it would appear that community backlash to any construction of the proposed Monash Drive linking Gungahlin to Civic through North Canberra will result in this road not proceeding. Failure to build these roads will severely limit vehicular access to Gungahlin in coming years as the district's population increases. Therefore, Gungahlin's major access road for the foreseeable future will continue to be Northbourne Avenue.

Another important factor to be considered in any transport plan is the rapid take-up of new technology within the Canberra region. The uptake of mobile telephones and the internet within this region is probably above the Australian national average. This communication technology, together with the introduction of the TransACT service, brings with it many possibilities and opportunities. The introduction of a CTR program would clearly include the use of such technologies.

TANGIBLE BENEFITS AND SAVINGS FOR CANBERRA

Regular commuters on major arterial roads, such as Northbourne Avenue and the Tuggeranong Parkway, know that these roads are fast approaching their vehicle carrying capacity. If the present rate of road traffic increase continues in Canberra, then it is expected that this increase in traffic congestion will cause a lengthening of the peak commuting periods resulting in workers having to spend more time away from their families. Hence strategies will need to be developed that significantly reduce the number of commuter vehicles using our road network so as to create road capacity for future growth.

An example of CTR in the context of Gungahlin commuters is as follows. Commuting figures for early 2002 show that about 4,000 Gungahlin residents per hour use their own car to travel to and from their workplace. If 20 percent of these commuters could

be convinced to use alternative forms of transport to their work, then there would be a reduction of about 3,200 commuter trips per day (assuming a 2 hour morning and afternoon peak period). If each of these trips only covered the 11 kilometres from Gungahlin to Civic, then this reduction would total 35,200 kilometres and result in a saving of about 3,500 litres of fuel per day.

If similar practices could be implemented across all of Canberra, then the potential savings, even for a 15 percent reduction in individual car use, would be enormous. Since 22 percent of all ACT greenhouse gas emissions are attributed to transport, the implementation of these practices could result in the ACT achieving its commitment to reduce greenhouse gas emissions to 1990s levels by 2008.

Hence any strategy such as CTR which will reduce road congestion needs careful consideration and would appear to be of practical use to Canberra given the factors of road design, road quality, low population density and significant uptake of new technology.

WALKING AND CYCLING

Canberra presently has over 2,200 kilometres of community paths which residents use for walking and cycling[2], and there are funds allocated in the 2002-2003 Budget to improve the path network between Woden and Dickson. For fit young people, cycling is generally quicker than public transport over short distances of up to say 10 kilometres. However a problem remains with a general lack of amenities such as showers and secure bike storage at a lot of workplaces throughout Canberra.

About 29 percent of people living in North Canberra either walk or cycle to work, but overall, only about 5 percent of Canberra's workers either walk or cycle to work[2]. By way of example, on Census day, 7 August 2001, 8,856 people (5.5 percent of Canberra's workers) either rode a bike or walked to work[3].

Therefore, walking and cycling make a significant, though minor, contribution to all commuting trips.

Whilst it is possible that efforts by groups such as Pedal Power will improve the usage of Canberra's paths, it is unlikely that these modes of commuting will grow to the levels required to make a significant reduction in car usage for the daily commute to work. This reasoning is based on the fact that nearly 80 percent Canberra's workers are based in Belconnen, Woden, and North and South Canberra whilst new residential development is proceeding in Gungahlin and south Tuggeranong. Hence, the WCCC believes that for the foreseeable future, a vast majority of workers will continue to commute significant distances from their homes to their workplace.

BUSES

Canberra has an extensive bus-based public transport system called the ACT Internal Omnibus Network (ACTION), and it receives a significant Government subsidy to cover its operating losses. Nearly half of Canberra's residents do not use ACTION buses because they consider them inconvenient and only about 6 percent of all trips are by bus[2], although on Census day, 7,401 people (4.6 percent of Canberra's workers) relied solely on the bus to get to work[3]. However, ACTION is an important part of the

social fabric of Canberra since it provides mobility to those people in our community who are unable to drive a vehicle or who do not have access to a vehicle. Therefore, from a social justice perspective, it is unreasonable to expect ACTION to operate at a profit, or even be cost-neutral.

Most of the ACTION network operates on roads shared with other vehicles and routes operating along Northbourne Avenue are hampered by traffic congestion during the morning and afternoon peak periods. This congestion has added up to 10 minutes to the travel time for these routes when compared to other operating times.

A number of groups and individuals, including the WCCC[1], have made suggestions on how a Bus Rapid Transit (BRT) system could be established to operate between Gungahlin and Civic. It is proposed that the BRT operates on a dedicated transitway and hence its operations would not be hampered by congestion resulting from private vehicles being used for commuting to work. This operating strategy is hoped to attract people normally using their private car onto the BRT, thus reducing dependence on cars for commuting purposes. Subject to financial resources and projected patronage, the BRT could be extended to link all of Canberra's districts.

The Canberra Spatial Plan envisages a greater reliance on public transport in future years and there have been suggestions that this will be accomplished through a combination of "carrot and stick" measures. This is likely to make the situation of the people living beyond a bus interchange worse than at present.

Among the "carrot" measures being discussed is the continuance of the present public transport subsidies where those using the service are not expected to pay the full cost of providing the service, and introducing more frequent services. The recent introduction of the time-based one-fare system for every public transport journey in Canberra has reduced some inequity in the previous fare arrangements. These previous arrangements resulted in people who were the most inconvenienced by having to change buses because they travelled across two or more zones being expected to pay more for the privilege. However, the cost of the fares was not the most important factor influencing people in choosing transport options. Research has shown that having to change buses and the time taken to complete the journey were more important factors.

"Stick" measures being discussed include banning cars from selected areas of Canberra; reducing the number of carparking spaces and/or increasing charges for parking; increasing car registration fees and increasing fuel excise. These changes are unlikely to be popular, especially if their main purpose is to "encourage" public transport use and if the charges and restrictions are not based on sound economic principles. The WCCC believes that the greatest impact of such changes will be felt by people who believe that public transport is not an option for them. This includes people living beyond the bus interchanges.

These "stick" measures will have a great impact on people living beyond the interchanges because they are unlikely to see any improvement in public transport services to accompany the increased parking restrictions and charges. However, experience in other jurisdictions has shown that such anti-car measures are generally unpopular because the affected people see them as causing a reduction in their quality of life. Inevitably, these measures result in a voter backlash at the next election.

If increased frequencies are introduced they are more likely to be introduced on services operating between the interchanges than beyond them. Public transport officials have decided that they can reduce costs by not increasing direct services because they have estimated that the increase in revenue will be more than outweighed by the increased costs of providing these services to areas beyond interchanges.

In the near/medium term, it is unlikely that Canberra's bus system can be made attractive enough to entice large numbers people out of their cars without providing some form of incentive.

TRAMS

The Village Building Company and the Gungahlin Community Council have been active in recent months promoting a tramway to link Gungahlin to Civic. Whilst the concept has some merit, research by the WCCC has shown that a tramway is not the most appropriate nor most cost-effective solution for reducing traffic congestion in Canberra. For example, an estimated expenditure of $80-$100 million is required to construct a system that is intended transport 1,000 passengers per hour in a single direction, and ACTION will not be allowed to have competing services. This passenger capacity is comparable to the number of passengers already carried on ACTION buses between Gungahlin and Civic in the early part of 2002.

An earlier discussion paper by the WCCC[1] explores these issues further and explains the reasoning behind the WCCC's opposition to the tramway proposal.

CARPOOLS (AND VANPOOLS)

To date this type of CTR has not been seriously discussed in any public forum. So what are carpools and vanpools and how do they operate?

Carpools (and vanpools)[4] are commuting schemes which attempt to respond to the fact that about 80 percent of car drivers are alone in their vehicle for daily commuting from home to work. These schemes offer the scope to use a car (or van) with all of the seats full between home and work, thus substantially reducing the number of vehicles on the road system. In addition, the comforts of the car are retained for commuters, especially where other modes do not provide an acceptable alternative.

Carpooling uses the participants' own vehicles. Vanpooling uses vans and mini-buses (which may carry from 6-15 persons) that are normally owned by an organisation and made available specifically for commuting. These organisations may include businesses, non-profit groups, or government agencies and departments. Vanpooling is particularly suitable for longer commutes, usually in excess of about 15 kilometres each way.

A carpool should not be confused with an HOV (High Occupancy Vehicle)[5]. An HOV is a vehicle travelling on the road complying with a minimum occupancy requirement, for example two or more people. HOV refers only to the requirement for using an HOV lane or another HOV facility.

Carpools can be adapted to suit most geographic areas. They can be implemented by individual businesses, business associations, or local and regional governments. Ridematching services can be implemented to provide efficient mobility for all participants, irrespective of the time of day. Regional programs appear to be most preferable because there is a larger pool of potential users for ridematching than would otherwise be available at a single workplace or at a local level.

Carpooling schemes have gained increasing levels of acceptance throughout western Europe, the United States and Canada over the last 20 years.

Their importance in Europe is such that the European Commission established a Transport Research Program entitled "Increase of Car Occupancy through Innovative Measures and Technical Instruments" which is referred to as ICARO[5] on 1 January 1997. The aims of ICARO were to evaluate measures for increasing car occupancy rates in European countries and to provide guidelines for policy development and implementation strategies. ICARO was completed on 31 March 1999 and a report has since been published. The Trans-European car-pooling and parking systems (TECAPSY) project[6] was established in mid-2001 and is also being co-funded by the European Commission. TECAPSY is an innovative urban mobility concept using IT technology and aims to develop and market test a system that allows available carparking spaces to be offered to carpools in various commuter environments across Europe.

European carpooling systems are aiming to have 40-50 percent of all commuter car journeys completed as part of a carpool. Systems in the United States on the other hand are aiming to achieve in excess of 20 percent participation in carpooling or vanpooling schemes.

Benefits of Carpools

Carpools tend to have the lowest cost per passenger-kilometre of any motorised mode of transport since they make use of vehicle seats that would otherwise be empty. Carpooling provides financial savings and time savings to the participants when compared to the individuals driving themselves to work. Carpooling is also particularly helpful to commuters who cannot drive or who lack a reliable vehicle. Lastly, carpools can also service smaller or more remote communities that would normally be uneconomic to service with bus routes or other established public transport services.

For local governments and communities, carpools reduce the number of private vehicles on the road during peak period commuting times. This lower number of vehicles results in reductions in the following areas: traffic congestion and noise; freeway construction and road widening programs; road maintenance costs; the amount of greenhouse gas emissions attributable motor vehicles; the number of car crashes; and demand for carparking spaces.

An increased reduction in greenhouse gas emissions can be achieved if environmentally friendly vehicles are used for carpools and vanpools. Environmentally friendly vehicles include hybrid cars (such as the Honda Insight or the Toyota Prius); as well as vehicles powered by liquified petroleum gas (LPG), compressed natural gas (CNG), and green fuels such as ethanol.

Disadvantages of Carpools

Carpools may disadvantage participants by increasing their travel distance because the participants need to meet their carpooling partners at an agreed location. Other disadvantages are a potential loss of flexible working hours because of scheduling constraints needed to match the participant's commuting times, a loss of privacy through having to share a vehicle, and restrictions on stops for errands.

Carpools (and vanpools) may also contribute to urban sprawl by making longer distance commuting easier and cheaper than other modes of transport. Furthermore, transit agencies sometimes consider carpools as competition since they have the potential to reduce patronage on public transport services, though if the transport services were convenient and competitively priced, they might be patronised anyway.

For carpools to be successful, they require sufficient funding to provide efficient ridematching services and marketing programs so that potential participants know about this option. They also require appropriate incentives to encourage individual car commuters to join a program.

Without appropriate incentives, experience in the United States and Canada indicates that carpooling programs attract at most 5 percent of all car commuters.

Incentives to use Carpools

Various incentives are available to encourage commuters who would normally drive themselves to work to use a carpool. By way of example, these incentives might be in the form of vouchers, rebates, free carparking, or motivational strategies offered either individually or in various combinations. It might be prudent that the vouchers and rebates be given to the carpool participants after they had utilised the carpool rather than prior to carpooling. A guaranteed ride home service might also be provided which ensures that if a carpool participant is forced to miss their carpool, they will be able to use a taxi or other form of transport to get home at either no cost or at a reduced cost.

Vouchers could be issued by the carpool administrators, the participants' employers, or by the local government. They would not be redeemable for cash, but they may be used as cash to purchase (or to offset the purchase of) goods or services such as bus tickets, vehicle maintenance, fuel, vehicle insurance, vehicle registration, carpooling fares, or carparking charges. The vouchers may or may not be tax deductible.

Rebates, on the other hand, would be granted by the local government to give an exemption (or a part exemption) to various excises or taxes. For example, excise might be waived on fuel purchased for carpool vehicles, or sales tax might be waived on vehicles purchased for carpools. Alternatively, a rebate might be given to reduce the price of a car purchased for a carpool, or carpool participants might be given a rebate against part of their residential rates charges.

Motivational strategies could encourage carpooling by stressing the environmental benefits to the city of reducing greenhouse gas emissions, vehicle noise and fuel usage. They could also emphasise the faster travel times that result from participating in a

carpool when compared to driving yourself to work and the cost savings that result from a family not requiring an additional car for commuting purposes.

If governments were offering the incentives, then it would be reasonable that the funds used to provide the incentives be drawn from the government's savings accrued from the carpooling arrangements. Irrespective of the source of the incentives, it should be obvious that the cost of the incentives has to be less than the net gains made from the carpools, and that the carpools should be self-funding after the initial start-up costs are discounted.

Integrating Carpools with HOV Lanes

Carpools do not usually exist in isolation, but rather they are integrated into an existing public transport network. Research in Graz, Austria, as part of ICARO indicates that carpools have very limited value as a feeder to other forms of public transport.

Further results from ICARO studies in Leeds (United Kingdom), Madrid (Spain), Salzburg (Austria) and Thessaloniki (Greece) show that HOV lanes can be effective in promoting carpooling and that significant time savings are possible for carpools using HOV lanes. Buses also gain similar benefits from HOV lanes.

Experience in Houston and Dallas (both in Texas)[7] shows that HOV lanes are most effective when the primary motive is to move people rather than reduce congestion or improve air quality. Texas HOV lanes allow for bus use as well as carpools and vanpools, and these lanes attract commuters who are seeking short, reliable travel times. These HOV lanes carry up to 40 percent of the total number of people travelling along a transport corridor during the commuting peak period. In Houston, about 32 percent of people using HOV lanes are carried by buses, and experience has shown that HOV lanes which are restricted to bus services only are generally not successful.

HOV lanes appear to work best when traffic congestion results in average peak period vehicle speeds falling below 50 kilometres per hour. As stated above, HOV lanes will probably not relieve traffic congestion to any significant degree, but they may improve patronage on buses and usage of carpools by significantly reducing travel times. In Houston, HOV lanes have cut travel times by between 2 and 18 minutes depending on the route taken.

CONCLUSIONS

The WCCC believes that the recently announced Public Transport Futures Feasibility Study will enable an Integrated Transport Plan (ITP) to be developed which will encompass all viable transport options that allow Canberrans to travel around their city. The ITP may involve structural changes or encourage behavioural changes.

Regular commuters on major arterial roads, such as Northbourne Avenue and the Tuggeranong Parkway, know that these roads are fast approaching their vehicle carrying capacity. Hence strategies will need to be developed that significantly reduce the number of commuter vehicles using our road network.

Various options to achieve this have been discussed at recent public meetings, including bus transit systems and a tramway to link Gungahlin with Civic. Another

option that has so far been ignored is carpooling. Carpools have been successfully implemented in some US cities. The European Commission is also encouraging their use. Carpools have very low costs per passenger-kilometre because they make use of seats that would otherwise be empty. They can provide participants with both financial and time savings when compared to driving themselves to work. Carpools also reduce the amount of greenhouse gas emissions and reduce road maintenance costs.

Experience in the United States indicates that carpools can reduce personal car usage by 15-20 percent. However, most carpools have some form of incentive program. The WCCC believes that the benefits of carpools are such that they should be seriously considered and implemented as part of an ITP.

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BIBLIOGRAPHY

1. WESTON CREEK COMMUNITY COUNCIL (2002), "The Weston Creek Community Council's position on the proposed Gungahlin to Civic Tramway " (www.wccc.com.au under "Submissions to Government") posted 2 July 2002.

2. PLANNING AND LAND MANAGEMENT (2002), "Your Canberra Your Future – Changes and Challenges", ACT Government, July 2002

3. AUSTRALIAN BUREAU OF STATISTICS (2002), "2001 Census Second Release (Summary Publication) – 2046.0 Australian Capital Territory" (www.abs.gov.au) posted 9 September 2002.

4. VICTORIA TRANSPORT POLICY INSTITUTE, "Ridesharing – Car and Van Pooling", *TDM Encyclopedia*, (www.vtpi.org/tdm/tdm34.htm)

5. ICARO: A Research and Demonstration Programme on Car-Pooling, 1 January 1997-31 March 1999 (www.boku.ac.at/verkehr/icaro.htm)

6. EUROPEAN ROAD FEDERATION (2001), "TECAPSY – Trans-European car-pooling & parking systems", May 2001, (www.erf.be/projects/pr_TECAPSY.htm)

7. STOCKTON, W.R; DANIELS, G.; SKOWRONEK, D.A.; FENNO, D.W.(2000), "The A,B,C's of HOV – The Texas Experience", Texas Transportation Institute Research Report 1353-I, Texas Department of Transportation, February 2000

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