Victorian Bicycle Coalition

VicePresident (campaigns) Alan A Parker, 50 Stirling Street, Footscray Vie 3011 Phone Hm & work 96893693, Fax 96879519, Email: alanpar@labyrinth.net.au

To Professor Peter Newman
Director Sustainability Policy Unit
Policy Office
Department of Premier and Cabinet
15th Floor, 197 St Georges Terrace
Perth WA 6000

18-3-02

Dear Peter,

SUBMISSION BY THE VICTORIAN BICYCLE COALITION (VBC) REGARDING THE SUSTAINABILITY STRATEGY FOR WA

The Victorian Bicycle Coalition (VBC) is a cycling organisation with many bicycle clubs as its members. The objective of the Association is to bring together bicycle clubs throughout Victoria for the purposes of:

- ensuring that governments at state and local level develop sound bicycle policies and apply them in practice to create a finer and healthier society and a more ecologically sustainable transport system;
- seeking innovative, practical and effective means to improve accessibility by bicycle for single and multi modal journeys;
- coordinating policy responses to current issues affecting cyclists, in the best interests of cyclists and cycling;

Some of our committee members have ridden bicycles in WA and attended bicycle planning conferences in Perth we know that many of the policies we promote in Victoria are relevant to WA as well. We note the concern about learning from world best practice and applying that in WA. We hope that the Sustainability Strategy for WA will reflect world best bicycle planning practice in this regard. (Wellemen 2000) (Jenson,et all 2000)

The negative environmental impact of excessive reliance on private motor vehicles requires a major upgrade of the public transport system and a safe means of accessing the rail system by bicycle, powered assisted bicycle and small electric vehicles used by the disabled. There is a need for rail stations, modal interchanges, express bus stops to provide for secure bicycle parking as an integral pan of that upgrade. This submission also outlines a specific engineering opportunity to use Western Australian expertise in

the design of clean two stroke engines to manufacture and export Power Assisted Bicycles to other states and developing countries.

URBAN BIKEWAY NETWORKS ARE NOT ONLY OF VALUE TO CYCLISTS BUT TO PEDESTRIANS, THE ELDERLY AND THE DISABLED.

We believe that bicycle infrastructure is the single most important way to encourage more cycling and to encourage people of all ages to continue cycling. The current provision for the funding of urban bikeway networks in Perth is inadequate. Also bicycle infrastructure is much more than a well linked network of high standard bicycle facilities comprising bicycle lanes, shared footways and off-road paths with bicycle parking at destinations for point to point trips by bicycle. Bicycle infrastructure is also needed for fostering intermodal passenger travel and in particular accessing the rail system and express bus services by bicycle as an alternative to long urban car trips in the peak hour.

Most important of all is that bicycle infrastructure will also be of benefit to the disabled and pedestrians since in the long term the increased volume of rail traffic that it generates should enable provision of more frequent train services and better station facilities. For example Citytrain in Brisbane has demonstrated that able bodied Australians will cycle to a station if the serious problems of bicycle theft and vandalism are addressed with free lockers. Currently there is free car parking which costs far more than bicycle lockers. When 25% of locker users no longer park their cars at the station, it reduces the cost per vehicle parked and optimises the use of car parks". It is envisaged that the problem of bicycle theft and vandalism will get much worse in Perth over the next few years. See appendix A for details of the Citytrain bicycle locker scheme.

We believe that the vehicle parking infrastructure required by 2020 will have to be very different than it is now as the price of land will make the provision of new car parking at stations (and in many other places) a most uneconomic proposition. Meanwhile the per capita costs of secure bicycle parking should greatly reduce, once the number of bike rail users exceeds 100 at individual stations and interchanges, because it is then possible to provide high security compounds accessed by ticket holder swipe cards subject to remote surveillance. These facilities are being developed now in the Netherlands and could be applied here.

We know that bikeway networks can be used by a whole range of clean and small electric vehicles. Indeed these small vehicles are used on bikeways in European cities, many of which have been much more proactive than Perth to accommodate and encourage those unfortunate enough to have to use electric wheel chairs and similar small electrically powered vehicles because of health problems or old age.(Parker 2001)

In the long term Bicycle infrastructure in the form of bikeway networks can also be used by power assisted bicycles (PAR) that weigh only a few kilograms more than a bicycle and, as its name suggests, gives power assistance only and are a practical substitute for the able bodied for many urban car trips

which are of less than 10km while increasing the mobility of those with health problems or old age who cannot or should not drive a motor car in cities (Cycle Press 2001).

The needs of the ageing Australian population can also be met by giving greater priority to the development of urban bikeway networks coupled with lower vehicle speeds on local roads. By 2020 many of the aged population will not be able to drive on roads and will want to use of power assisted bicycles, electric wheelchairs and tiny low speed three and four wheeled electric vehicles, and to do that they also will need urban bikeway networks.

These trends can already be seen in Japan in 2001 where 40,000 small electric vehicles (mostly four wheelers) were sold to the disabled and 140,000 electric bicycles were sold; of which 100,000 were bought by women mostly older than 50 years of age. There are over 125 models of PABs sold throughout the world today and most are legally classified as bicycles. For an analysis of the potential of PABs see appendix B.

The sale and use of PABs in Australian cities is currently constrained by legislation which classifies most of the world's safest PABs (205 to 300 watts power output) as motorcycles thereby discouraging their use. The most advanced electric PABs have electronically controlled power assistance via sensors in the cranks linked to a computer chip, with automatic speed control to enable them to be safely used on shared footways. and bikelanes. Furthermore future models could be mass produced to run on renewable energy.

PABS can also be powered by bio fuels. Indeed, the Orbital Engine Corporation (OEC) in WA, which is one of the leading independent automotive research establishments in the world, has expertise in the design of small clean two stroke engines.(Leighton et all 1993) and could produce them in Perth.

ADAPTING EXISTING WA EXPERTISE IN ENGINE DESIGN TO CREATE A "NON-POLLUTING" POWER ASSISTED BICYCLE (PAB) MANUFACTURING INDUSTRY.

There is the potential for West Australian companies to manufacture power assisted bicycles (PABs) powered by clean electronic ignition two stroke engines that run on relatively clean fuels that are available in WA. Indeed, the Orbital Engine Corporation (OEC) in WA, which is one of the leading independent automotive research establishments in the world, has expertise in the design of small clean two stroke engines (Leighton et all 1993). OEC technology is also used in marine outboard motors, jet skies, Piaggio-engined scooters, and NSR motor cycles. There is a market for PABs in Australia and huge market in Asia and the developing world. The Chinese authorities have now adopted OEC designed clean, two stroke, engines for all new motor scooters made in China (Johnstone, B 1998).

The direct injection orbital engine when using petrol produces less pollutants than four stroke engines. A tiny 25 cc or 3Occ OEC two stroke PAB engine precision built with high quality materials and specifically designed to use ethanol, LNG or CNO or blend of ethanol and petrol would produce a very small volume of air pollutants. As OEC designed engines for scooters and light weight motorcycles already exist it is reasonable to assume that the opportunity exists in Australia to manufacture an even

smaller engine using the same OEC electronically controlled fuel injection system to produce a clean PAB engine. QEC made PAB engines could be fitted to a specially designed Australian bicycles or to bicycles made in other countries.

Most mega cities in Asia are plagued by air pollution from motorised two wheelers and three wheelers with dirty two stroke engines and some mega city governments are already phasing them out. The current policy of the Chinese government is to replace the existing petrol powered PABs with the electric PABs and electric mopeds. This is why the Asian PAB industry is already tooled up to produce 250,000 or so "state of the art" electric PABs and electric mopeds a year and with factories on the Chinese mainland being tooled up to produce millions of them a year. Other countries are bound to follow this lead for obvious environmental reasons.

Tomorrows biofueled PAB with a clean engine of around 25 cc or 30 cc capacity may prove to be a competitor to the "state of the art" electric PABs, It certainly will be a few kilograms lighter than most electric PABS and will not rely on mains electricity to charge it batteries, When the oil crunch comes and fuel is much more expensive than today. The potential long term market for biofueled PAB's in rural areas of the developing world could be over one billion

The choice of which alternative clean fuels to adopt is best left to OEC engine designers to shortlist and the final choice of fuel to be decided at later stage. It is not possible to be more specific at this time, For example Ethanol is an alcohol created through fermentation of sugars and can be made from timber harvest residues, agricultural waste, trees, and sugar cane. It can be used as a fuel for specially designed internal combustion engines, or a percentage can be added to petrol or diesel for use in existing engines. As a commercial hid it is likely to be made from plantations of specially selected shrubs or trees grown on marginal land with low value for anything else.

The manufacture of ethanol from Blue Mallee forests farmed on the millions of hectares of land that has already been damaged by salination could, theoretically at least, could produce a million tonnes of ethanol a year by 2010. This would displace fossil fuels, as well as helping to rehabilitate the ***bush, both ecologically*** and ***economically.*** (NELA ***1996)***

Ethanol fuel use would greatly reduce C02 emissions but it can currently only be produced at a cost higher than petrol. New technology for producing ethanol from wood is likely to reduce the production cost substantially (NELA 1 996) Whether the predicted cost reductions materialise or not the PAB would use so little ethanol that it could be and should be free to tax.

Recommendation

The WA government should assist the OEC to develop a clean engine using a cheap clean fuel that is readily available in WA and assist the OEC to research overseas markets to determine the export potential of bio fuelled PAB's in the developing world.

THE NEED FOR SECURE BICYCLE PARKING AT RAILWAY STATIONS, MODAL INTERCHANGES AND EXPRESS BUS STOPS

The VBC believes that cycling already plays a role in increasing Perths rail patronage as is evidenced by take up of bicycle lockers and the number of bicycles carried on suburban trains out of peak hours and for travelling contra-flow during peak hours. There are practical problems during the peaks hours when trains are crowded so it is necessary to have secure long term parking of bicycles at railway stations, Furthermore this secure parking must be provided in accordance with SAA standards for long term bicycle parking and the Austroads Bikeway design manual.

We have recently studied Cityrail in Brisbane who have provided bicycle lockers since 1992 and now have 1,900 free lockers with a waiting list for over 1,000 more who now have one bicycle locker for every 20 rail commuters and cycling colleagues in Brisbane hope to have 1 bicycle locker for every ten rail commuters in the not so distant future (see appendix A) To catch up with Brisbane Perth will require around 450 more bicycle lockers and that will require many more bicycle lockers be provided (See appendix A). At present there are as many lockers on the four largest locker installations in Brisbane as on the entire Perth rail network. Three of these large Brisbane installations are shown on page 5.

Any upgrade of rail transport must provide secure bicycle parking to utilise the ergonomic advantage of cycling over walking shown on figure 1 on page 7.

The Bicycle and pedestrian access map of the Perth rail system (figure 2) clearly shows the potential of bike/rail travel in Perth. The use of the bicycle to access premium stations increases the rail catchment area 8 to 10 times. Indeed only 12 % of Perth's population are within easy walking distance but 81 % are within easy cycling distance.

Conclusion

Within the 20 year time frame of the State Sustainability Strategy we estimate that there is a need to provide 10,000 secure bicycle parking places on the public transport system. A 500 new bicycle lockers need to be provided on average per year for the next ten years. About half of which would be put on rail stations.

There is the potention use use bicycles as feeders to express bus services and in the Netherlands they have been successful in providing such services. (Wellemen 2000) At a conceptual level this is shown on figure 3 where bus and rail Systems are linked into a network that that provides convenient access by bicycle and public transport anywhere in a metropolis.

Bike/rail travel can make rail networks more accessible and competitive with car travel.

OECD studies (FCMT 2001) show that the high level of bicycle use in the Netherlands (28% of all trips) for 'door to door' trips and accessing railway stations has helped stabilise car fleet greenhouse emissions

and constrained road congestion costs. Meanwhile Australian urban emissions and congestion costs escalate.

Ned Rails modal share has increased from 8.5% of all trips in 1985 to 15% of all trips in 1996 mostly due to the increase in the proportion of patrons who ride bicycles to the stations (IECMT 2001). They understand that bicycle access uses the ergonomic advantage of pedalling over walking to go 3.5 times as far and has ten time the station catchment area; and that it is only competitive because safe access routes to stations and secure bicycle storage are provided. A typical example is shown on the photographs of Tilburg Station on page 10.

Bike/rail patronage is growing because Dutch planners understand the needs of cyclists for safe access to stations, secure parking facilities, well organised route information and intermodal connections with buses, trains, planes and ferries. Dutch investment in secure bicycle parking at stations and modal interchanges since 1985 has made rail travel more competitive with car travel; by 2006 A$250 million is budgeted for increased bicycle security.(ECMT 2001)(Wellemen 2000)

There is sound research from the Netherlands showing that bike/rail travel is the most competitive public transport mode to the motorcar for everyday commuting in cities. This is because access to stations by walking is too slow for distances over 500 metres; bus access wastes time because its patrons have to accept longer waiting times on the platforms; and most important of all car parking is much too costly and space consuming. See figure 4 below.

The Dutch bike/rail experience suggests that Citytrain has only picked up part of the latent demand for bike/rail travel. Even so, Citytrain has demonstrated that able bodied Australians will cycle to a station if the serious problems of bicycle theft and vandalism are addressed with free lockers. Car parking costs the rail authority less when 25% of locker users no longer park their cars at the station. Freeing up parking spaces for others reduces the cost per vehicle parked and optimises the use of car parks. It is concluded that this is Australian best practice. (See appendix A)

Recommendations

As rail patrons mostly use lockers for commuting to work or places of education on all rail systems, Citytrain's provision of 453 lockers per 10,000 commuters should be accepted as an achievable five year target. This target when translated as additional lockers required on other rail systems is:
Melbourne 3800, Sydney 8800, Adelaide 240, and Perth 480. The VEC wants these lockers funded out of vehicle parking budgets and given priority over car parking.

This submission supports the view that if 1000 lockers per 10,000 commuters were accepted as the long term target by Transperth and 30% of these lockers were taken up by many of the able bodied motorists (50%) who now drive less than 3 km to a station is would greatly reduce the costs of vehicle parking infrastructure and optimise car parking utilisation.

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Directorate general for Passenger Transport P.O,box 2090 1, 2500EX The Hague.

ATTACHMENTS.

Appendix A: Parker, A. A (2002) *"Report on the encouragement of bike/rail commuting on the Brisbane rail network"* Report prepared for Dr John Grant of the Department of Infrastructure

Appendix B: Parker,A,A. May (1999) *"Green products to help move the world beyond oil: power assisted bicycles",* Proceedings of Solar 99, 37th annual conference of the Australia and New Zealand Solar Energy Society, Deakin University Geelong Dec 1-4 1999. 12 page 5 figures.

This submission also contained the following figures and attachments:

Figure 1: Catchment Area Data – Showing how much more efficient bicycling is tan walking for gaining access to stations, bus stops and shared cars.
Figure 2: Perth Rail System and Bicycle Access.
Figure 3: Bicycle Dual Mode – making rail networks more accessible.
Figure 4: Time and Effective Travel Speed from Home to Train Boarding

Attachment A: "Report on the encouragement of bike/rail commuting on the Brisbane rail network"

Attachment B: "Green products to help move the world beyond oil: power assisted bicycles"

Photograph 1: New PAS Unit
Photograph 2: Lockers for Bicycles at Launton Station – Brisbane
Photograph 3: Lockers for Bicycles at Bray Park Station – Brisbane
Photograph 4: Lockers for Bicycles at Bald Hills Station – Brisbane
Photographs 5 –7: Tilburg Central Railway Station – underground bike hire centre and repair shop, and separate bicycle path access.

Contact the Sustainability Policy Unit of the Department of Premier and Cabinet to obtain copies.