ASSESSING
THE INFRASTRUCTURE ISSUES
OF
VICTORIA’S POPULATION GROWTH

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ASSESSING THE INFRASTRUCTURE ISSUES OF VICTORIA’S POPULATION GROWTH

1. INTRODUCTION

In the last 18 months the Victorian Government has signaled a departure from its previous work, by releasing a raft of documents focusing on planning for the future growth of Melbourne.

These include the release of Melbourne 2030 Update: Melbourne @5 million, Planning for all of Melbourne, The Victorian Transport Plan, Freight Futures - the Victorian Freight Network Strategy, Victorian Cycling Strategy, Port Futures – New Priorities and Directions for Victoria’s ports System and Delivering Melbourne’s Newest Sustainable Communities – Urban Growth Boundary Review.

Melbourne 2030 stood as the Government’s long term vision for the growth of Melbourne since 2002 and in March 2008, released the Report of Expert Group’s Audit into Melbourne 2030.

In the context of all of these documents, it is timely to look at just how well the current plans address some of the pressing issues facing Melbourne, most particularly population growth.

2. VICTORIA’S POPULATION GROWTH

2.1 Victoria’s Population

At the 2006 Census Victoria’s population tipped just over 5m.

Current estimates suggest that Victoria will be home to an estimated 6.7m people in 2026 and by 2039 it is estimated that Victoria will be at 7.58m.

This will mean that in the 30 years from June this year to 2039, Victoria’s population will grow by around 50%.
2.2. Melbourne’ s Population Growth

As with Victoria, the rate of growth likely to be felt in Melbourne over the next thirty years will lead to a 50% increase in the population.

In 2006 Melbourne was 3.74m, and accounted for 73% of Victoria's population. Growth estimates currently see Melbourne reaching 5m in 2026. This is an increase of 1.26m or 42% in just 20 years.

By 2039 it is estimated that Melbourne will be at 5.68m and by 2046 it will reach 6m. Melbourne will by this time account for 75% of Victoria's population, mirroring the process of urbanization being experienced elsewhere.

And given that Melbourne's relative size will increase, the rate of growth predicted for Melbourne is greater than that of both the State and Regional areas.
2.3 Location of Growth

The State Government in Melbourne @5 million suggests that 53% of the new dwellings to be built in Melbourne over the next 20 years will be accommodated within established areas and that growth areas will accommodate the remaining 47%

Looking at Melbourne on its own, growth is predicted to be concentrated primarily in the west and the north with one key corridor to the south east. The physical constraints created by the Dandenong Ranges and the Yarra Valley and the availability of residential land in the north and west are responsible for this pattern.

Having identified that greatest urban fringe growth will be focused on the fringes of the city in the north and west, this does not mean that there will be no growth to the east and south. Indeed the south eastern corridor represented by the City of Casey is predicted to experience high growth, much higher than the rest of the south east corridor.

The DCPD projections also show growth of around 100,000 in inner Melbourne, which no doubt reflects the trend of high density apartment development close to and in the city itself.

1 Victorian Department of Planning and Community Development. “Melbourne 2030: A planning update – Melbourne at 5million”. December 2008
Despite the very clear and obvious reasons why growth in Melbourne is predicted to occur in this pattern, there are a number of ways in which this growth pattern might be challenged.

Outside Melbourne growth will be concentrated in a number of regional centres around the state most notably Greater Geelong, Greater Bendigo and Ballarat. Together, these three locations have accounted for almost half of regional Victoria’s growth in recent years and all indicators suggest that this trend will continue.

Outside of these regional centres the areas most likely to experience growth are coastal areas and those areas known loosely as “lifestyle locations” including rural areas within relatively close proximity to Melbourne.

2.4 Drivers of Growth

The population estimates, released by the Victorian Department of Planning and Community Development in 2009 have the ABS 2006 Census data as their base. The DPCD assumptions relating to population growth including birth, death and migration rates are consistent with the ABS projections, but also take into account information from groups including local government and service providers.

But while the ABS produces a range of projections using different assumptions for each of the key influencing factors, the DCPD produces just the one. In doing so the department avoids the complications involved in developing projections for regional areas in Victoria. In most cases the DCPD uses the medium assumptions used by the ABS, so there is considerable room for movement in either direction.

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The DPCD stresses that the projections are best effort estimates. Not predictions, not targets. In other words they don't want you to rely on these estimates, even if they are what the government will be planning on.

**Fertility rate**

The factors driving Victoria’s growth are all subject to change and naturally there is room for some variations in the predicted rates of growth. So whilst Victoria has been experiencing a high fertility rate at 1.87 in 2007, the DCPD, in line with the ABS, projects that the rate will decrease gradually to 1.73 by 2021 and thereafter remain relatively constant.

**Migration**

The level of overseas migration has been a key factor in determining Australia’s and Victoria’s growth rate.

*Population growth of Australia, through natural increase and overseas migration:*

![Population growth chart]

Source Victoria in Future 2008

Victoria has proven to be a favorite location for overseas migrants and the DCPD expects both this and the trend for high levels of immigration to continue. It argues that a net total of 180,000 overseas migrants per year in the long term is likely as the need for a growing labor force will not be met within Australia alone. The need for maintaining a growing labor force will be increasingly important as the population ages and an ever declining percentage of the population makes up the workforce.

Whether Victoria is able to continue to attract high levels of overseas migrants is however less certain. As Skilled and Business migrants have become the most significant migrant group, the comparative strength of the Victorian economy will be more important.
The significance of migration for Melbourne, where over 90% of overseas migrants to Victoria settle, will continue as they are drawn to existing focal centres of particular cultures and languages.

Despite all this it is worth noting that the DPCD uses the ABS ‘s mid level assumptions for migration levels. Should the ABS high migration level be used for the DPCD projections, Melbourne would reach its projected population of 5 million two years earlier than it would using the medium migration levels.

Another key element in the determining growth is the level of net interstate migration. The DCPD has adopted the same assumptions regarding these interstate movements, with projections of -2,000 until 2009 and -6,000 from 2011.

Population Aging

It also seems certain that the population will continue to age, which has particular relevance for a range of infrastructure needs.

The aging of our population will be dramatic over the next 30 years. In 2006 those aged 70 years and over made up 9.5% of the population. By 2036 that figure will have grown to 16.3%.

Key to the rate at which this will occur are changes to life expectancy. Just as this has been progressively rising over many years, the trend is likely to continue given advancements in the state of general health and medical science.

The assumptions adopted by the DCPD project life expectancy of males to increase from 80 to 85 between 2006 and 2056, and for females from 84 to 88 in the same period. To give an indication of just how significant the different
assumptions might be, using its own high level projections, the ABS estimates the life expectancy to rise over the same period from 80 to 93 for males and from 84 to 96 for females. Should the improvements in health and medicine achieve a lengthening of life of this nature, we could expect a more significant aging of the population.

The aging of the population raises a number of key issues for infrastructure planning. In addition to the effect on household size (see below), we could expect that the workforce will make up an ever decreasing proportion of the total population which will of course have implications on tax revenues. As well, infrastructure design will need to better accommodate the requirements for the continued independent access and mobility of seniors, including accessible public transport vehicles, safe pedestrian crossings and refuges, and legible signage, not to mention public transport routes that reliably connect residential zones with shopping, medical treatment and recreational zones used by seniors.

*Household Size*

Significantly the aging of the population will also contribute to a reduction in the size of the average household. This will drop from 2.54 in 2006 to 2.36 by 2036. Other factors which will continue to contribute to this trend include the long term trend for households made up of either an individual or a childless couple.
3. THE ISSUES

3.1 Melbourne 2030

The Melbourne 2030 plan released in 2002 assumed a population growth for Melbourne considerably lower than currently predicted. The medium assumptions saw growth to 4.4m by 2031 and the high end assumptions predicted population to reach just over 4.6m. Just a few years later these predictions are now regarded as being far too low. Current predictions see Melbourne's population at nearly 5.3m by 2031.

The Melbourne 2030 plan incorporated a number of core policies to encourage growth of “a more compact city”. These included:

1. The concentration of development in numerous “Activity Centres” throughout the metropolitan area, each of which would include a broad range of retail and commercial activities, good transport links as well as residential opportunities.

2. Better “management of metropolitan growth” – including establishing a Melbourne Urban Growth Boundary to limits to outward growth and concentrating expansion to those areas with “high-capacity public transport”.


4. Development of better transport links including an upgraded and more integrated public transport system making jobs and serves more accessible.
Although some progress has been made to items (3) and (4) on this list, items (1) and (2) were less well realised. Item (4) was poorly delivered and possibly represented the fatal flaw in the overall success of the strategy. Attention to these priorities would certainly have provided a stronger base to assist in absorbing future growth within the existing city boundaries. Indeed, the 2007 M2030 Audit Expert Group’s Report recommended that the Urban Growth Boundaries should be maintained.

The Expert Audit group in their report on progress toward the implementation of Melbourne 2030 found that:

“… it is our strong view that ‘on the ground’ implementation of the plan has under-performed in several key areas. These are

- Insufficient progress, to date, in redirecting residential growth from the fringe to established areas of the metropolis.
- The lack of significant residential or mixed use development in and around principal and major activity centres.
- Insufficient provision or commitment to crucial public transport investments, such as fixed rail to the Whittlesea growth area and expanding the capacity of the city rail loop.”

The Expert Audit group went on to identify a number of transport specific principles which must be respected to ensure development of a sustainable city. The included the need to design transport systems to both service and shape land use, to minimize travel time, and finally to set, implement and monitor modal shift targets and to manage roads for all uses including freight.

Each of these principles have merit and would make a strong basis for planning our infrastructure in the coming decades.

In response to the Audit Expert Group Report, the State Government released “Planning for all of Melbourne” in May 2008. Although the government supported in “broad terms” the findings of the AEG, critically, government policy points in a different direction more closely aligned with the expansion of the city limits.

### 3.2 Opportunities for Accommodating Growth

In light of the fact that the government has adopted a policy position which now looks at the extension of the Urban Growth Areas, it is worth examining what opportunities exist to accommodate ongoing growth within the existing metropolitan area. There are a number.

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Increasing Density in New Growth Areas

Melbourne outlines that development in new growth areas should be encouraged at a preferred minimum of 15 dwellings per hectare. Development trends have seen the average density of developments increase to 12 dwellings per hectare in recent years and it might be expected that the trend will continue. Despite moving in the right direction, this is unlikely to have much of an impact on the overall size of the city.

Urban Brownfields

The continuing goal of densification could have been better advanced by an audit and focus on the re-use of brownfields sites in the inner and middle suburbs. There remain substantial areas of disused industrial land which could be developed for residential and associated purposes. Chemical and industrial contamination of such sites can be both time consuming and costly and to date this has made many unusable or unattractive to developers. However the size and location of such sites in Melbourne is increasingly making them more attractive for development.

Melbourne’s Docklands and more recently the former Commonwealth Munitions factories sites in Maribynong are prime examples of such opportunities. The Maribynong site will require an extensive remediation process likely to take years and a great deal of funding. However, the 128 hectare site is planned to be home to a 3000 houses.

Although there is an abundance of strategic potential for brownfield development, government has too often preferred the easier option of “business as usual”, sprawl and car dependence.

For example, there are many hectares of vacant post industrial land along the railway from North Melbourne to Sunshine – for example in Sunshine Road, where land uses are dominated by low grade warehouses and large vacant sites.

Again, around Kensington, the Four and Twenty Pie Factory site has only recently been redeveloped as tilt slab one story warehouses – despite being contiguous to an inner city rail line and sought after residential area.

Increasing Housing Density Along Transport Routes

Professor Rob Adams from the City Melbourne and University of Melbourne champions the opportunities to absorb urban growth within existing boundaries, by raising housing density along existing growth corridors and road based public transport routes.

In alerting us to savings which might be made he points to the results of research undertaken by Curtin University which conclude that “the costs per 1000 dwellings of infill and fringe developments are $309m and $653m respectively.”

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5 City of Melbourne and Victoria, Department of Transport, Transforming Australian Cities for a More Financially Viable and Sustainable Future, July 2009, p9
He argues that increasing the density of the vast majority of Melbourne’s suburbs is unlikely to be achieved at least in the short term, not least because of our love of the suburban block, but also because they are not well serviced by public transport.

Taking tram lines as a case in point, he argues that there is huge potential to develop medium density housing of say 4 to 8 storeys, along tram routes such as Nicholson St in East Brunswick or Riversdale Road in Hawthorn.

Identifying possible development sites along transport routes across Melbourne, and accessing the development capacity of the sites, leads Adams to suggest that this approach could accommodate a population increase of between 1m and 2.4m depending on the density scenario adopted.


**Inner City High-Rise Residences**

The inner city of Melbourne including the CBD and its immediate surrounds has experienced rapid growth in its residential population over the last 20 years. In the CBD itself, the number of residents increased from 1000 in 1991 to 9,000 in
For the wider inner Melbourne area it increased over the same period from 34,600 to 76,000.

The City of Melbourne estimates that this population could double again by 2020 to 140,000 living in 73,000 dwellings and estimates a capacity of something like 100,000 dwellings for 2030.

This continued growth has been achieved through the development and adoption of high-rise living in the central city. There is no doubt that there is demand for centrally located high-rise apartment accommodation as is evident throughout Docklands and Southbank. Clearly there is capacity for substantially more.

Unlike many large cities the world over, Melbourne has been late in adopting the inner city high-rise as a viable residential option. This trend will continue, taking advantage of the many sites around both the CBD and the immediate inner suburbs which could be developed.

**Dual Occupancies**

The development of two dwellings on a single allotment also offers some further potential to increase the density of housing without redevelopment and massive changes to the nature of a residential area.

In a city like Melbourne which has been developed with large residential blocks, there is considerable capacity for ongoing development of sites as dual occupancies. It is difficult to accurately measure the real extent of dual occupancies throughout the metropolitan area, as building approval statistics do not adequately distinguish them from other types of development. Statistics on building approvals for “other residential buildings” include dwellings other than detached houses, such as flats, apartments, and semi detached townhouses. Some dual occupancies would be included in this group when they are semi detached. Other dual occupancies might be included within the detached dwelling approval statistics.

In 1996 there were just over 7,000 approvals for “other residential buildings” across Melbourne and this had nearly doubled to nearly 14,000 by 2004, thereafter declining back to the 1996 levels of around 7000 in 2005. There has been some resurgence and activity has levelled at around 10,000 in 2007 and 2008.

However, despite the difficulties in measuring the extent of dual occupancy across Melbourne, the figures reflect fluctuations in the number of approvals which might include dual occupancies. Despite some overall increase over the last few years, it would be expected that much of this would be accounted for by the surge in apartment construction, particularly in inner city areas.

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7 ABS Building Approvals
Whatever the exact figures, the potential for dual occupancies to make a long term impact on housing development is unlikely to be huge. Firstly, dual occupancy developments have been concentrated amongst Melbourne’s inner and middle suburbs characterized by older houses on large suburban blocks. Although planning controls have assisted this type of development the overall number of dwellings being developed are still relatively small in numbers.

Decentralization

Another widely advocated strategy to deal with expected population growth is to make it more desirable to live and work in regional cities. This relies, among other things, on regional cities being linked to Melbourne by well developed transport corridors, which provide reliable, convenient and fast access between centres. The Regional Fast Rail initiative and the excellent frequent services provided under the new regional timetable improvements are an example of this – and the current Regional Rail Link project for fast regional paths for regional services to Southern Cross will consolidate these improvements.

Geelong, Ballarat and Bendigo have absorbed the majority of growth experienced in regional Victoria in recent years and this trend is expected to continue.

Among regional cities, the most ambitious currently planned greenfield development is at Armstrong Creek, just beyond Geelong. It is intended to provide an additional 70,000 houses in the coming years. It is broadly similar in scale to the the size of the other urban fringe developments on the edge of Melbourne.

3.3 Central Activities Districts

As an alternative to extra-metropolitan decentralisation on a regional basis the State Government has announced a form of intra-metropolitan decentralisation through the designation of multiple “Central Activity Districts” as a key element of the “Melbourne @5million”.

Six centres have been selected to be developed as Central Activities Districts at Box Hill, Broadmeadows, Dandenong, Footscray, Frankston and Ringwood. These locations have been selected on the basis that they already are major hubs within the region of Melbourne for a range of activities including retail, education, employment, health and transport and crucially they represent the priority locations for Government investment in the future. By definition they will have the greatest variety of uses and the most intensive concentration of development. As part of a network of centres to be developed across the metropolitan area the CADs will be second in importance to the CBD.

As an example Box Hill, already a major transport interchange has attracted recent developments including a new hospital, and expanded education and shopping facilities to complement the existing facilities.

The aim is to take pressure off the central business district and encourage diversity in commercial and service activities in the selected locations.
This is intended to encourage the location of jobs to be spread around the city and closer to where people live, rather than in the one central location. In doing so, multiple CADs may reduce both congestion and commuter times, although this is yet to be demonstrated. Of course, the policy requires that the CADs are well serviced by transport and act as transit hubs for the surrounding areas.

In summary the new CADs aim to incorporate:

- “Significant CBD-type jobs and commercial services
- A strong and diverse retail sector
- Specialised goods and services drawing on a large regional catchment
- Significant opportunities for housing redevelopment in and around these centres
- High levels of accessibility for walking, cycling, public transport or car by being located at junctions in the Principal Public Transport Network
- Vibrant centres of community activity with a range of public facilities.”

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8 Victorian Department of Planning and Community Development. “Melbourne 2030: A planning update – Melbourne at 5million”. December 2008
Employment Corridors
The CAD concept is also to be supported by the development of “Employment Corridors” linking the Activity centres with areas of high employment such as Universities, Hospital and Medical precincts and research and technology precincts. Fundamental to the Employment Corridors will be the development of improved transport which not only provides access to and from the CBD in Melbourne, but also access across and within the corridors themselves.

Three employment corridors have been identified for priority.
- Avalon Airport to Werribee, Melton, Melbourne Airport and Donnybrook;
- Caulfield to Dandenong; and
- Monash University to Box Hill, the Austin Hospital and Bell Street.
To some extent the concept of a corridor that include both Monash University Clayton Campus and the Austin Hospital at Heidelberg may seem fanciful, however the notion that CADs must be supported by expanded local employment is logical and worth supporting. If these employment corridors can be realized they will support denser, transit oriented communities that will provide a useful and sustainable component of the city’s future growth.

3.4 Expansion of the Growth Areas
The Government’s June 2009 paper, Delivering Melbourne’s Newest Sustainable Communities argues that “greenfield extensions of Melbourne need to be adjacent to existing urban development in order to efficiently use and augment existing infrastructure for transport, drainage, water, power and sewerage”. Examination of the proposed extensions discloses that broadly speaking, this principle has been followed:
It is worthwhile to examine some of the proposed growth areas and how they will develop:

According to Victoria in Future, the leading growth areas, with population growth above 200,000 to 2031 will be:

- Hume
- Whittlesea
- Wyndham
- Casey
- Melton

Beyond these, there are three LGAs where 100,000+ growth is anticipated – the Melbourne CBD, Cardinia, and Greater Geelong. It is instructive to look at these in turn.

Related to this, the Melbourne @ 5million, released in December 2008, and the Victorian Transport Plan envisage "Polycentric development" and the dominance of six new Central Activities districts

- Broadmeadows
- Footscray
- Ringwood
- Box Hill
- Dandenong
Frankston

Greater Geelong is nominated as a key regional variant of these CADs. In some respects it represents a “seventh” in the set of new, polycentric CADs.

It is notable that the highest growth areas do not correspond precisely to the CADs. In fact the CADs are, by and large, the centres where investment has occurred under the “Transit City Program” of the past decade.

The following table compares CADs with the highest growth LGAs:

<table>
<thead>
<tr>
<th>Broadmeadows</th>
<th>Hume</th>
<th>Corresponds to growth area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dandenong</td>
<td>Casey</td>
<td>Transit City</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Centre for Casey and Cardinia growth areas</td>
</tr>
<tr>
<td>Ringwood</td>
<td></td>
<td>Transit City</td>
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<tr>
<td>Box Hill</td>
<td></td>
<td></td>
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<tr>
<td>Footscray</td>
<td></td>
<td>Transit City</td>
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<tr>
<td></td>
<td></td>
<td>Possible inner focus for Hume, Wyndham and Melton growth areas</td>
</tr>
<tr>
<td>Frankston</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geelong</td>
<td></td>
<td>Transit City</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Armstrong Creek (100 to 250,000)</td>
</tr>
</tbody>
</table>

It is useful to briefly review growth, and planned infrastructure, in some examples of the largest expected growth areas. I will look at the northern, south-eastern and Geelong growth areas in turn:

Hume-Mitchell-Whittlesea

The Hume Area Growth Framework plan 2006 provided for an increase in population for this area of 35,000 people living in 20,000 households.10

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9 Victorian Transport Plan, p. 41
10 Hume Area Growth Framework Plan 2006
Main transport proposals in the 2006 plans included the electrification of the Craigieburn railway, construction of the E14 freeway, and local bus improvements.

Since 2006, the Craigieburn rail electrification has been completed, and $20m earmarked for Broadmeadows station improvements. However the revised urban growth boundaries now provide for a population expansion in Hume not of 35,000 but of 200,000 plus. In June 2009, the Report Delivering Melbourne’s newest Sustainable Communities was delivered, revising upwards the intended growth of this corridor.

The revised urban growth boundary places new emphasis on land north of Craigieburn and suggests that future urban development should be focussed in a band approximately 10km wide saddling the northeast railway from Craigieburn north towards Wallan. At the southern end of this growth area, this includes a strip 4-6 km west of the Hume highway/northeast railway, from Greenvale northwards along Mickleham Road. Craigieburn Town Centre has been developed 2km west of Craigieburn station—a location that is substantially car dependent.

In considering the transport infrastructure needs of this development, the following observations can be made:

1. the area is well served by freeways since the construction of the Hume freeway to Craigieburn. The Government’s proposed Westlink will provide further radial freeway access and E14 if constructed would further support car dependent access;
2. the poorly served area including Melbourne airport, Greenvale and the area toward Craigieburn town centre could provide the basis for a rail

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12 Victoria, Department of Planning and Community Development, (June 2009)Delivering Melbourne’s Newest Sustainable Communities
route serving the west of the corridor. There is currently physical space in terms of vacant public and private land where such a corridor could be inserted and this should be done now.

3. Access from this growth area to Melbourne’s northern suburbs would be enhanced if the non-electrified Somerton to Upfield railway were electrified and Upfield trains continued to Craigieburn as proposed in my report *Melbourne’s Northern Gateway*.

This growth expansion and its location strongly suggests that the previous airport rail link issue should be re-opened with a view to a rail link serving the western side of the Hume growth corridor and Melbourne airport. The previous airport rail link study, which ignored urban growth issues and has left the Mickleham Road/Greenvale area highly car dependent, should be viewed as obsolete and a new study is needed.

**Casey and Cardinia**

The Melbourne South East Investigation area (Casey and Cardinia) report proposes the inclusion of an area north of the former Clyde station and east of Cranbourne as part of the growth area.

While the report avers that the urban growth boundary should be "based on the creation of a high capacity transport corridor", its actual recommendations are modest and involve a “long term” implementation of the Victorian Transport Plan’s intent of a small extension of the electrified suburban train system from Cranbourne to Cranbourne East, and the retention (as again recommended by the VTP) of the rail corridor from Cranbourne East to Clyde (a short extension along the reservation of the Leongatha line).

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These are extremely modest recommendations. Cranbourne East already lies within urban development, and Clyde, as the following map shows, is at the Western end of the proposed development.

In this area the steps that need to be taken are:

1. Extension of the electrified suburban train system to Clyde. The full extension to Clyde rather than Cranbourne East only would allow the principle of creating transport options in advance of urban development to occur;

2. The existing single line electrified route between Cranbourne and Dandenong should be duplicated;

3. The development of this public transport route adds to the case for increasing the capacity of the Dandenong line;

4. It is particularly vital that the issue of a standard gauge rail freight route to Hastings should be resolved as this route could pass close to this
development, and public submissions and advocacy in the area suggest some local hostility to this vital corridor;

5. Although a government study recommended the abandonment of plans to re-instate the Leongatha rail service, this issue should not be closed as the replacement bus services are unlikely to be adequate in the future. The rail reservation must be retained and a further study undertaken by 2015.

Greater Geelong

Geelong and district has its own urban growth plan –the “G21 or Geelong Regional Alliance plan”, which proposes to concentrate “the majority of the growth of Geelong for the foreseeable future into a comprehensive community in the area south of the railway line at Grovedale and Marshall”. This is an area now known as Armstrong Creek. DSE plans for the Geelong region to grow from 254 732 in 2001 to 352662 in 2031, while the Geelong Region Alliance (G21) hopes for 510,000 by 2021.

The Armstrong Creek structure plan states that to service this area “private car based travel will continue to be the dominant mode of travel for the foreseeable future, despite increasing oil prices.”14 The structure plan suggests a public transport interchange, but notes that “much of the area would be distant from the rail line to the north”. This surrender to car dependence in the planning of one of Victoria’s major urban growth developments is extremely disappointing.

However the study did make some limited public transport suggestions and these should be accepted with vigour (rather than left dormant in the report). It suggested:

- A Department of Transport study of the corridor
- The need to provide a corridor for public transport toward Torquay in the future
- Light rail or rapid bus to take people to and from stations on the rail system

The basic formula is for the development to be car based, supported by one or more rail stations, with buses for regional and sub regional trips and community buses for special needs groups.

While the Department of Transport working party has yet to report, several issues should be noted:

- The Geelong Ring Road has already been constructed to freeway standard to the gateway of the growth area
- Although a Department of Transport working party has been appointed there are no concrete proposals in this major Urban Growth Plan for any change to a status quo of car based dispersion, with feeder buses to an existing station.

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14 City of Greater Geelong, Armstrong Creek Urban Growth Plan vol 1, p. 54
Of course plans can be updated as the actual experience of population growth unfolds, however the failure to provide rail corridors has been a major factor in constraining the construction of needed new services in the past.

Creating a station near the Armstrong Creek Town Centre, or defining a future Torquay line reservation, would imply bifurcating rail services beyond Geelong, with long distance trains continuing west to Warrnambool, and future commuter trains heading south to Torquay. From a rail efficiency point of view, unnecessary bifurcation of rail routes is to be avoided, but on the other hand, consider the size of the communities being created

- Urban Growth plan/Victoria in Future- + 100,000 people
- G21 estimates - + 250,000 people
- Surf Coast day visitors

These numbers suggest that a far greater number of potential public transport users would be served if Geelong trains, rather than terminating as at present at Marshall, were to be extended first to Armstrong Creek Town Centre, and thence by a reservation which should be put in place now, to Torquay. This means that the park and ride proposed to be established further west of Marshall, beyond where the junction for Torquay would be located, should be developed as an interim location only with the major park and ride for the district instead planned for the Torquay route. Far more patrons will be generated for Geelong line trains from Armstrong Creek and Torquay than from Winchelsea, Colac and points west. It is appropriate therefore that the terminal for the Geelong (as opposed to the Warrnambool) train service be oriented to Armstrong Creek and Torquay, not on the main Warrnambool line in the direction of Winchelsea.

The Armstrong Creek Urban Growth Plan, adopted by the City of Greater Geelong in May 2008, envisages locating the urban growth centre of the new community approximately 1.5km south of the Geelong-Colac railway, and in this regard it is
similar to the design of Craigieburn, which also separates the railway and town centre.

However in the case of Armstrong Creek, a better outcome could be achieved by

1. locating the proposed the Park and Ride on a new rail spur built south passing by the proposed town centre, at a location on the south edge of the proposed town centre
2. providing a new station be provided at the Town Centre, where the bus/train interchange should be built
3. terminating Geelong line trains at this Park and Ride instead of Marshall (as at present), or a new station west of Marshall on the Warrnambool line (as currently proposed)
4. Reserving a rail corridor from Armstrong South to Torquay.

Combining the Growth Corridors and the CADs

Layering the various aspects of the Melbourne 2030 and Melbourne @5million raises a number of interesting questions.

In particular it makes sense to look at the location of the designated CADs in relation to those areas which have been identified as the primary growth areas for Melbourne.

- Box Hill and Ringwood

Box Hill and Ringwood have both been identified for development as Central Activities Districts. Both of these centres already have well established retail, service, medical, educational and government activities as part of their existing fabric. For both of these centres, designation and development as CADs will assist in reducing the dependence of the population in the outer east of Melbourne on the CBD. If the policy outcomes are as intended, then one could expect that growth of Box Hill and Ringwood CADs will assist in reducing commuting times for people living in the outer east and further congestion of the transport system.

But the importance of these CADs in terms of future population growth in Melbourne is limited, given that the outer east of Melbourne is the area likely to experience the lowest level of growth.

Located on the Lilydale/ Belgrave railway, both Ringwood and Box Hill are existing public transport hubs. In addition, the outer east is well serviced by the freeways. Given that the trunk of high speed public transport in the outer east is limited to the Lilydale and Belgrave railways, vast sections of the outer east sector of the city are dependent on a variable bus service and private cars. Bus system development is therefore extremely important in these areas, but improvements to travel speed on the rail trunk route and urban densification
around it provides the best promise of accommodating higher populations while reducing car dependence.

Placing priority on increasing the amount of higher density housing close to the CADs in both Box Hill and Ringwood would make sense on a number of fronts. It could be accommodated relatively easily, maximizing both the potential of the CADs and the potential reduction in congestion and pressure on the CBD and its associated public transport system.

- Frankston and Dandenong

Development of both Frankston and Dandenong as CADs will, like Box Hill and Ringwood, provide potential for reducing dependence on the CBD from existing surrounding areas.

The Casey – Cardinia growth area will see new housing develop with their focus on the CADs. Nevertheless there is potential for greater emphasis to be placed on the higher density housing close to the CADs to maximize the focal role intended, particularly given both the existing public transport and road networks on the sector.

- Footscray and Broadmeadows

The proposed CADs to be developed in the Footscray to the west and Broadmeadows to the north, represent different challenges, not least because these are the very areas where the vast amount of growth is expected. Growth is anticipated both within established areas as well as via the expansion of the growth boundaries of the city.

It might be expected that the potential for these CADs to provide real alternatives to the CBD is substantial. But given the vast level of new growth anticipated in these sectors of the city, the transport pressures will be intense, requiring both road based and rail based investments.

4. PRINCIPLES FOR INFRASTRUCTURE DEVELOPMENT

4.1 Sustainable Transport and Sustainable City Development

A key principle underlying policy development must include sustainability. The size, shape and operation of cities and in particular urban transport are critical influences on sustainability.

But just what do we mean by Sustainability? In broad terms it might incorporate a future characterised by:

- Continued economic development,
- Protection and preservation of the environment and our natural resources,
- Pursuit of social equity.
Each of these go straight to the heart of multiple elements of urban development which must be addressed as we deal with the issues of

- Climate change. A reduction in greenhouse gas emissions is required to minimize the effects of climate change. In the short term this means giving priority to forms of transport such as walking and cycling which are emission free and to public transport which contributes fewer emissions per person.

- Car Dependence. Rising petrol prices, congestion, and high infrastructure costs are all making the dependence on cars for private road users increasingly unsustainable requiring the need for practical alternatives including public transport. It also means giving priority to reducing the need for car travel via improved access to services and facilities on a local basis that can be more reasonably accessed either by foot or cycle.

- Increased Freight. Economic development and competitive advantage require efficient and affordable solutions to freight which at the same time limit the inherent conflict between land uses within cities.

4.2 Can we Reduce the Need to Travel?

In addressing the question of how best to provide appropriate transport systems for the future, it is useful to consider if we are able to reduce the need to travel, so as to avoid unnecessary infrastructure development.

Reducing the need to travel includes looking at travel for individuals from home to work, school, shopping, and sport and leisure activities. Obviously the closer these activities are to the places where people live, the less travel required. This of course is one of the key principles behind the development of Central Activities Districts within the Metropolitan area. The more we can encourage people to focus their work, education and leisure activities within the area they live the more successful the overall metropolitan strategy will be in reducing travel.

Melbourne @5million sets out the basic policy principle which is consistent with this objective, but whether the principles can be met in practice is another thing. The focus that the Central Activities Districts will need to command to effect the change required will be significant, both in terms of the pattern of development and the community response.

Government investment for schools, hospitals, shopping centres and regional government offices for example need to be being prioritized toward CADs across the metropolitan area. In so far as these investments will assist in the development of the CADs and provide services and facilities within local areas, they will help in reducing the length of many commuter trips.

Reducing the need to travel will also require a change in travel patterns and habits amongst the community. With cars as the primary mode of transport for
the majority of the population, and a freeway system which provides rapid access across the metropolitan area, it is not surprising that a large geographic area has come to be regarded as readily accessible. Indeed, the more the freeway system is developed, the more people choose to routinely plan and undertake longer journeys by car across the city. This is the opposite of the policy principle being put forward as part of Melbourne @ 5 million.

Construction of yet more freeways and road space will inexorably encourage longer car journeys and urban sprawl. We need to manage our existing road system more competently through strategic road pricing: we can’t “build ourselves out of a problem” if freeways are not consistently priced at the point of use.

Ensuring that consistent policy principles are put in place is critical in ensuring the success of any planning and in maximizing the efficiency of infrastructure investment.

Source: City of Melbourne and Victorian Department of Transport - “Transforming Australian Cities for a more financially Viable and Sustainable Future” July 2009
4.3 Transporting People to Jobs, Education and Leisure

Travelling to work, school, shopping and leisure activities are key for almost every urban dweller.

Determining just how far people are prepared to travel is a key. According to Cesare Marchetti, this is not so mysterious. He claims that the time people are prepared to travel has remained constant at around one hour ever since Neolithic times. As the means of transport has developed from walking to horse drawn vehicles, to public transport and to cars, people have simply expanded their area of travel, to include those destinations that can be reached within one hour.

In other words the optimal spread of the city is determined by the adequacy of its transit system and its ability to transport people to their desired or necessary destinations in about one hour. In modern cities this roughly equates to a travel time of an hour from the fringes to the core.

In looking at the most recent results of the National Travel Survey (UK 2008) David Metz, highlights that average travel in 2008 was “376 hours per person per year, just over an hour per day, little changed from 353 hours in 1972/73”\textsuperscript{15} He goes on to say that despite “the common supposition that daily travel has been increasing, and may be expected to increase as incomes grow….. the data suggests otherwise….. It looks as though we may be travelling enough to meet our individual needs for access, and that overall travel growth will be driven by population growth.

“Melbourne @ 5 million” sets out the likely one hour travel time arcs for Melbourne and suggests that it stretches out towards Ballarat, Kyneton and to Seymour. Yet surely we should avoid infilling this circle with sprawling suburban development.

\textsuperscript{15} David Metz – Limits to travel website Blog, September 2009
4.4 Economic Development and Accessibility

Travel time has long been regarded as a cost which must be balanced against any benefits to be gained from locating in cities. As cities have grown congestion has led to a massive increase in the cost of travel time.

Immediate policy responses to these issues has seen cities around the world increasing the capacity and network of freeways so as to increase traffic flow, reduce congestion and therefore reduce travel time.

As Crozet\textsuperscript{16} notes, this has had some unexpected policy outcomes. The high speed of cars on roads (via freeways) allows for a greater distance to be traveled and therefore a greater dispersion of cities. The side effect of this dispersion leads to increasing segregation of urban functions, most notably areas of

\textsuperscript{16} Crozet – “Economic development and the role of Time Travel : the Key concept of Accessibility”
residential, employment, shopping and leisure activities. Excessive separation of these activities results in reduced accessibility. Costs to the community mount as cities are faced with providing massive infrastructure to low density areas and the costs to individuals mount as they are forced to spend more time and more money on travel. The social implications of this become paramount as cities struggle to ensure continued access to urban amenities, to all residents regardless of their income. So what starts out as a policy to improve accessibility, has in the longer term exactly the opposite effect.

By contrast in many European Cities, accessibility is the primary factor leading policy development. “Rather than focusing on speed and the distance it provides residents are invited to make choices that reflect the advantages of density and proximity.” In particular, policies are no longer focusing on improving car accessibility, but rather concentrating on improving the speed and reliability of public transport. Indeed in some cases there is an active step to stop addressing car congestion, the result of which is to further reduce car speed and improve the comparative accessibility of alternative forms of transport.

**Access for Non-Motorists**

In considering the transport requirements of Melbourne’s future population, it is important to recognise that there is a significant proportion of non-motorists in the population, who choose not to drive, or who are unable to drive, whether for reasons of age, health or legal status. Car dependence provides no transport solution for these categories of the population.

An example is provided by disabled people. Ensuring that infrastructure is accessible and appropriate for the disabled is a principle which is well understood. Commonwealth standards set out a range of requirements including ramps, boarding devices, allocated space, grabrails, doorways, signs and alarms.

Melbourne has been a world leader in developing facilities such as the raised platforms for tramways in the central city and the low floor trams, which ensure wheelchair access to trams.

However most of our trams are still not wheelchair accessible. Indeed, the platform tram stops require low floor trams to ensure wheelchair access, and they make up only a minority of the tramway rolling stock. The recent reduction of forward orders from 100 to 50 new trams in the Victorian Transport Plan is a backward step from this perspective.

Ensuring that all forms of infrastructure are appropriate for disabled use must underpin our thinking. A simpler and less expensive issue but one which is nevertheless just as important is the design and timing of many pedestrian crossings. The time cycle at many crossings is set for the young and athletic, and presumably linked to the time cycle for the traffic. These are often impossibly fast for the old and the disabled, not only making crossing the road dangerous

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17 Cozet p29
18 Crozet. p30
but also actively discouraging pedestrian traffic. Crossing designs also lag, despite some interesting experiments in safer pedestrian crossings in Clarendon St, South Melbourne.

As a general principle we need to think beyond the standards and ensure that consistency underpins both policy and practical applications on the ground.

5. PRIORITIES BY MODE

5.1 Freeways

It is commonly understood that people adopt modes of transport for particular types of travel when they first move into an area and tend to stay with that mode for the length of their residency. So it is that young couples will adopt car based transport, either because of a lack of public transport or because of the presence of freeways.

Melbourne in recent decades has invested significant amounts in the development of freeways, which have preceded the development of many suburbs, most particularly to the South East around Cranbourne, in the North around Epping and in Geelong at forthcoming development at Armstrong Creek. Thus when young couples establish their commuting patterns on settling in new areas, they normally acquire a minimum of two cars, with other cars being added by necessity as teenagers reach driving age. If good public transport preceded housing development, these choices would not be as inevitable.

The Victorian Transport Plan includes a number of developments which focus on freeways including:

- Construction of the Peninsula Link - a 25 kilometre, four lane, connection between EastLink at Carrum Downs and Mt Martha
- Extension and upgrade of outer suburban arterial roads
- Connect the Metropolitan Ring Road and the Eastern Freeway at Bulleen
- Construct an alternative to the West Gate Bridge - a tunnel between Geelong Road/Sunshine Road and Dynon Road/Footscray Road
- Upgrade the Dingley Arterial linking Perry Road and Springvale Road at Westall Road.

A number of conclusions can be drawn in relation to freeways and their role in the future development of Melbourne.

- Freeways encourage dispersion. The very nature of freeways encourages people to think that they can live, work, shop, study and relax almost anywhere in the city. High capacity freeways will provide the mechanism through which people feel that traveling across the city is both possible and expected. Such expectations are in direct conflict with the planning
principles of consolidation and focusing around central activity districts across the city.

- The current pricing policies for freeways are inequitable. Users of some routes face high charges; equivalent routes in other locations are free. A uniform price on all freeways (government-owned as well as private) would be more equitable, and the price for the use of any specific freeway would be reduced.

- Price signals on freeways should be strategic, encouraging freight and discouraging unnecessary private car usage over long distances.

- The freeway system in Melbourne is now well developed, and the focus should change from providing more freeway space to efficiently managing the road space already built.

5.2 Railways

The Victorian Transport Plan outlines a number of rail projects which are to be implemented by 2020. Key projects include:

- Up to 70 new trains, to increase capacity by more than 40 per cent
- Regional Rail Link – construction of dedicated regional lines to Melbourne CBD
- Melbourne Metro - constructing a new rail tunnel -including extending the underground network.
- New rail extensions into growth areas at
  - South Morang
  - Sunbury
  - Melton
  - Cranbourne East
- New stations in growth areas including Williams Landing and Caroline Springs in the west, Cardinia Road and Lynbrook in the south-east.
- Stations upgrade to improve customer amenities, walkways, drop off areas and interchanges
- Program to eliminate level crossings at critical locations - starting with Springvale Road in Nunawading
- More than 100 kilometres of new rail track
- Increased rail service capacity on the Northern, Western and South-Eastern lines from 67 to 109 trains in the busiest hour

In direct contrast with its record on freeways, Melbourne has few modern examples of railways being built first and the development of suburbs following. One potential opportunity for this was presented when the government chose through VicUrban to create a model environmental suburb at Aurora, to the north of Melbourne near Epping. However although provision was made for a rail corridor to the suburb, the Victorian government cancelled the extension of it in 2004. The area now has a thin bus service as replacement – where the last bus on a weekend leaves at noon on Saturday – leaving the entire “environmental suburb” car dependent for most of every weekend.
This illustration shows the bus timetable at Aurora, the Government’s demonstration environmental suburb at Epping North. As can be seen, there are no buses after noon on Saturday and none at all on Sunday.

Government should recognize that in providing first class freeways to new suburbs while denying them rail extensions or stations it is taking a primary role in creating the car dependence of the future. This situation currently exists at important new suburbs such as Aurora, Caroline Springs, Williams Landing, and Armstrong Creek and should be remedied as a matter of priority.

5.3 Ports and Freight

The transport of freight around and through cities is the source of considerable conflict as it directly impacts on the amenity of the city, especially residential neighborhoods. Freight routes typically operate at all hours of the day and night. The size and speed of road freight vehicles are intimidating to motorists. Not only are the vehicles themselves sources of noise and air pollution, but the freight itself can be toxic and dangerous should it be subject to accident. For
these reasons it is important that the task of promoting modal shift of freight from road to rail should be promoted with far more vigour than has been seen lately. The government has set few targets in this area, and has fallen woefully short of the modal shift target it set itself for port related freight.

That said, the movement of freight by road will continue to grow, and road freight vehicles will become larger. The economy depends on an efficient road freight operation. It is quite important to ensure that “road hogs” - single occupancy private motorists who occupy road space at a whim and cause congestion on freeways - are discouraged from creating congestion and impeding road freight unnecessarily. A regime that includes road pricing that discriminates in favour of road freight vehicles and against single driver cars at times of road space scarcity is a primary tool still not available in Victoria. On the other hand, if such a regime were adopted, a competent and comprehensive public transport alternative would be needed, and the government has been slow in its progress towards this goal.

Melbourne’s freight network hinges around the Port of Melbourne which is the largest container port in Australia and Victoria’s key freight terminal. In fact nearly 10% of all truck movements around Melbourne come from the CBD and Melbourne LGA.

Estimates made in the “Freight Futures” (companion strategic plan by Victorian State Government) has revealed that there will be a nearly 100% increase in the volume of freight carried by all transport modes across Victoria by 2030. ¹⁹

¹⁹ Freight Futures, p 7
Of that, it is estimated that there will be double the tonnage of freight moved by road around Melbourne, and three times the tonnage of freight being delivered into Melbourne by container through the Port of Melbourne. This includes estimates that the Port of Melbourne will be handling some 7 million TEU containers (TEU - Twenty Foot Equivalent Units) by 2030. By 2035 it is estimated container traffic through the port of Melbourne is expected to have quadrupled to 8 million TEUs. And over 80% of these 8 million TEUs will be dispersed throughout the metropolitan area through inner Melbourne. A capacity for these containers, empty or full, to move through the metropolitan area without choking it, must be created.

The Victorian Transport Plan includes a number of general directions:

- Establishment of a Principal Freight Network
- Establishment of a series of strategically located “Freight Activity Centres” around Melbourne, which will reduce the pressure on the central Melbourne and Port/Dynon road areas.

- Identifying future freight corridors and planning for both the transport links between FACs as well as buffer zones with other urban land uses.

The Victorian Transport Plan has as its key priorities

- A Truck Action Plan to remove thousands of trucks from inner-western suburban streets, including building a new connection from the West Gate Freeway to Hyde Street/Whitehall Street linking to the port

- A Principal Freight Network providing high capacity connections to existing and new freight terminals in metropolitan and regional Victoria
• West Gate Bridge alternative - a tunnel between Geelong Road/Sunshine Road and Dynon Road/Footscray Road to increase freight access to the Port of Melbourne
• Plan and build a Metropolitan Freight Terminals Network for more efficient freight movements within Melbourne by road and rail
• A new International Freight Terminal north of Footscray Road for the Port of Melbourne to serve as the central hub of the Metropolitan Freight Terminals Network
• A new interstate rail terminal at Donnybrook/Beveridge, north of Melbourne, to shift truck trips away from the Dynon area and inner suburbs at a cost of $340 million
• Planning for an expansion of the Port of Hastings

Some but by no means all of the functions of the Port of Melbourne can be served by the alternative ports in Geelong, Portland and Hastings. Currently they account for only a small proportion of the overall freight task in Victoria, and account for the majority of non-containerized bulk cargos such as grain, fertilizers, chemicals, petrochemicals, oil and woodchips.

The Port of Hastings has been identified as a long term, deep water container Port to service as an alternative and adjunct to the Port of Melbourne. However, a dedicated rail freight corridor from this Hastings to the standard gauge network (or even to the proposed Intermodal terminal near Dandenong) has yet to be reserved.

Victoria is serviced by a long established rail system across the state, recently re-purchased by the Victorian Government, and the subject of over 1 billion dollars worth of investment in re-furbishment following the Victorian Freight Network Review led by Tim Fischer. There is enormous scope for rail to handle a far higher proportion of the intrastate freight task, and it is critical that it should do so. As the number of containers through the Port of Melbourne grows to 8M by 2035, inner city environments will be choked unless significant modal shift to rail and the implementation of a well managed freight terminal network occurs. While there is increasing recognition of these imperatives, there is a long way to go.

The European Commission’s “BEST Urban Freight Solutions” reviewed best practices throughout Europe from 2000 to 2008 and identified key areas in which the operation of freight transport in urban areas could be improved. In summary these included issues relating to vehicle access and loading in urban areas - outlining best practice guidelines on issues relating to signage, on street loading bays, nearby delivery areas, vehicle weight and size regulations to name just a few.

5.4 Bicycles
Cycling is a fast growing form of transport in cities around the world, including Melbourne.
This is not surprising given the benefits of this as a distinct and viable form of transport, providing a valuable alternative to traditional modes such as the car and public transport. These might include:

- Reduced traffic congestion
- Lower air and noise pollution
- Space savings in both road and parking requirements
- Increased linkage to and appeal of both public transport and walking.
- Improved amenity of the cityscape
- A range of health benefits

In the period 2001 – 2006, the growth of journeys to work via bicycle have grown at an average annual rate of 5.8% for all of Victoria and for the City of Melbourne 11.7%. Counts done since 2006 suggest that rider numbers have risen an extraordinary 42%. Anecdotal evidence suggests that this trend will continue for some time yet.

As might be expected the mean length of journey is between 6 and 8 kms for women and men respectively, and so it is not surprising that the largest proportion of riders commuting into the city come from the inner suburbs.
As outlined in the Victorian Cycling Strategy, 87% of all weekday car trips made in Melbourne in the 5 years 1994-1999, were less than 5 kms in length.

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<th>Bicycle %</th>
<th>Car %</th>
<th>Public Transport %</th>
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</table>

Source: Victorian Cycling Strategy

Department of Transport has identified a number of infrastructure barriers to cycling in Melbourne, include:

- Gaps in off-road cycling networks;
- Inadequate design of bike paths;
• Inadequate separation of bikes and traffic on road paths;
• Inadequate connections with other transport modes;
• Lack of end of trip facilities – eg change facilities, bike parking etc, such as those provided by the City of Brisbane in the recently constructed Bus Station under King George Square.

Interestingly, 3 of these 5 key barriers have a strong link to safety issues for cyclists. This has been an ongoing issue for cyclists in Melbourne, not least after the well publicized and tragic death of a cyclist in Swanston St last year.

In recent years, some investment has been made in improving the facilities and infrastructure specifically for cycling. Melbourne currently has:

• Dedicated off road bike / pedestrian path network around Melbourne;
• A dedicated 1 km long on-road bike path in Swanston Street;
• Secure bicycle parking facilities at some Melbourne railway stations.

Source Victorian Cycling Strategy
The Victorian Cycling Strategy, released in 2009, outlines a number of key infrastructure priorities to supplement the existing facilities in Melbourne. These include:

- Further development of the PBN (Principal Bike Network);
- Giving priority to infrastructure within 10kms of the CBD;
- Developing bike facilities as part of major transport projects such as freeways and arterial roads;
- Pursue the development of cycling facilities (eg secure parking and changing facilities) as part of general infrastructure developments;
- Improve the links and interface between public transport and cycling – including the Melbourne Public Bike Hire Scheme in City of Melbourne and secure bike parking at bus and train stations.

Given that Melbourne's Principal Bike Network includes some 3,485 kms of paths in Melbourne, of which 1200 km is already complete (which is approx 34%) we still have along way to go.
Within Europe, some best practice principles and examples are found in Copenhagen, where in 2003, 36% of the city’s population cycled to work everyday.

The city planners are aiming to see 40% of Copenhageners riding to work by 2012 and to do so have developed both policies and the infrastructure to support cycling as a distinct category of traffic.

The infrastructure in Copenhagen includes

- Bike Tracks – approx 350kms on either side of all major roads, with an additional 65 kms planned;
- Bike Lanes - approx 15 kms of separate lanes;
- Bike Parking – locked and covered parking is located at railways and bus stations;
- Green Cycle Routes - long distance, wider cycle paths with fewer steps and parallel pedestrian paths to allow faster cycling speeds for commuters, and an additional 71 kms are currently planned;

Source Victorian Cycling Strategy
• Bikes on trains – allowing people to combine transit modes;
• Bike Signals – traffic signals turn green before car signals;
• City Bikes – Bikes are available for short term hire from over 120 bike rakes located throughout the city.

There can be no doubt that cycling specific infrastructure is critical in raising cycling rates in cities. Surveys conducted by the European Commission reveal that 70% of people take up cycling as a means of regular transport because of improved facilities and cycling routes.20

In addition to these elements of physical infrastructure, Copenhagen along with other cities in Europe has encouraged changes in attitudes toward cycling. It’s no wonder then that despite:

• the cold in Sweden, 33% of all journeys in Vasteras are taken by cycle;
• the hills in Switzerland, 23% of all journeys in Basle and 15% of journeys in Bern are done on cycles;
• the rain in UK, 27% of journeys in Cambridge are done on bikes.21

Melbourne faces none of these hindrances to a comparable degree – our main hindrance is the determination of the authorities to accord priority to motorists against most other road users in most circumstances.

Cycling has continued to grow in Copenhagen in recent decades and despite the increase in bicycle usage, the number of accidents has steadily declined, thanks to broad ranging policies. If we are to successfully increase the density of the Central Business District and the Central Activity Districts, improving the amenity of these areas for cyclists will be critical.

Critical cycling infrastructure requirements for Melbourne in the next few decades include:

- A target for percentage of cycle journeys;
- A safe, connected commuter cycling network to compass points;
- A cycle rental system operating at the CBD and the 6 new CADs;
- A standard model for safe on road bicycle paths.

20 European Commission. Cycling – the Way forward for cities and towns. 1999
21 European Commission. Cycling – the Way forward for cities and towns. 1999
5.5 Pedestrians

In 2007 the Minister for Roads Tim Pallas indicated that around 40% of all trips taken in Melbourne on a daily basis are less than 2 km in length. It might be expected that many of these are taken as pedestrian trips which underlines the importance of pedestrians in the overall travel picture.

![Average length of trips in Melbourne](image)

Source Darebin Transport Strategy

However, Pedestrians have, it might be argued, received the least attention of all the transport modes in urban planning in recent decades.

City of Melbourne surveys estimate that approximately 771,000 people used the city on a daily basis in 2008, which was 13% greater than in 2004. On the ground that means an extra 92,000 more people were using the city on a daily basis in 2008 compared with 2004. With the increased population growth across the city, and the ongoing predominance of the CBD, there is no doubt that this growth will continue.

Within the CBD Melbourne experiences not just a high number of pedestrians on a daily basis, but the state's highest level of pedestrian accidents.

The reasons for pedestrian accidents relate to the high number of pedestrians, the high number of vehicles, and excessive vehicle speed. Amenity and safety are also affected by issues such as the width of footpaths, signage, the operation of electronic pedestrian signals and the design of the general footpath areas.

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City of Melbourne. City User Estimates and Forecasts, 2009
If we are to successfully increase the density of the Central Business District and the Central Activity Districts, improving the amenity of these areas for pedestrians will be critical.

As outlined by Tolley for the Department of Infrastructure (2003), the key issues to be considered in planning for pedestrians are:

1. **Personal safety.** People need to be or at least feel safe;

2. **Road safety.** Restricting vehicle speeds are a key;

3. **Accessibility.** One of the principles which underpin planning for pedestrians is that of “local living”, which as the name suggests, aims to ensure that people are able to access many of the regular community, educational, recreation, regular shopping and public transport by foot;

4. **Design for disability.** Recognising that a significant proportion of the population has some form of disability, good design should take their needs into account. As our population ages, the need for design to account for people with slower or more restricted mobility will be crucial;

5. **Engineering standards.** The UK Department of the Environment, Transport and the Regions, 2000 report ‘Encouraging Walking: Advice to Local Authorities’, outlined a “5C’s checklist” on making all walking routes **Connected, Comfortable, Convenient, Convivial and Conspicuous.** Amenities which might be incorporated under these headings adequate paving, street crossings, seating, lighting, protection from the weather, ramps, curb cutaways, signage and wide footpaths.

Despite these relatively long held principles, in some areas of the Melbourne planning has deserted the pedestrian and allowed developments at street level which have no pedestrian interest or activity. In some cases, the developments are so unfriendly they positively discourage foot traffic. Many car parks and car dominant zones are exceptionally dangerous to pedestrians, as are many pedestrian crossings and refuges.

As an alternative to this, the concept of “Naked Streets” or “Shared Spaces” has been adopted as part of new traffic/pedestrian plans in Bendigo and in the Melbourne’s inner northern suburb of Darebin. They are both being developed as case studies to examine how best to improve access in local areas. In Bendigo the plan involves the narrowing of the streets, widening of the pedestrian footpaths and the removal of street signs and traffic markings, most of which give instructions to and reinforce the road as a place for vehicles. In Darebin, the traffic plan explicitly gives priority to trams, cyclists and pedestrians on some major roads such as High Street, Northcote.

We have of course yet to see whether this approach will achieve the desired aims in Australia, but it is receiving considerable interest around the world. As reported in the UK “Stripping out safety features on roads was first pioneered
in Holland and has since been tested with small schemes in London, Brighton and Ashford in Kent. Removing some road markings and railings in Kensington High Street, west London, led to accidents falling by 44% over two years.”

5. Conclusions.

Though we have many plans for Melbourne’s urban future, we are dominated by projects not plans, of which there have been too many;

We need to focus on providing the transport needed for a much larger city that is actively responding to greenhouse responsibilities and higher fuel prices;

Further urban dispersion should be more actively discouraged, and the various paths of concentration must be actively supported;

Freeway development should focus on strengthening existing arteries, not extensions to new dormitory suburbs;

Strategic road pricing will be an essential tool to manage demand;

Much more intensive rail investment is needed, including expedited roll-out of the proposed Metro as well as extra outer suburban capacity;

Aspirations to reduce the need to travel by developing the proposed self-contained CADs with locally available diverse housing, employment and leisure is critical and needs stronger support from governments at all levels.

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