EXECUTIVE SUMMARY

TRANSPORT AND HEALTH

Travel by private car has transformed the way in which land is used and people live. Use of private motorised transport is an integral part of a period of industrial and social change in the developed world that has brought higher living standards and longer life expectancies. It is now seen as essential to our quality of life.

Car ownership and travel have brought considerable benefits, but have also created new health and social problems. There is a growing body of scientific evidence linking motorised road transport with damage to human health through road accidents, air pollution and noise. Increased car travel is also correlated with additional and cumulating health risks from declining levels of physical activity and the fragmentation of neighbourhoods.

Road accidents: Each year, about one million people die in road traffic accidents with 10 million permanently disabled. The World Bank estimates that road trauma accounts for over 2% of the estimated total global burden of impaired health.

In Victoria, nearly 400 people are killed on the roads each year in addition to the 6,000 or so persons hospitalised and about 17,000 persons with other injuries.

Air pollution: In Australia, motor vehicles are responsible for 40-90% of the various pollutants in the air and are the largest source of human-made pollutant emissions in urban airsheds. Of main concern are airborne particles, oxides of nitrogen, volatile organic compounds and their photochemical progeny, air toxics (eg. benzene) and lead. Substantial epidemiological evidence links these air pollutants with adverse health effects.

- *Small particles*: heart and lung disease, asthma attacks, increased mortality, decreased lung function, lung cancer. Fine particles are believed to have a cumulative effect.
- *Ozone*: increased respiratory symptoms, decreased lung function, asthma attacks.
- *Carbon monoxide*: increased cardiovascular disease symptoms, neurological disturbances, visual impairment, reduced ability to learn.
- *Oxides of nitrogen*: increased chance of respiratory illness, especially in young children.
- *Lead*: affects functioning of most organs, especially the central nervous system of young children.
- *Organic compounds and other air toxics*: increased risk of cancers.

The association that has emerged between mortality and fine particulate matter in diesel exhaust is particularly concerning given the growth of diesel- fuelled 4WD, light commercial and large freight vehicles on the road in Australia, and the low standard of Australian diesolene. It means that, healthwise, living in heavily trafficked and congested inner cities may be equivalent to smoking up to a pack of cigarettes a day.

Long term air pollution from cars in Austria, France and Switzerland has led to an extra 21,000 premature deaths per year from respiratory or heart disease, more than the total number of annual traffic deaths in the three countries. In Sydney, an estimated 400 people are dying each year from pollution-related illnesses. In Melbourne, the figure is likely to be closer to 220.

Health costs of vehicle emissions in Australia are estimated to be as high as $5.3 billion per year i.e. about the same as the costs of road trauma ($6 billion).

The high incidence of short vehicle trips in Australia - around 50% of vehicle trips are less than 5 kms - worsens emissions levels because

most motor vehicle pollutants are emitted during the first 8-10 minutes of a journey.

Per capita, Australians have the third highest greenhouse gas emissions from transport use in the world with 86% being generated by road transport.

Noise: Transport is the most pervasive source of noise and can affect memory, attention, functioning, sleep and hypertension.

Traffic congestion: Traffic congestion contributes to increased stress levels, more aggressive driver behaviour, and increased traffic and accident risks on residential streets as drivers attempt to avoid congested areas.

Physical activity: Car dependency has made many environments hostile to walking and cycling, causing a decline in these forms of travel by adults and children. Limitations on children's independent travel can have a significant influence on their attitudes to these forms of activity in later life.

Social interaction: The presence of busy motorised traffic inhibits residents from socialising, and children from playing, on the street. This can have a negative effect on community spirit and on people's feelings of safety and security.

Water and soil pollution: Soil, crops and waterways can be contaminated by photochemical oxidants and acid aerosols, heavy metals from vehicle exhaust, vehicle waste, fuel spillages, oil runoff, tyre and road abrasion.

Groups at higher risk: Those most likely to suffer adverse effects from motorised transport are the old, the young, people already ill, the poor and those who live or work in areas of high levels of air pollution and noise.

TRENDS IN TRANSPORTATION

Europe, North America and Australia have experienced similar transportation trends: rising demand for transport, growth in road traffic (both passenger and freight), increasing use of private cars, and declining use of public transport.

Motor vehicles are now growing almost everywhere at higher rates than both human population and GDP. Between 1950 and the mid 1990s, the number of private cars worldwide increased from around 50 million to 500 million while over the same period, motor vehicle numbers in Australia rose from approximately 1.5 million to 11.4 million.

Private motor vehicle usage: Australian levels of car ownership and use are at the upper end of the OECD range. A continued expansion in the motor vehicle fleet can be expected due to the financial incentives to car use provided through the taxation system.

In Melbourne, 75% of all trips are by car as either a driver (48%) or passenger (27%). Although commuter trips account for only about 20% of total trips, 84% of people used cars to get to work in Melbourne in 1994, compared to 69% in 1974. Total distances travelled by car have risen but 47% of car trips are 2.5km or less and occupancy is declining.

Freight and commercial transport: Australia has one of the highest per capita rates of road freight haulage in the world. Between 1976 and 1995, the number of road freight-carrying vehicles and total distance travelled by them increased by 71% and 95% respectively. The diesel sector of the fleet, light commercials and articulated trucks have experienced the biggest growth rates.

The majority of freight moves within urban areas which has significant implications for air quality and amenity. Pollution from freight vehicles is expected to increase by 70% over the next 15 years.

Public transport: As the use of cars has increased, total public transport use has fallen from about 30% of all trips in Australian capital cities in 1970 to about 10% today. Despite having the world's largest tram and rail network per capita, only 5% of trips in Melbourne are by public transport - lower than in either Sydney or Brisbane.

The operators of Melbourne's newly privatised public transport system are being given financial incentives to increase patronage to contracted target levels. However, the GST surcharge on

public transport fares is likely to lead to a reduction in public transport use.

Non-motorised transport: Recreation, travelling to an educational institution or to the shops are the main purposes of walking and cycling. In the major Australian cities, walking accounts for 10-15% of all personal trips and cycling 2-3%. But in the small European countries, a high proportion of trips is by bicycle: 29% in the Netherlands and 18% in Denmark. Britain is similar to Australia with about 2% of trips made by bicycle.

The popularity of cycling has increased significantly with the number of adult cyclists doubling in 10 years in Victoria. By the mid 1990s, there were 1.2 million bicycles across metropolitan Melbourne, although only 6% of bicycles are used on any one day.

Funding remains massively car oriented with $1,578m being allocated by the Commonwealth to roads in 1997-98 in tied and untied grants compared to less than $80m for bicycles at both State and Commonwealth level.

Implications of current trends: The clear trends have been towards greater use of cars and lower use of public transport. The implications of these trends are greater traffic congestion, increased demand for road infrastructure, particularly in newly developed parts of cities based on car usage, continued erosion of infrastructure for walking, loss of residential amenity due to traffic growth, and a deterioration in air quality.

FACTORS INFLUENCING TRANSPORT CHOICE

Individual travel decisions are influenced by a range of economic, physical, social and psychological factors that are common to most countries. However, the weight of specific factors on travel decisions varies. In Australia, the high level of car ownership, the sprawling nature of our capital cities, and the policy emphasis on building road infrastructure capacity have all strongly favoured car use.

Transport policy to date has mostly sought to change individual travel choices by modifying infrastructure capacity and/or by pricing strategies for roads and fuel. But Government action aimed at reducing car travel has little effect if external or structural factors are so strong that individuals feel that their current behaviour is the only realistic choice. The OECD has recognised the importance of understanding individual travel behaviour in order to reduce the environmental impacts of transport.

Car ownership: Owning a motor vehicle often involves a large fixed investment. The need to get the most value out of this investment leads to nearly exclusive use of the vehicle, even where other modes are more cost or energy efficient.

Car makers and suppliers are large contributors to employment and to the economic wealth of Australia, and of Victoria, in particular. Their economic might constitutes a formidable force encouraging car ownership at the public policy and individual level.

Perception of modes: Car drivers systematically perceive the car's characteristics – cost, travel time, ease of use – as being better than they actually are, and consistently judge public transport, and to a lesser extent, walking and cycling, as being worse than they are. These perceptions are principal barriers to changing travel behaviour.

In the outer suburbs of Australian cities where housing is scattered and non-car options are severely limited, children and young adults lose the opportunity for anything other than car-based travel. The lack of knowledge and experience of travel alternatives reinforces the inevitability of car use.

Cost of different transport activities: The external costs of urban driving are high and increasing. In addition to road trauma and motor vehicle emissions, the Bureau of Transport Economics recently estimated the annual costs of traffic congestion in mainland cities to be $12.75 billion in 1995, rising to $29.7 billion by 2015.

Studies show that the external costs of driving are around $4,000 per car per year in major Australian cities and that, over the 12 year life of the average car, these external costs exceed its initial purchase price. As a result, Australia's urban car fleet is being subsidised by between $17 and $25 billion. A British report shows that

motor vehicle users only pay about one-third of the costs they impose on society.

Through favourable tax treatment of cars and fuel, Australia provides financial incentives to motor vehicle use. European countries appear to have made greater effort than Australia to acknowledge through their taxation systems the environmental and health impacts of motor vehicle usage.

Availability of public transport: Declining patronage, greater urban spread, and fewer rural passengers have led to reduced investment in public transport, the sale of facilities and/or closure of lines and services. This has left many urban fringe and rural areas, and people with disabilities, with few travel options other than the private car.

Safety: Despite the well-publicised number of deaths and injuries in road accidents, there is no evidence that the risk of death or injury deters car usage. However, safety concerns principally related to the speed and volume of motorised traffic dominate decisions made on whether to cycle or walk. For would-be cyclists, fear of injury by having to compete for road space with vehicles is particularly important.

Fear of attack, particularly at night and at unstaffed stations, is a major safety concern relating to public transport use. Fear of assault or abduction is also one of the reasons which parents cite for driving children to school.

Travel time and convenience: A key driving force behind car travel is the convenience it offers in giving control over time and space. It provides independence and enables freedom of movement at any time to any place. It is one of the main reasons provided by parents for taking their children to school by car (52% of children in Melbourne travelled to and from school by car in 1993).

Convenience and quick, door-to-door travel are the primary reasons given by cyclists for riding bicycles, together with fitness and environmental friendliness. Deterrents to cycling are rain, limited carrying capacity and lack of end of trip facilities.

People with young children and those carrying heavy or bulky items are less likely to use public transport because of the difficulty of manoeuvring prams and baggage.

Availability of parking: The availability of free, subsidised or cheap parking is a strong influence on the decision to use a car.

Changing individual travel behaviour: OECD findings: To be effective, messages aimed at changing individual travel behaviour to reduce car dependency must be relevant (for example, couched in terms of safety, health and quality of life concerns), carefully targeted, and offer incremental and feasible options for change.

TRANSPORT POLICY AND INITIATIVES OVERSEAS

Countries in North America and Europe have experienced similar transport trends to Australia but concern over the growth and environmental consequences of road transport has prompted many cities to act to curtail growth in car travel and encourage use of less polluting modes.

A study of 44 cities has shown that cities with the highest car use, largest road building program and lowest density, have the highest proportion of their city wealth being spent on transport. Zurich, Copenhagen and Stockholm which invest heavily in public transport and emphasise walking and cycling, now spend 4-5% of their wealth on transport compared to up to 17% for Phoenix, Detroit, Los Angeles and Perth which spend heavily on roads. Australia with its emphasis on catering for the private motor vehicle, uses nearly three times as much of its GNP for transport than Japan.

Overseas experience indicates that for transport policy to change mobility patterns and reduce car use, not only must there be a mix of policy elements to reduce the growth in car travel, manage traffic volumes, encourage use of alternative modes and control land use, but all elements must be implemented together.

Increasing public transport usage: Making public transport 'more attractive' has been the principal means of encouraging higher usage. Improvements have included upgrading of vehicles and rolling stock, system integration, better traveller information, synchronised scheduling, innovative ticketing, and more flexible service. Specific examples are:

- Introduction of midi and minibuses to service previously inaccessible areas (European Union).

- Integration of different modes under a single organisation to co-ordinate timetables and ticketing (Zurich).

- Real time information advising passengers of the best travel option to reach their destination (Munich).

- All-mode tickets leading to a 36% increase in bus patronage in Paris and a 16% increase in overall public transport patronage in London.

- Provision of discounted public transport travel for employees (Germany, Oregon) and free public transport tickets on high pollution days (Oregon).

- Inexpensive forms of door-to-door public transport that give assured convenience comparable to the private car.

Reducing the need to travel: Land use planning is being used in Europe and some North American cities to ensure more compact and mixed land use and the location of people-generating activities near public transport. In the Netherlands and Germany, car-free residential areas are being developed while in Portland, Oregon, the linking of urban and transport planning to reduce reliance on the car resulted in 30,000 more jobs and 40% of commuters using public transport.

In the UK and US, telecommuting, teleconferencing and compressed work weeks (10 hour work days) have been used to help reduce business travel.

Restricting car use: Restricting car access to certain city areas is a popular policy in Europe and has produced a 30% reduction in motorised traffic in Milan and Bologna. Deliberately limiting car parking space, applying high parking fees, and placing levies on workplace parking are also widely used and have been successful in encouraging use of alternatives to car travel.

In Norway, Sweden and Singapore, road pricing via tolls or cordon charges to reflect external costs of motor vehicle transport have been effective in raising revenue and reducing traffic volumes and congestion.

Reducing car ownership: Widespread use is made of car sharing which provides individual mobility without the need to own a car. Schemes ranging in size from 6 to 6,000 members operate in neighbourhoods, workplaces and universities in Europe, UK, North America and Singapore. Singapore supports such schemes with tough fiscal measures that limit car ownership to the wealthy.

Increasing vehicle occupancy: Designated, high occupancy vehicle (transit) lanes are being used with mixed success in Europe and North America to encourage ride sharing and bus travel. They can be effective on freeways but are difficult to enforce. Car pooling (and, in the US, van pooling) schemes offer flexible and generally inexpensive travel and in some areas are promoted with a range of government and private incentives.

Promoting cycling and walking: Creating an environment conducive to walking and cycling is most advanced in Europe. Specific measures taken include:

- reduction in urban speed limits to below 50 kph (and below 20 kph in Japan);

- functionally classifying roads to ensure consistency of use (Norway and Sweden);

- separation of bicycle, pedestrian and motorised traffic (northern Europe);

- traffic calming to create “community streets” (Europe, Japan);

- creation of “traffic cells” forcing drivers to take longer and more convoluted routes than pedestrians and cyclists (Europe, Japan);

- large infrastructure investments to create bicycle networks (Netherlands, Denmark, UK);

- integration of cycling and public transport (Europe, North America, Japan);

- government and private funded incentives for bicycle commuting;

- development of safe routes to schools, school travel plans and other initiatives to encourage active forms of getting to school.

Changing commuter and personal travel: Encouraging employers to develop workplace-based transport plans or "Green Transport Plans" (GTP) through regulation or tax incentives is in common usage in Europe, UK and North America. GTPs typically comprise incentives to encourage use of public transport, walking or cycling to and at work; alternative employee benefits to company cars; car pooling or car sharing schemes; promotion of telecommuting, videoconferencing and revised work hours; and measures to enhance fuel efficiency of the vehicle fleet. GTPs or "Healthy Transport Plans" are increasingly being developed by health facilities in the UK. They have also been used on a neighbourhood basis in North America.

TRANSPORT POLICY AND PROGRAMS IN AUSTRALIA

Transport policy and planning in Australia has been and remains focused on road transport. There are signs that this is changing but the pace of change is slow.

The national approach: Despite the importance of transport to our national economic and social wellbeing, Australia has no national transport strategy. However, completion of a draft strategy is expected by the end of 1999.

The transport agencies have yet to fully accept the need to curtail traffic growth. Unlike New Zealand, they are not active in management of travel demand and have left the environment portfolio to be the main driving force behind air quality improvement. Recognition of transport–health links are very rudimentary.

Environmental reports such as the National Greenhouse Strategy (1998) which include initiatives to reduce the environmental consequences of transport, are proving to be a mechanism for shifting the transport agencies' understanding of transport and sustainable development.

Transport at the State level: State transport policies have traditionally focused on moving vehicles, not people. Planning for each transport mode has been carried out in isolation with little concern for the effect that this would have on other modes or broader urban development.

Most States are now adopting an integrated approach to transport planning which emphasises development of the transport system as a whole and its co-ordination with land use planning. While some consideration is being given to the environmental consequences of transport, driven largely by environmental organisations' concern for clean air, health has yet to enter the equation. Health agencies have not yet become involved in transport planning or decision making.

Using expenditures as the real guide to policy intent, there is unfortunately no standardised basis for comparison of State expenditures on roads relative to expenditures on other modes of transport. Victoria's privatisation of its rail, tram and bus services make comparison even more difficult.

Most States in their transport strategies refer to the need to reduce car travel but current budget figures indicate that State transport expenditures are still heavily focused on roads. Only Queensland and to a lesser extent NSW have made a strong commitment to public transport while Victoria's private operators have a contractual agreement to upgrade train and tram services.

Several States have attempted to manage travel demand through the introduction of transit lanes but few have gone on to implement measures used in European and some North American cities such as stringent parking controls and transport pricing, or to introduce controls on company and government vehicles. Western Australia and South Australia, however, are engaged in schemes to change travel behaviour at the household level and in schools and workplaces.

While there is universal agreement in State transport strategies that walking and cycling should be attractive and viable options, translation of this view into on-the-ground facilities is patchy. Catering for motorists is still a higher priority than pedestrian and cyclist safety.

Redressing the imbalance will require committed State policy, responsive State agencies and commitment and resources from local councils.

Freight is a priority in all States from both an economic and environmental point of view. NSW has made a commitment to increasing the proportion of freight moved by rail but there is a general acceptance that the dominance of road freight will continue, particularly in urban areas. This has important implications for air quality, safety, amenity and health.

Programs aimed at altering travel choices: A variety of initiatives are being taken in Australia to encourage travel that involves more physical activity, fewer vehicle emissions and higher vehicle occupancy.

- Individualised marketing to change people's travel behaviour has been successfully applied in Perth and Adelaide. A pilot of 400 households in Perth indicated that a 14% reduction in vehicle emissions and 10% reduction local traffic could be achieved. A $1.2m grant will extend the program to 15,000 households in 2000. In Adelaide, a similar project has resulted in an 11-15% reduction in car travel, a 13% increase in public transport and an increase in walking. Funding of around $0.75m will help to extend this project to other municipalities.

- Green Transport Plans are being developed in a small number of workplaces in the mainland capitals. The project is being delivered by the Conservation Councils in each State with funding from the Natural Heritage Trust. The WA Government is also funding a three year program to encourage travel behaviour change in the workplace.

- In Perth, a program modelled on a successful Danish scheme sponsors employees who commit to cycle commuting and evaluates the resultant changes in fat loss, blood pressure, and work absentee rates.

- School-based projects aimed at changing travel behaviour of students, teachers and parents are being developed in Perth and Adelaide. The projects encourage children to think about how they travel and to find their own solutions to reducing excessive car use. Early results from both indicate a reduction in car trips.

- Five local councils in South Australia and Victoria are involved in a National Heart Foundation project to increase opportunities for people to be physically active in their daily life by removing infrastructural and other barriers.

- The University of NSW is providing information and health support to encourage staff and students to use more physically active forms of transport.

- Moreland and Port Phillip City Councils in Victoria are developing infrastructure and using other incentives to encourage cycling and walking. Moreland is piloting a traffic reduction study to create more livable residential streets.

- In Maitland, NSW, a private bus company operates an 'on call' bus service.

Policy in transition: Major elements of a car-oriented transport policy are still being promoted at national and state levels. There has been a failure to acknowledge the true health and environmental costs of the car dependency that governments have either actively promoted through their funding decisions or accepted was inevitable.

However, public concerns for the environment and the political imperatives of the Kyoto Protocol are causing a questioning of conventional transport planning. Transport policy is in transition but if the onset of increasingly dirty, heavily trafficked and unhealthy environments is to be avoided, the pace of change must be speeded up dramatically. There are currently significant windows of opportunity for health based advocacy to join with forces at local, State and national levels to achieve more healthy transport outcomes.

OPPORTUNITIES FOR HEALTH PROMOTION IN THE TRANSPORT SECTOR

The adverse impacts of car-based transport on public health cannot be dismissed. The present

transport system is not sustainable in that it compromises the choices, freedom and health of current and future generations.

There is sufficient scientific evidence to suggest that the costs of failing to take preventive action on vehicle emissions could be very high in terms of death, ill-health and treatment. As smoking and asbestos have shown, prevention of environmentally-caused diseases cannot always wait until there is scientific proof "beyond doubt".

Agencies concerned with public health have a role to play in preventing the health damaging effects of transport rather than just dealing with the consequences. They should impress upon transport and other relevant departments the effects of their policies and help to reshape transport policy so that it nurtures rather than damages health.

Public health arguments for a change in transport policy are in line with those based on concerns for environmental protection, equity, and social justice. Building an alliance between public health and the environment would increase the political influence of the health argument and extend the resource base for implementing change.

Role for Health Promotion: The impacts of the projected growth in motor vehicle use do not yet have a 'crisis' tag in Victoria with the result that the need to redirect transport policy is not seen as politically urgent. However, the evidence of health damage from road traffic is mounting. There is need for health promotion organisations to extend the environment argument and raise the profile of the transport-health and environment links.

Health promotion organizations are ideally placed to take on that role and act as a catalyst in putting public health on the transport agenda. There are four main areas of activity which health promotion organisations could pursue.

1. <u>Advocacy and research</u>

(a) Compiling and publicising findings of existing research;

(b) Identifying gaps in knowledge and promoting research where evidence is incomplete;

(c) Encouraging and implementing health impact assessments;

(d) Assessing public health impacts of different transport modes.

2. <u>Education and awareness</u>

(a) Identifying the range and scale of external costs of transport modes;

(b) Providing information to transport users on the impacts of different transport choices and advice on how to lower social costs through the use of healthy transport options;

(c) Partnering with other agencies to provide information and resource materials to schools and work places;

(d) Recognising through an annual award or competition, innovative projects that encourage healthier forms of travel in the school, workplace or community.

3. <u>Feasibility studies and pilot projects</u>

(a) Develop pilot projects and feasibility studies which reduce the adverse health effects of transport;

(b) Health promotion organisations working in partnership with other organisations to extend or promote existing health promoting transport projects;

(c) Develop proposals in rural and metropolitan fringe areas that increase transport options and reduce social isolation.

4. <u>Securing sponsorships</u>

(a) Approach larger organisations and trusts to sponsor small community initiatives or particular elements of projects;

(b) Encourage interest amongst companies to engage in workplace transport plans or the sponsoring of car pooling and non-car travel schemes.

Partners and stakeholders: There is a wide range of potential stakeholders and partners in Victoria and nationally in the health, environment

and transport areas in the public, private, government and community sectors.

Potential sources of funding and support: In the public arena, funding is most likely to be available from the environment portfolios through, for example, the Natural Heritage Trust or Agenda 21. Some financial support from health and transport portfolios may be forthcoming but is less certain. Projects to be undertaken by the Victorian EPA and the Commonwealth Department of Transport and Regional Services could present opportunities for health promotion organizations involvement in the short term. Councils have limited funds but are an important partner and can frequently offer in-kind support.

Large companies (including Victoria's public transport operators), universities and hospitals may provide various forms of program and networking support.

The next steps: Health promotion organisations have the opportunity to be a catalyst for improving public health in an area which is fragmented by political jurisdictions and bureaucratic rivalries and defended against change by strong vested interests.

This paper illuminates why this role is so important and many of the ways in which this could be achieved.