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Connecting Neighbourhoods: The 20 minute city

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Policy Paper 4

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Connecting Neighbourhoods: The 20 minute city

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Foreword

This research policy paper is part of a series of six publications aimed at decision and policy makers, academics and students. This Policy Series focuses on land transport, land use, integrated planning and urban development challenges in Australia.

The Policy Series has been developed by the Bus Industry Confederation (BIC) of Australia and the Institute of Transport and Logistics Studies - Sydney University, and addresses specific subject matters and issues raised in the BIC's previous reports: "Moving People - Solutions for a Growing Australia" and "Moving People - Solutions for a Liveable Australia." Both publications are available at www.ozebus.com.au.

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Scope

The BIC Policy Paper 2 challenged Australia's capital city land use and transport planners to target zero growth in vehicle kilometres of travel, as a key performance indicator of progress towards sustainable cities. It looked at some of the regional scale transport/built environment issues that need to be tackled in moving to more sustainable Australian cities. The present paper complements this by exploring 'local'.

The paper looks at the idea of a '20 minute city', a concept raised (but little developed) in Plan Melbourne, the city's recent long term land use/transport plan. A '20 minute city' is one in which most people are able to undertake most activities needed for a good life within a 20 minute walk, cycle or public transport trip from where they live. Transport is a very important lever for taking action to achieve a metropolitan area that consists of a series of smaller 20 minute cities, each of which might comprise one or more neighbourhoods. The paper focuses mainly on the roles of density, supportive public transport requirements and walking in achievement of the 20 minute city. It is very early days in thinking about the 20 minute city in an Australian setting. The BIC encourages all interested stakeholders to contribute ideas to progress thinking.

The 20 minute city

The paper refers to '20 minute city', 'communities' and 'neighbourhoods'. It views neighbourhood as a local area, personally defined as where the resident has a sense of belonging. A community can, but need not, overlap with neighbourhood. It can refer to a group of people in an area or to a shared community of interest to which a person belongs. A 20 minute city refers to a larger area than a neighbourhood, perhaps an area with a five kilometre radius, as defined by a 20 minute public transport or bike trip and with a potential population catchment of about 200,000+ people. This area will encompass a number of communities and neighbourhoods.

The 20 minute city needs to offer most of the services, activities and social infrastructure to meet essential needs: social inclusion, personal wellbeing, mental health and social equity; a sense of place and belonging; participation and choice; the ability to successfully adapt to external challenges; and the provision of some local employment opportunities.

The ability to be mobile and to access friends, employment and activities is a requirement to achieve most needs. A 20 minute city therefore requires both a range of local activities and also requires local mobility choices, particularly safe walking/cycling opportunities and an adequate service level on local public transport. These can be best provided where urban densities are planned for this purpose.

Image adapted from the Sheridan Station 20 Minute Neighbourhood Implementation Strategy[1]

A neighbourhood structure embedded in a 20 minute city, with good local and regional transport choices, is likely to promote many positive outcomes in terms of personal and societal wellbeing, enhance liveability (which is already a strong international brand for our cities), as well as being cost effective to service and supportive of increased economic productivity. Flow-on effects will include lower traffic congestion levels, improved health outcomes, lower accident costs, reduced emissions (greenhouse gases and air pollutants) and greater social inclusion.

1 West Line Corridor Collaborative, 2013, "Sheridan Station, 20-Minute Neighbourhood Implementation Strategy", http://www.westlinecorridor.org/20MinuteNeighborhood/

Built form

Discussion about connections between travel and the built environment usually focuses on the five 'Ds' of built form (density, diversity of land uses, design, destination accessibility and distance to public transport) in terms of how they impact on car travel distances (vehicle kilometres of travel, or vkt). Individually these 'D' factors have only small impacts on vkt but the combined effect of a number of measures can be significantly large, particularly when regional scale and local measures are combined.

Policy packaging, therefore, needs to play a central role in the land use/transport space to deliver an increased likelihood of achieving a series of 20 minute cities. These policy packages need to encompass from regional to neighbourhood level considerations, underlining the vital importance of taking integrated approaches across land use and transport, including both top down (regional) and bottom up (neighbourhood) perspectives.

The prospects for achievement of a city that comprises a series of 20 minute cities will be enhanced if there is:

- a high proportion of metropolitan, regional and sub-regional activities and services concentrated in high to medium density mixed-use nodes/corridors
- fast and reliable trunk public transport connectivity between these centres (nodes) and along trunk feeder corridors, with good connections to the various neighbourhoods
- a wide range of activities available for people to undertake in their local neighbourhood/20 minute city
- a range of options for easy, safe and convenient movement around that neighbourhood/20 minute city on foot, by bicycle or on public transport (mainly local bus) and for connecting to trunk public transport corridors (mainly rail or bus) and regional cycle-ways.

PT service requirements to support the 20 minute city

Supportive densities are fundamental to achievement of a city as a series of 20 minute cities. But this is not enough. Densities need to be complemented by high quality local mobility opportunities that are available to all, implying the availability of high quality public and active transport (walk and cycle) choices. Public transport performs mass transit and local transit roles. Mass transit is mainly about getting in and out of your neighbourhood and/or 20 minute city; local transit is mainly about getting around your neighbourhood/20 minute city.

To provide local public transport service in support of the 20 minute city in the middle and outer suburban parts of Australia's largest cities, where the greatest urban needs exist with respect to achieving a 20 minute city, local bus services will be the prime focus. The aim should be to provide a service level that enables most people to do most of the things they want to do, most of the time, without needing a car, subject to meeting a minimum boarding rate benchmark (5-6 boardings/service hour). This is likely to require a 30 minute minimum local service frequency on local services for about 15-18 hours a day, with increased peak frequencies if loadings suffice.

These local services need to complement trunk services operating at the same, or higher, frequencies and over direct routes, with a synchronised timetable. This mass transit/local transit combination will give people the certainty that they can achieve their trip purpose(s) without long waits, when they need or wish to travel. It will also reduce the need for car ownership.

Walking and public transport

Planning neighbourhoods and regional centres for walkability and public transport use go hand-in-hand, supporting higher densities and the 20 minute city. A number of steps can be taken to promote walkability, in the context of developing a 20 minute city, such as:

- provide a full range of uses within nodes (having regard to node size), including medium to high density residential, institutional (e.g., hospitals, community facilities), entertainment, offices, educational facilities, personal services, social services, recreational facilities, retail, faith-based uses
- focussing on urban intensification to meet target density levels that are public transport supportive, because of the connection between public transport use and walking
- create an alternative set of development standards and processes for transit-supportive development. This might include density/height bonusing opportunities and fast approval processes
- boundaries for medium to high density nodes should be based around at least 90% of people being within a 5-10 minute walk (400-800m) from a PT focal point (distance depending on PT frequency). Similar distances should define boundaries of medium to high density PT corridors
- provide good quality walking and cycling infrastructure to PT, creating additional street or pedestrian connections if needed to keep walk/cycling distances and safety acceptable. Such access planning should be within a complete streets or smart streets framework.

Cycling is also an important contributor to the 20 minute city but is less so than public transport and walking, which have been the focus of the current paper.

Target densities and public transport

The BIC Policy Paper No. 2 pointed out that 35-40 residents plus jobs per hectare has been suggested as a threshold for effective public transport provision, supporting a 30 minute frequency across an extended span of hours. That paper showed that there are substantial parts of Australia's capital cities that fall short of this density level. Pursuing development strategies that accelerate achievement of this density benchmark should be a priority.

It is arguable, however, that public transport service frequencies of 20 minutes are more consistent with the idea of a 20 minute city. Lifting density targets from ~35-40 to ~50 residents plus jobs per hectare would support an improved public transport service frequency (a bus every 20-30 minutes, based on Ontario experience). Many middle suburban areas already meet this density benchmark and other parts are close. An accelerated urban infill program would support more widespread achievement of the 20 minute city.

Growth area minimum density targets would need to be lifted if a target at this level were to be adopted. For Melbourne, for example it would probably require minimum densities to be increased by about 3 dwellings/ha. There are a number of 'sustainable city' reasons to pursue such a higher target and it would enhance achievement of the 20 minute city.

In outer growth suburbs, development on multiple fronts slows achievement of target densities over large contiguous areas. It also results in lagged provision of infrastructure and services, including local public transport. Land release needs to be managed in a way that supports earlier achievement of these density levels. This will mean that a wider range of infrastructure and services are available to residents earlier in their occupancy. This eases pressure on household budgets for residents who have lower household incomes, promoting social inclusion and enhanced wellbeing. It will also reduce the need for car ownership and lower the associated external costs of car use.

Increasing densities will take time, particularly in new growth suburbs. In the meantime, what public transport service levels should be provided in lower density areas? The minimum proposed service levels should be in place as soon as feasible, to reduce the requirement for households to acquire multiple cars. A minimum boarding rate of about 5-6 passengers per service hour is sufficient to economically justify a bus service in outer suburbs (and regional towns/cities). If a 30 minute minimum frequency service fails to meet this benchmark boarding rate, options include going to an hourly frequency. This is a bare bones minimum service level and would be undesirable unless complemented with some additional service opportunities. A Warrnambool (Victoria) trial, partly supported by the Bus Industry Confederation, is providing some good ideas in this regard.

Warrnambool is trialling a new social enterprise approach to 'public transport' (ConnectU), which is proving effective in providing public transport to people who do not have a service, including meeting the needs of some people who are largely unable to use existing public transport. It extends the local availability of public transport services by making use of currently underutilised assets (e.g., community buses and cars owned by service providers, local government and other agencies) and volunteers as drivers, providing the user a little extra assistance if needed. Patronage is growing very strongly.

The ConnectU model is cost-effective and should be tested for extension to service provision in low volume outer urban settings, as a complement to, not replacement for, the route bus service. The ultimate operating goal should be 'total transport', with service integration across a full range of opportunities. This goal is in line with new approaches recently proposed by the UK House of Commons Transport Committee.

1. Context

The BIC Policy Paper 2 challenged Australia's capital city land use and transport planners to target zero growth in vehicle kilometres of travel, as a key performance indicator of progress towards sustainable cities (Stanley 2014). Greater Vancouver (>2.4m population in 2014) has been a pioneer in setting such an ambitious target, aiming to almost double its city-wide combined mode share for walking, cycling and public transport (PT) to 50% by 2040 (from 27% in 2011) and reduce trip lengths by 30% to meet the target (Translink 2013). Within the smaller City of Vancouver (>600,000 population in 2014), the target is for at least 2/3 trips to be by walk, cycle and/or PT by 2040 (40% in 2008), with motor vehicle volumes to decline slightly (City of Vancouver 2012). The connections between travel and the built environment (Ewing and Cervero 2010) mean that delivering zero (or low) growth in vehicle kilometres of travel (vkt) places high demands on both transport policy/plans and on policy/plans for the built environment to be mutually supportive.

Urban transport and land use planning have traditionally been treated as 'top-down' activities, which start by identifying some loosely defined high level economic, social and environmental outcome goals for the greater urban area. The dominance of major transport infrastructure in city shaping, however, is such that it is crucial for the land use/transport planning process to first decide on a clear vision of desired future land use and then use transport to help deliver that result (Cervero 2014). All too frequently in Australian capital cities 'big transport projects' have taken on political lives of their own and urban land use/transport integration becomes lost in the mire, as these projects are imposed on land use. An incapacity to establish, and then stick with, bipartisan integrated long term land use/transport strategies is one outcome. Governance arrangements must tackle this problem in Australian cities (Sussex 2014), an area on which the BIC has made representations at a national level. Appendix 1 provides an example of a possible governance framework, including policies, strategies, programs and investment ideas, developed by the BIC.

The BIC Policy Paper 2 looked at some of the regional scale transport/built environment issues that need to be tackled in moving to more sustainable Australian cities. The present paper complements this by looking 'local'. Most people live most of their daily lives locally, not city wide. Their wellbeing is therefore at least as much tied up in how well their local neighbourhood functions as it is in how well the wider city functions. This issue is well understood in much social literature and research (see for example, University of Western Sydney 2014) but has not impacted much on Australian strategic land use/transport policy and planning. City and neighbourhood are both important but one, the neighbourhood, has rarely been part of the international and Australian urban land use/transport policy and planning conversation. New York City has been a notable international exception, with its recent planning focus at street/place level (NYSSP 2008) and a history that includes the vibrancy of Jane Jacobs' discussions of life in Greenwich Village (Jacobs 1961).

This relative neglect of the neighbourhood level in urban land use/transport planning is starting to change. The North American focus on Smart Growth (see, for example, US EPA 2013) and on Creating Complete Communities (see, for example, Ohland and Brooks 2013 for the US and GVRD (1996) and Metro Vancouver (2011) for Canada) is a good example of the growing interest in neighbourhood, integrated with regional and national level policy settings and partnerships. Ohland and Brooks describe the aim of creating complete communities as to build communities where people can live, work, move and thrive.

Building on work by Florida (2002) and others, Ohland and Brooks (2013) highlight how structural economic change is resulting in growth of knowledge-based/creative jobs, where lifestyle is a key locational determinant. Compact inner urban areas, characterised by Leinberger (2009) as 'walkable urbanism', are increasingly providing the magnets that attract talent, especially the millennial offspring of the baby boomer generation (Leinberger and Alonzo 2012; Speck 2012). Public transport, walking and cycling are the travel modes of increasing choice in these settings. Williams (2014) has commented on similar structural influences in Sydney, as did the Ministerial Advisory Committee that worked on Plan Melbourne (MAC 2012).

Demographics are reinforcing the effect of structural economic shifts on urban development patterns, with a rapidly growing and aging population, an increasing number of single person and single parent households and increasing demand for affordable, accessible and more diverse housing. This is leading, in turn, to a need for innovation in housing styles and financial models, and associated planning arrangements (e.g., to increase supply of accessible affordable housing, including medium density family housing in inner/middle suburbs). Educational facilities, medical and other services, open space (including the role of the street), add to the built environmental inputs required for creating complete communities, where strong social capital and sense of community are expected outcomes when this planning is done well, in turn promoting wellbeing (see for example, Farrell et al. 2004).

The growing UK localism agenda is a further expression of the shift in the urban planning focus towards the neighbourhood. Localism is viewed as a means of better meeting needs by viewing people holistically, rather than as clients for a transaction, and resolving local needs rather than offering a standardised service designed by people too far removed to hold the requisite knowledge to resolve the issues of local concern. Localism is effective because it seeks to resolve issues and achieve outcomes, while at the same time building personal and community capacities, rather than dependency. Local cooperation and integration of services between government, business, the third sector and the community also offers efficiencies, while at the same time developing leadership, local ownership and the opportunity to have greater flexibility and innovation in approach (Breeze et al. 2013; Blond 2010).

In Australia, Melbourne, Brisbane and Perth have been leaders in drawing attention to the importance of neighbourhoods in urban land use/transport planning. In Melbourne, this was primarily through the work of the Ministerial Advisory Committee appointed to advise the State Minister for Planning on the city's new long term land use/transport strategy (MAC 2012)[2]. A demonstration of the level of interest in neighbourhoods for urban and transport planning was provided by the 2012-13 consultation process for that plan. Of all the ideas discussed during the

2 John Stanley was a member of the MAC; Janet Stanley was a contributing author for the Plan.

consultation process that was run by the MAC, the idea that created most interest was that of the 20 minute city. This was explained as a city in which most people would be able to undertake most activities needed for a good life within a 20 minute walk, cycle or public transport trip from where they lived. This idea had strong resonance with a wide range of stakeholders, many of whom queried exactly what it meant and how it might be delivered in their locality. The subsequent Plan Melbourne (State Government Victoria 2014) includes a chapter on liveable communities and neighbourhoods, which is unusual for long term city-wide strategies. Anthony Albanese, Federal Shadow Minister for Cities, has taken up the idea, modified somewhat to a '30 minute city' (perhaps with an inclination to under promise and over deliver).

This paper looks at the idea of the 20 minute city, as an expression of neighbourhood, in more detail than was presented in the Plan Melbourne work. Transport is a very important lever for taking action to achieve a city that consists of a series of smaller 20 minute cities, each of which might comprise one or more neighbourhoods. The paper focuses mainly on supportive public transport requirements in this regard but also looks in some detail at the role of walking. Walking is an area of growing policy interest internationally, is inextricably linked to public transport use and is closely associated with the idea of neighbourhoods (and 'walkable urbanism') and with health. Cities like Vancouver, for example, increasingly talk about public transport, walking and cycling mode shares in common. The paper also looks at urban densities that are likely to support more widespread achievement of a series of 20 minute cities and also briefly introduces some of the wider policy agenda items that will be needed to deliver successful 20 minute cities.

Section 2 offers some background thinking on what a 20 minute city might encompass. It explores the idea of neighbourhoods and explains why they are important. This leads to a Section 3 discussion of the role of built form and, in particular, the part that density plays in providing the foundations for an effective 20 minute city. Section 4 discusses public transport service standards that are likely to support achievement of a 20 minute city and ways that patronage can be increased on local public transport services, which are essentially bus services. It also discusses active transport (particularly walking) as an important element of neighbourhood accessibility. The low densities that exist across Australian capital cities contributes to lower public transport boardings per service kilometre than in higher density locations and poses the question of the best way to provide 'public transport' in relatively low patronage settings. This is an important discussion in Section 5, which includes ideas for taking a more integrated approach to local 'public transport' and broadening the conception of public transport. Section 6 presents the paper's conclusions.

2. The importance of 'local'

2.1 Spatial concepts

The paper refers to '20 minute city', 'communities' and 'neighbourhoods'. While there are no set definitions for these terms, this paper views neighbourhood as a local area, largely personally defined as where the resident has a sense of belonging. A community can, but may not, overlap with neighbourhood. It can refer to a group of people in an area or to a shared community of interest to which a person belongs. A 20 minute city refers to a larger area than a neighbourhood, perhaps an area with a five kilometre radius, as defined by a 20 minute public transport or bike trip. This area is likely to encompass a few communities and neighbourhoods.

Neighbourhoods are key building blocks to achieve a well-functioning city (Jacobs 1961). A well-functioning city facilitates wellbeing and is able to meet challenges and change through strong communities. Strong communities arise from well-resourced and well-functioning neighbourhoods. Such neighbourhoods will be good for people, the environment and economic participation (Stanley et al. 2014).

The 20 minute city needs to offer most of the services, activities and social infrastructure to meet essential needs: social inclusion, personal wellbeing, mental health and social equity; a sense of place and belonging; participation and choice; the ability to successfully adapt to external challenges; and the provision of some local employment opportunities. The ability to be mobile and to access friends, employment and activities is a requirement to achieve most of these needs. In line with this thinking, Ohland and Brooks (2013, p. 3) describe the elements they see are needed to turn neighbourhoods in to 'complete communities' as:

> *... a quality education, access to good jobs, an affordable roof over our heads, access to affordable healthy food and health services, the ability to enjoy artistic, spiritual and cultural amenities, access to recreation and parks, meaningful civic engagement, and affordable transportation choices that get us where we need to go.*

A 20 minute city requires a range of local activities and it requires local mobility choices, particularly safe walking/cycling opportunities and an adequate service level on local public transport (discussed in more detail in section 4). In many ways this is going back to the future, since cities were necessarily organised in this way for the 5,000+ years they existed prior to the widespread use of the motor car. The City of Vancouver, within the Greater Vancouver region, has pursued this approach for some time (City of Vancouver 2012, p. 18):

> *Much of Vancouver is built around the idea of being able to live, work, play and shop in the same neighbourhood, which allows people to easily walk or cycle for most trips , and to take transit when they need to travel a little further.*

That city has learnt from research by Zahavi (1979) and Marchetti (1994) on travel time budgets, and Duranton and Taylor (2011) on the traffic-generating effects of additional road capacity, how major new road capacity additions pose risks to the idea of the compact city. The absence of freeways in Vancouver stands in marked contrast to Australian cities, yet liveability is very competitive.

As our cities grow, good mobility opportunities and availabilities of local services and infrastructure can be best provided where urban densities are planned for this purpose, in an integrated land use/transport setting, thereby also reducing infrastructure costs and trip lengths (see Section 3).

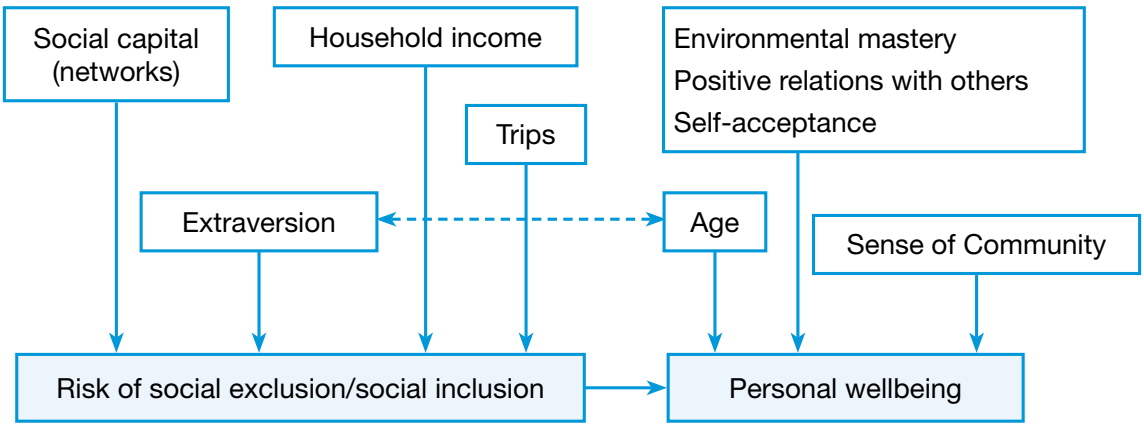
2.2 The role and value of mobility

Urban land use/transport strategies commonly seek to pursue triple bottom line economic, social and environmental goals, as elaborated in the BIC's Policy Paper 2 (Stanley 2014). With respect to the social inclusion element of this set of goals, a major Victorian study supported by BusVic examined which factors are important in facilitating a person to achieve social inclusion and wellbeing (Stanley et al. 2011). Risk of social exclusion was measured using the following dimensions:

- household income
- employment status
- political activity in 12 months prior to interview
- social support available
- participation in community events in the month prior to the interview.

Modelling revealed (Figure 1) that 'adequate' levels of household income, trip making (mobility) and social capital are all important for social inclusion; having an extrovert personality also helps. Social inclusion, in turn, is important for promoting personal wellbeing, as is attachment to community, environmental mastery (being able to manage personal space), good relationships with others and self-acceptance. A person is also more likely to achieve higher levels of wellbeing as they age.

Figure 1: The most critical factors to achieve social inclusion and wellbeing



Source: Based on Stanley et al. (2011)

Being socially included promotes wellbeing and this opens other opportunities for people, such as increasing the likelihood of finding employment. Trips both directly fulfil the need for inclusion and wellbeing, as well as promoting need fulfilment achieved as a result of the access to resources that travel can foster (Vella-Brodrick and Stanley 2013). The provision of a 20 minute city, which includes good quality public transport and active transport opportunities, should be particularly beneficial for people at risk of social exclusion and with low levels of wellbeing.

This model shown in Figure 1 could be extended to explain how some of the drivers of social inclusion and wellbeing might be achieved using the opportunities made available through the ability to be mobile. Thus, for example, without the ability to be mobile, it will be more difficult to obtain an education to gain the skills for work, to build social capital and connection to community, and thus achieve social inclusion and wellbeing. Transport has subsequently been shown as important for achieving other tools needed to maintain and build wellbeing. Vella-Brodrick and Stanley (2013) showed that mobility enhances mental health through enabling satisfaction of inherent psychological needs known to be important for mental health: environmental mastery, positive relations with others and self-acceptance. The fulfilment of these needs is vital to many other positive outcomes for individuals, such as improved health, vitality and motivation, as well as decreased anxiety (Deci and Ryan, 2000). Apart from the economic costs, Wilkinson and Pickett (2009) show that inequality, or having areas of disadvantage, reduces the wellbeing of all people in that society.

The results of an evaluation of a transport project called ConnectU, discussed in more detail in Section 5.2, also show that there are small but important improvements in attachment to community and the wellbeing of customers, particularly in relation to an improvement in personal rating of a purposeful and meaningful life, after they became a ConnectU passenger. These improvements are small but present, even though many of the passengers only took a small number of trips with ConnectU. This finding is important because it is often difficult for policy makers to initiate policy that increases a sense of community (Farrell et al. 2004). This research shows that, even if no new community initiatives are undertaken, merely facilitating mobility has a capacity building impact for individuals.

A person is thought less likely to be at risk of social exclusion when they are embedded in societal structures (family and friends, the community and society; Bronfenbrenner 1979), a theory supported by the empirical work reflected in the model in Figure 1. In the literature, social capital and sense of community is rarely linked with public transport, although Putnam (1995) notes an indirect association. He points out that two-thirds of car trips (in the US) involve 'driving alone' and this is increasing, and that the time and distance of commuting is increasing, with the consequence that time is reduced for community engagement. He recommends we should aim for less travel time and better design of communities to encourage more casual socializing. Urry (2002 p.265) argues that co-presence is necessary and that mobility is '… central to glueing social networks together' and that the development of social capital depends on the range, extent and modes of mobility to prevent social exclusion. He talks about the need for co-presence for the development of trust, often defined as a component of social capital. The neighbourhood and idea of a 20 minute city, are at the heart of these conversations about wellbeing and social inclusion.

Mobility is particularly important for those at most risk of social exclusion. A substantial proportion of Melbourne residents at high risk of exclusion reported they cannot do some activities because of transport problems (Stanley et al. 2010). The most frequent activities nominated were enjoyment, getting out and about and sporting activities. The value of these informal activities is greatly under-estimated by planners, transport planners and by the community transport system, yet they appear to be very important to people. When additional local bus services were provided in Pakenham (Victoria), under the Meeting our Transport Challenges program, increased mobility was linked with feeling good about the community (Bell et al. 2006). Almost half of the use of the new bus services was associated with leisure activities and socialising, in addition to 20% of passengers who used the new services to reach community activities and sport, 16% to get to work, 8% for accessing health services and 8% for education. These activities build social capital and sense of community and, in so doing, promote inclusion and wellbeing.

While the definition of social capital varies, the most common version identifies social capital as comprising networks of people, trust and reciprocity.

The network component of social capital can be disaggregated as:

- bonding capital - the extent of contact with close family, extended family, friends/intimates and neighbours, and
- bridging capital - the extent of contact with work colleagues and community groups (e.g. church, sporting, clubs, school, self-help or voluntary groups).

When this division was explored, it was found that trips are especially important for bridging social capital, but less important for bonding social capital (Stanley et al. 2010). When monetary values are applied, a unit increase in bonding social capital (as defined by Stanley et al. 2012) is worth about $37/day (or $13,500 p.a.) to that person, and a unit increase in bridging social capital (as defined) is worth about $43/day ($15,700 p.a.). These figures need to be treated with caution, due to assumptions made around this calculation, but they indicate the potential scale of benefit available from improving social capital. Greater confidence, however, can be given to the dollar value of connection to the community, where a unit increase in a person's 'sense of community' (as defined) is worth about $60/day (or $22,000 a year) to that person (Stanley et al. 2012).[3]

The value of these connections to people and the community goes well beyond the dollar value for individuals cited in the preceding paragraph. Improving an individual's social inclusion and wellbeing also benefits society as a whole. For example, gaining employment removes the cost to society of unemployment benefits. In addition, there are many other community costs forgone, such as in areas around health, mental health, substance abuse and family violence. There are also many benefits gained from a happy and healthy population, including increased volunteering and a population which is able to be innovative, responsive to emergencies, forward thinking and creative. These flow-on impacts of exclusion might be seen as external costs.

This analysis suggests that the way we are shaping our cities is also shaping life chances and is increasingly becoming a determinant of economic productivity. Both the quality and utilization of human capital will, in large part, depend upon how our cities facilitate citizens to be healthy and well educated, able to participate in the labour market and in social and civic life. Thus, a neighbourhood structure embedded in a 20 minute city, with good local and regional transport choices, is likely to promote many positive outcomes in terms of personal and societal wellbeing, as well as being cost effective to service and supportive of increased economic productivity.

This analysis suggests that trip making (as a reflection of the ability to be mobile) is:

- a direct source of social inclusion and wellbeing
- an input in some elements (such as income and connection to community) needed to achieve social inclusion and wellbeing
- important for maintaining and improving social inclusion and wellbeing
- a source of social capital and connection with the community, in itself, and
- an important input in economic productivity.

Public transport is particularly important in this mix for people at risk of social exclusion and diminished wellbeing that results there-from.[4]

Thus, there is clear evidence that mobility has a central role in social policy. Expenditure in improving transport mobility through improved infrastructure and increased service provision can be justified on social and health (physical and psychological) criteria and not just on economic grounds. It could be argued that the evidence on improvement of mobility options provided by the research reported above is far more compelling than evidence arising from the findings on neighbourhood renewal type programs, which tend to concentrate on personal deficits rather than policy deficits.

In short, neighbourhoods are fundamental building blocks for a strong and resilient community. If we get our neighbourhoods right, the city and its citizens and visitors will benefit and flourish. If we don't, then disadvantage will be further entrenched. How then, might Australian cities go about delivering a city that consists of a series of 20 minute cities, building on neighbourhoods? We examine this primarily in terms of actions that can be taken in the transport sector and in the built environment, with additional and complementary suggestions about social infrastructure. A particular focus on walking is included, since walking needs to be integrated more closely with our thinking about public transport (where there is strong co-dependence) and urban development. For example, Speck (2012) has noted how cities with high public transport use also tend to be highly walkable, many built form factors that support public transport use also being supportive of walking, which suggests that measures to support one or other of these travel modes will also tend to support the other (public transport trips usually require a walking component at each end of the trip). Cycling tends to be more self-contained.

3 This value sounds high but achieving a one point increase in 'sense of community' is very hard.

4 As well as for its role in supporting major urban nodes, particularly CBDs.

3 Built form

3.1 The Five Ds

The probability of achieving a city that substantially consists of a series of smaller and vibrant 20 minute cities, building on neighbourhoods, will depend to a significant extent on the nature of that city's built form, as well as available travel opportunities. A growing body of research has demonstrated that there are links between travel and the built environment, characteristics such as higher density and mixed-use development (for example) tending to be associated with a higher share of trips by walk, cycle and public transport.

The most comprehensive review of connections between travel and the built environment is the meta-analysis by Ewing and Cervero (2010), who talk about the five 'Ds' of built form in terms of how they impact on car travel distances (vehicle kilometres of travel, or vkt):

1. **Density** - higher densities support more local activity opportunities, higher public transport service levels and walking opportunities. Destination density is particularly important.
2. **Diversity of land uses** makes it easier to undertake activities locally, associated with ideas such as mixed-use development and jobs/housing balance.
3. **Design** - particularly creating interesting places where people want to be, are safe and feel safe.
4. **Destination accessibility** - ease of access to trip destinations and developing activity nodes and corridors.
5. **Distance to transit**, supported by fine-grained pedestrian opportunities, embedded in intersection density and street connectivity. For example, Ewing and Cervero (2010) find that halving the distance to the nearest transit stop is associated with a 29 per cent increase in trips.

Ewing and Cervero report impact elasticities, which show the relative sensitivity of response variables (primarily vkt in their case) to changes in a range of causal influences (the respective Ds). This is relevant to calculating the broad magnitudes of changes that might be required to manage or reduce aggregate vkt, which was the main interest of their work. Most reported elasticities are quite small, those with respect to neighbourhood level land use variables (e.g., population density, land use mix, street network connectivity) being typically between -0.02[5] to -0.12 and those with respect to regional access to employment being larger, at between -0.05 and -0.2 (Boarnet 2011). Prima facie this might suggest that not much can be done at the neighbourhood level, through land use, to promote the 20 minute city. However, the combined effect of a number of measures can be significantly large, particularly when regional and local measures are both used.[6] More specifically, the prospects for achievement of a city that comprises a series of 20 minute cities will be enhanced if there is:

- a high proportion of metropolitan, regional and sub-regional activities and services concentrated in high to medium density mixed-use nodes/corridors, with good freight access
- fast and reliable trunk public transport connectivity between these centres[7] and along trunk feeder corridors, with good connections to the various neighbourhoods
- a wide range of activities available for people to undertake in their local neighbourhood/20 minute city
- a range of options for easy, safe and convenient movement around that neighbourhood/20 minute city on foot, by bicycle or on public transport and for connecting to trunk public transport corridors and regional cycle-ways.

The resulting land use pattern will be good for public transport use, for walking and for cycling, with flow-on benefits in terms of reduced congestion, cleaner air, lower greenhouse gas emissions, fewer road accidents and improved health and wellbeing.

Policy packaging needs to play a central role in the land use/transport space to deliver an increased likelihood of achieving a series of 20 minute cities. These policy packages need to encompass both regional and neighbourhood level considerations, underlining the vital importance of taking integrated approaches across land use and transport, including both top down (regional) and bottom up (neighbourhood) perspectives. Higher development densities (particularly destination densities), a focus on mixed-use and greater street network connectivity, for example, will be supportive of greater public transport use, walking and cycling.

Compact pedestrian (and bicycle-friendly) mixed use development, containing medium to high density residential, office and retail uses within walking distances of fast and frequent public transport, is sometimes called Transit Oriented Development (TOD) or Transit Supportive Land Use. Ontario has produced comprehensive, high quality guidelines that advise on ways of maximising the likely effectiveness of such developments, in terms of increasing use of public transport and active travel (MOT Ontario 2012). A number of studies have shown how such developments can substantially reduce car use (see, for example, SYDEC 2007; Nasri and Zheng 2014). However, TOD type initiatives have generally not been very successful at increasing the supply of affordable housing, being frequently positioned at relatively high price points (Ingram et al. 2009; Speck 2012; Robert Cervero pers. comm.),

5 An elasticity value of -0.02 suggests that doubling the causal variable in question would lead to a 2 per cent decline in vkt (if the elasticity in question was for vkt).

6 For example, Bento et al. (2005) showed that the estimated effect of moving a sample of households from a city like Atlanta (733 persons per km^2; 7000 rail miles of service/km^2; 10,000 bus miles of service/km^2) to a city with the characteristics of Boston (1202 persons/km^2; 18,000 rail miles of service/km^2; 13000 bus miles of service/km^2) is a reduction in annual vehicle travel of 25 per cent. This reduction is driven by differences in public transport supply, city shape and especially in population centrality (essentially compactness).

7 Which include the CBD. The connectivity needs to be both radial and circumferential, particularly in the larger cities.

reflecting (for example) capitalization of accessibility benefits. Australian development experience is similar.

Housing affordability is a growing community and policy concern in many cities and should be an integral part of planning that is directed towards delivery of the 20 minute city, to help ensure that adverse consequences for housing affordability are not an unintended outcome of such efforts. Planning initiatives that substantially lower formal on-site parking requirements, for example, are likely to support affordability and be consistent with the relatively greater use of PT and active transport by residents in such developments.[8]

3.2 Built form and walking

This section introduces some of the recent built form/walking research findings, because of the important role walking will play in achievement of a 20 minute city, both as a stand-alone mode of travel and as a way of accessing other modes, particularly local bus.

In transport planning and policy conversations, built form has primarily been a focus in terms of its longer term impact on vehicle kilometres of motor vehicle travel and the associated external costs of such travel (particularly congestion, greenhouse gas emissions and air pollution), the latter impacts motivating much of the relevant research. In health circles, the built environment has been of interest because of its possible connection with health outcomes, another externality, particularly in terms of active travel and the associated beneficial impacts on mitigating obesity and air pollution. For example, Frank et al. (2006, p. 75) observe that:

> *The literature shows single-use, low-density land development and disconnected street networks to be positively associated with auto dependence and negatively associated with walking and transit use. These factors in turn appear to affect health by influencing physical activity, obesity and emissions of air pollutants.*

Linkages between built form and walking (and, to a lesser extent, cycling) are thus important in both transport and health policy conversations.

Leinberger (2009) uses the term walkable urbanism to describe a situation where you can satisfy most everyday needs, such as school, shopping, parks, friends, and even employment, within walking or transit distance of home (Leinberger 2009, p. 5).[9] This is very similar to the concept of the 20 minute city, with the latter having a specific time boundary specified. Leinberger goes on to distinguish between regional serving walkable urban places and neighbourhood serving walkable urbanism. Leinberger identifies regional serving walkable urban places with (1) the traditional downtown or CBD, (2) downtown adjacent areas, (3) suburban towns, (4) greenfield towns and (5) redeveloped regional and strip malls. Neighbourhood serving walkable urban places provide what Leinberger (2009) calls the bedroom communities that support the regional serving places.

Based on his analysis of Washington DC, Leinberger estimates that about 300,000 people form the market for a regional serving walkable place, with a core size of 200-500 acres. Interestingly, in his address to the Australian ADC Forum 2010 Cities Summit, Professor Ed Blakely of University of Sydney argued that 250,000-300,000 people was sufficient number for a city that would provide most of the activities and services most people might require.

About half the trips in Australian capital cities are 5 kilometres or shorter. This is usually an easy trip length for a bicycle or bus trip and provides an indicative catchment scale for a 20 minute city. A hypothetical 5 kilometre radius urban area, settled at a dwelling density of 20 dwellings per net developable hectare, with net developable hectares constituting about 70% of gross area and an average of 2.6 persons per dwelling (as is common in middle Melbourne, for example), would include almost 300,000 people, in line with Leinberger and Blakely's indicative figures, providing a broad dimensioning of a possible 20 minute city. Public transport use should be effective in this context (this is elaborated further in section 4).

Why is walkability important?

Some authors looking at linkages between the built environment and health, such as Handy et al. (2006, p. 55), do not mince words: *"these days it is hard to miss that Americans are fatter than ever".* In looking for solutions, many researchers have focused on neighbourhood walkability, looking not only at potential health benefits but also at complementary benefits in areas such as lower transport externalities, crime reduction, lower rates of mortgage foreclosures, higher social capital and sense of community and increased neighbourhood housing values (see, for example, Gilderbloom et al. 2015). Leinberger and Alfonzo (2012) identify significant economic benefits from walkable places. Their economic analysis finds that:

- more walkable places perform better economically (e.g., higher office and retail rents, higher retail sales, higher housing values)
- residents of more walkable places have lower transport costs and better public transport access but higher housing costs. Good walkability was associated with US$301.76 per month higher residential rents and sale prices US$81.54 sq. ft. higher than places with only fair walkability (as measured) in their research. At a local Melbourne level, in 2013, buyer's advocate firm Secret Agent revealed prices can rise as much as A$298 per square metre in Melbourne for a five-point rise on an area's 'Walk Score', on a scale of 0-100[10])
- residents of places with poor walkability are generally less affluent and have lower educational attainment than places with good walkability.

They further identify the tendency for gentrification of more walkable places, highlighting the housing affordability and equity issues associated with higher density developments, such as TOD. In cities like Sydney and Melbourne, trends

8 Ontario's Transit Supportive Guidelines (MOT Ontario 2012) would benefit from the addition of a housing affordability focus, underlining the importance of broadening the approach to land use/transport integration.

9 This is contrasted to driveable suburbanism.

10 http://www.news.com.au/finance/real-estate/melbourne8217s-most-walkable-suburbs-scoring-a-pricey-advantage/story-fncq3gat-1226694398352

would be similar, with higher income, access rich, high land/housing cost and walkable inner areas contrasting with outer suburbs that are generally relatively access poor, are typically occupied by residents with lower incomes, poorer walkability and 'drive-in/drive-out' lifestyles.

Speck (2012) has observed the important role walkable neighbourhoods, with active street life, play in attracting talented millennials. The tendency for many of this generation to defer car ownership, or choose to not own a car, aligns with this desire for walkable neighbourhoods.[11] Importantly, Leinberger and Alfonzo (2012) and Gilderstrom et al. (2015) both note the converging housing demands in the US of many of the substantial ageing baby boomer generation and their millennial off-spring, highlighting a strongly growing future demand for neighbourhoods with characteristics such as vibrancy, safety, walkability, environmental quality, mixed uses and proximity to jobs and schooling. This convergence is described by Speck (2012) as a 'demographic perfect storm'.

Some Melbourne Evidence

Using the same data set as was used for Figure 1, Delbosc and Currie (2011) showed that there was a statistically significant difference between the mean walking distances from dwellings to a business zone between inner Melbourne, outer Melbourne, fringe areas and regional areas (the sample included the Latrobe Valley), walking distances increasing as you move through these locations. They further showed that there was a statistically significant decrease in the availability of public transport service as you move from inner to outer to fringe Melbourne. Those living in outer Melbourne, fringe Melbourne and regional Victoria (Latrobe Valley) were more likely to have frequent difficulty undertaking activities because of transport problems than those in inner Melbourne, particularly sporting/leisure activities, enjoyment (getting out and about), visiting friends and relatives and getting to work (Delbosc and Currie 2011). Wellbeing was adversely affected (statistically significant) by such difficulties. This data confirms that outer urban and fringe areas are likely to need most attention in terms of the 20 minute city.

Table 1 adds to the analysis by Delbosc and Currie (2011). It shows mean values for a range of the independent variables included in Figure 1, from the same data set, categorised according to whether the survey respondent's dwelling location was walkable, or not, to a business zone (i.e. whether or not it was within 500m of such a zone). A key point that stands out in Table 1 is that, in most cases, respondents in walkable areas (as defined) score higher (on average) than those in non-walkable locations in terms of sense of community (important for well-being), bonding social capital and bridging social capital (important for reducing risk of social exclusion). The results for inner/middle Melbourne are somewhat unexpected, with respondents living in walkable locations scoring (on average) a little worse than those in non-walkable locations, but the differences are not significant. One possible explanation is that city residents have communities of interest rather than communities of location and therefore view community somewhat differently to those living in a more dominant residential location.

Table 1: Walkability, sense of community and social capital: some Victorian survey data (2008)[12]

Location	Mean Sense of Community Score		Mean Bonding Social Capital** Score		Mean Bridging Social Capital *** Score	
	Walk (under 500 metres)	Non-walk* (Over 500 metres)	Walk	Non-walk*	Walk	Non-walk*
Metro						
Inner/middle	54.88 (120)	55.83 (70)	18.33	18.8	6.95	7.77
Outer	57.74 (244)	54.47 (339)	19.77	18.15	7.76	6.94
Outer Interface	55.66 (134)	54.09 (248)	19.12	18.15	7.46	6.94
Interface remote	58.62 (17)	52.20 (51)	19.65	17.16	8.69	5.84
Regional	57.11 (9)	53.52 (219)	19.78	17.72	7.33	6.26
Full sample	55.26 (374)	54.09 (629)	18.78	18.08	7.46	6.80

Notes:

*Non-walk is where the respondents live more that 500 metres from a business zone.

** Bonding social capital is the development of reciprocity, social networks and trust between immediate family and close friends

***Bridging social capital is the development of reciprocity, social networks and trust between more emotionally removed people, such as colleagues at work.

Source: Authors' calculations, based on data in ARC Project data set.

11 This millennial behavior is one explanation for the concept of 'peak car' or 'peak travel', discussed (for example) by Millard-Ball and Schipper (2010).

12 Walkability for Table 1 was defined as being within 500 metres of a B1Z planning zone, or not.

Interface Councils ring outer Melbourne. People who live in 'non-walkable' locations in these areas, particularly in the more remote parts of the Interface Council areas, tend to be lowest (on average) for sense of community,[13] bonding social capital and bridging social capital. Bridging social capital is particularly important for social inclusion (Stanley et al. 2010). People living in regional areas away from public transport are the second most 'at-risk' group. In terms of delivering positive outcomes from the 20 minute city, these results show some of the benefits of walkability and again confirm the importance of targeting outer and middle suburbs, particularly areas where walkability is poor. This will tend to correspond with areas where public transport availability is also relatively poor.

Implications

Speck (2012) sets out his General Theory of Walkability, which provides a useful framework for thinking about how to develop walkability in our cities. He suggests that, to be chosen, a walk has to satisfy four conditions. It has to be:

1. **Useful** – e.g., most aspects of daily life are located close by and arranged in a way that walking serves them well, which links to the idea of the 20 minute city. Parking requirements should be reduced in TOD areas.

2. **Safe** – the street/pathway has been designed for safe pedestrian movement (e.g. protection from motor vehicles) and for pedestrians to feel safe.

3. **Comfortable** – buildings and landscape shape streets into 'outdoor living rooms', as distinct from wide-open spaces that fail to attract pedestrians (building on the internationally recognised work of Jan Gehl, who is well-known in Australian capital cities – see, for example, Gehl et al. 2006).

4. **Interesting** – footpaths are lined by unique buildings with friendly faces and signs of humanity abound.

Some cities have adopted guidelines that promote walkability, reflecting principles such as these and going to considerable detail in terms of practical design application.

3.3 Densities and public transport use

Ewing and Cervero (2010) show that residential density is not a major driver of public transport use but destination density is important. Other things being equal, however, higher urban residential plus job densities will increase walking and public transport use (and cycling), shorten average trip lengths and will reduce the external costs of motor vehicle use. As a result Australian capital cities are generally seeking to lift their densities and become more compact.

The BIC's Policy Paper No. 2 drew on the work of Newman and Kenworthy (2006) and pointed out that 35-40 residents plus jobs per hectare[14] has been suggested as a threshold for effective public transport provision. Stanley and Hensher (2011) showed that boarding rates of about 8 passengers per service hour are sufficient for an economically warranted local route bus service, recognising the substantial social inclusion value of these services and also allowing for congestion cost savings. This boarding rate assumes that about one in three users are at risk of social exclusion from mobility circumstances (a typical Melbourne-wide rate for bus) and that the at-risk people are from average income households. Figure 2 extends that work and shows that, if the at-risk group is two in three bus users, as is likely in new fringe suburbs (and in regional towns), and household incomes are 10% less than average, about in line with the fringe of Melbourne (as an example), then economic benefit benchmark break-even boarding rates of about 6/hour apply for services costing $100/hr, as shown in Figure 2, based on social inclusion benefit values alone. This implies 5-6/hr allowing for congestion benefits.

Boarding rates that should be expected at an activity intensity of 35-40 persons plus jobs per hectare should support a 30 minute frequency on local services against this boarding rate benchmark. For example, Sydney PT mode shares in middle suburban areas where these densities are achieved are typically 11-14 per cent of total trips, on an SSD basis. These densities, if contiguous, would support a 20 minute city of 200,000+ (5 km radius). The BIC Policy Paper 2 also showed, however, that there are substantial parts of Australia's capital cities that fall short of this density level, particularly in outer areas but also in parts of the middle suburbs. Pursuing development strategies that accelerate achievement of this density benchmark should be a priority.

It is arguable, however, that public transport service frequencies of 20 minutes are more consistent with the idea of a 20 minute city than 30 minute frequencies. Ontario's Growth Plan for the Greater Golden Horseshoe 2006 (which includes Toronto) targets a minimum density of 50 residents plus jobs per hectare in designated Greenfield areas, equating this with 22 dwelling units/ha[15], and then linking this to 20-30 minute bus frequencies (Ontario MOT 2012; MEDEI 2013). Higher minimum densities are set for nodes.

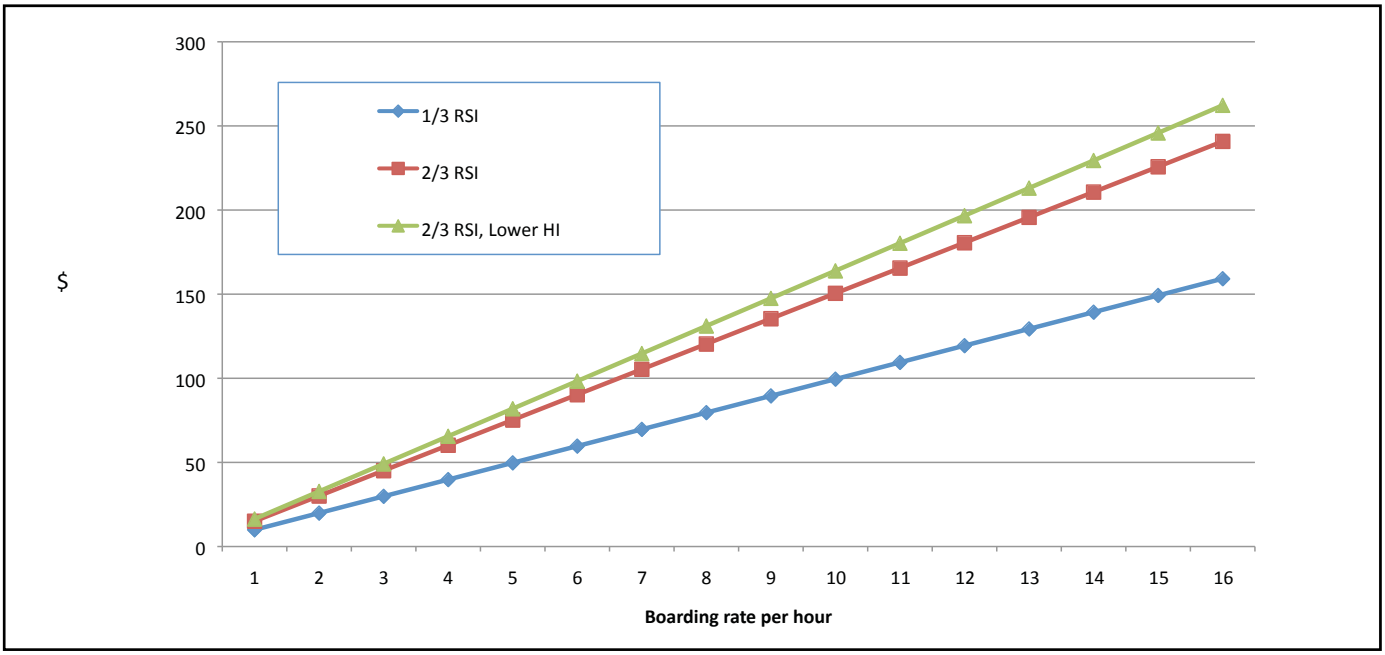
Lifting minimum density targets from ~35-40 to ~50 residents plus jobs per hectare would support a public transport service frequency more aligned with the idea of a 20 minute city (based on Ontario experience). Many middle suburban areas already meet this density benchmark and other parts are close. An accelerated urban infill program would support more widespread achievement of the 20 minute city, while improving the balance between jobs and residential locations (which helps to reduce trip distances and increase walking and cycling as well as PT use). Growth area minimum density targets would need to be lifted if a target at this level (~50) were to be adopted.

13 The standard deviation for sense of community score across the full (1003) sample is 6.78 (mean score 54.59), which about equals the difference between the mean value for walkable and non-walkable remote Interface Council areas. Similarly the standard deviation for the bridging social capital score over the full sample is 3.04 (mean score 6.98), which is also similar to the difference between the mean score for walkable and non-walkable in remote Interface Council areas.

14 This counts the number of people who live in a defined area and adds the number of jobs in the same area. For example, Boroondara has around 40 (residents plus jobs)/gross ha or 56/net developable ha, with over two thirds being residents.

15 This dwelling rate suggests that little provision is made for jobs in the Ontario people plus jobs per hectare benchmark. A surprisingly low 2.2 persons per dwelling is used to derive the 22 dwellings, much lower than in outer suburban Australian areas but closer to inner area Australian dwelling occupancy rates.

Figure 2: Benefits of route bus services attributable to social inclusion*



Notes: * In the legend, RSI = proportion of users at risk of social exclusion from mobility issues; HI = household income at ~90% of mean. $20 trip value is assumed for an 'at-risk' person from a household with mean household income, based on Stanley et al. 2011, and $5/trip for all other trips.

3.4 A look at Melbourne's growth areas

An exercise was undertaken to explore what setting a target of 50 people plus jobs per hectare might imply for the growth areas of Australian capital cities. To shed light on this issue, a detailed analysis was made of some of the growth suburbs on Melbourne's fringe. While this is only one city, the issues raised for growth area planning are relevant elsewhere.

The metropolitan growth areas of Melbourne have accommodated just over half the city's new house construction over the past decade or so but the recently released planning strategy for metropolitan Melbourne has targeted reducing this share to 39%, recognising the importance of achieving a more compact city (Plan Melbourne, 2014, p.62). The Ministerial Advisory Committee for Plan Melbourne wanted 30% but this was not accepted. A 30% growth areas share would mean a bigger emphasis on inner and middle urban infill, where most jobs are located.

Strategic planning for Melbourne's growth is mainly conducted via the Precinct Structure Planning process established by the Metropolitan Planning Authority (MPA, former Growth Areas Authority). Precinct Structure Plans (PSPs) provide a strategic framework to guide the development of greenfield areas and a statutory framework intended to ensure that important community and development infrastructure are appropriately located and co-ordinated, and to ensure that opportunities to achieve a diversity of land uses such as local town centres and sporting facilities are not precluded from areas.

Among other things, the PSPs set a requirement for a minimum average housing density to be achieved across the planning area of 15 dwellings per net developable hectare, a tighter definition than is used in the Ontario benchmark.[16] Typically around 65%-70% of a given greenfield area is available for development, which includes land for the provision of schools, active and passive public spaces, local or neighbourhood town centres, and the street network which includes local access streets and connector streets but not arterial roads. Land available for residential development (i.e. Net Residential Area) is typically around 55%-60% of the gross area.

In an Australian context, the idea of increased growth area residential housing density does not appear to have been explicitly linked to actions designed to reduce private vehicle use. Rather than direct policy interventions structured around the idea of coordinating higher density living options with higher frequency public transport provision and increased walkability, planning authorities prefer to allow 'the market' to respond to a relatively benign requirement to achieve the average housing density outlined in the planning ordinance. This typically results in residential estates in Melbourne's growth areas developing in their early stages at conventional housing densities on single dwelling allotments at an average of 15-16 dwellings per developable hectare. Sites close to future local activity centres, such as shops, schools and neighbourhood parks, are often required to develop at higher densities of between 22 and 25 dwellings per developable hectare, which translates into groupings of small lot and townhouse sites.

While PSPs do a good job in terms of establishing an urban structure planned around future uses, particularly

16 The Net Developable Area (NDA) is the area of land available for development after encumbrances such as arterial roads, conservation areas and drainage are excluded from the gross or total precinct area. The main difference we can see with the Ontario measure is that it does not remove arterial roads and railway corridors, which typically account for about 7% of the gross area in Melbourne's PSPs.

non residential land uses, they have not been successful in establishing the conditions needed to achieve substantially higher average residential densities. Free market house and land prices generally do not approach the levels (>1.3 times the median house price ratio) at which the market will move at any scale to higher densities (Property Council of Australia 2012). National Economics (2010) suggests that the lack of local services and community infrastructure in outer areas, together with the poor accessibility that results from lagged provision of transport infrastructure and public transport services, contributes to this price gap. The accessibility of a full range of services and infrastructure, including travel choices and employment opportunities, is substantially greater in areas that reach the higher price points. The associated higher densities show that some people are prepared to make a dwelling size trade off and pay a premium to achieve better accessibility and services. The alternative is usually lower priced dwellings with poorer accessibility and services.

Lifting densities in growth areas requires, inter alia, earlier provision of services and better accessibility, including better public transport. This, in turn, would be more feasible to provide if development was not happening on so many fronts at the same time. MPA (2014) indicates that the Authority has approved 38 PSP's, with a further 11 currently awaiting approval, 10 under preparation and 11 in the 'pre-planning' process. This suggests around 4,500 hectares of land potentially under development at one time, which makes timely provision of a full range of community infrastructure and services, including public transport, problematic. Sequencing of new greenfield development should be aligned with the capacity to provide and fund a wide range of infrastructure and services (e.g., schools, shops, active open spaces and other community facilities, especially public transport and walking facilities) at an early stage in estate development and this should be a high priority for state and local governments.

Lagged provision of public transport in new residential estates leads to low income households having little choice but to rely more on motor vehicles for meeting their mobility requirements, putting pressure on household budgets and inhibiting subsequent use of public transport (once household cars have been purchased). Public transport services should be available at an early stage in estate development, to reduce pressures for vehicle ownership and help reduce the external costs of car use. Limiting the number of active development fronts will mean target population plus jobs densities can be achieved more quickly over feasible service areas, supporting better public transport services.

Notwithstanding this concern about the number of development fronts in metropolitan Melbourne, the current growth area PSPs look unlikely to be able to achieve a density of 50 residents and jobs combined per hectare. 10 PSPs were assessed and evaluated based on their projected built form outcome. Using dwelling forecasts derived from the known developable areas listed in the PSP land use budgets, it was estimated that, at full development and assuming the precincts develop fully in accordance with the PSP, land within the PSP's will achieve an average dwelling density of 15.7 dwellings per Net Developable Hectare. This result suggests net dwelling densities would need to be increased to about 18 dwellings per net developable hectare to be able to reach 50 people plus jobs per hectare (based on higher dwelling occupancy rates than in the Ontario work).

4. Public transport service requirements

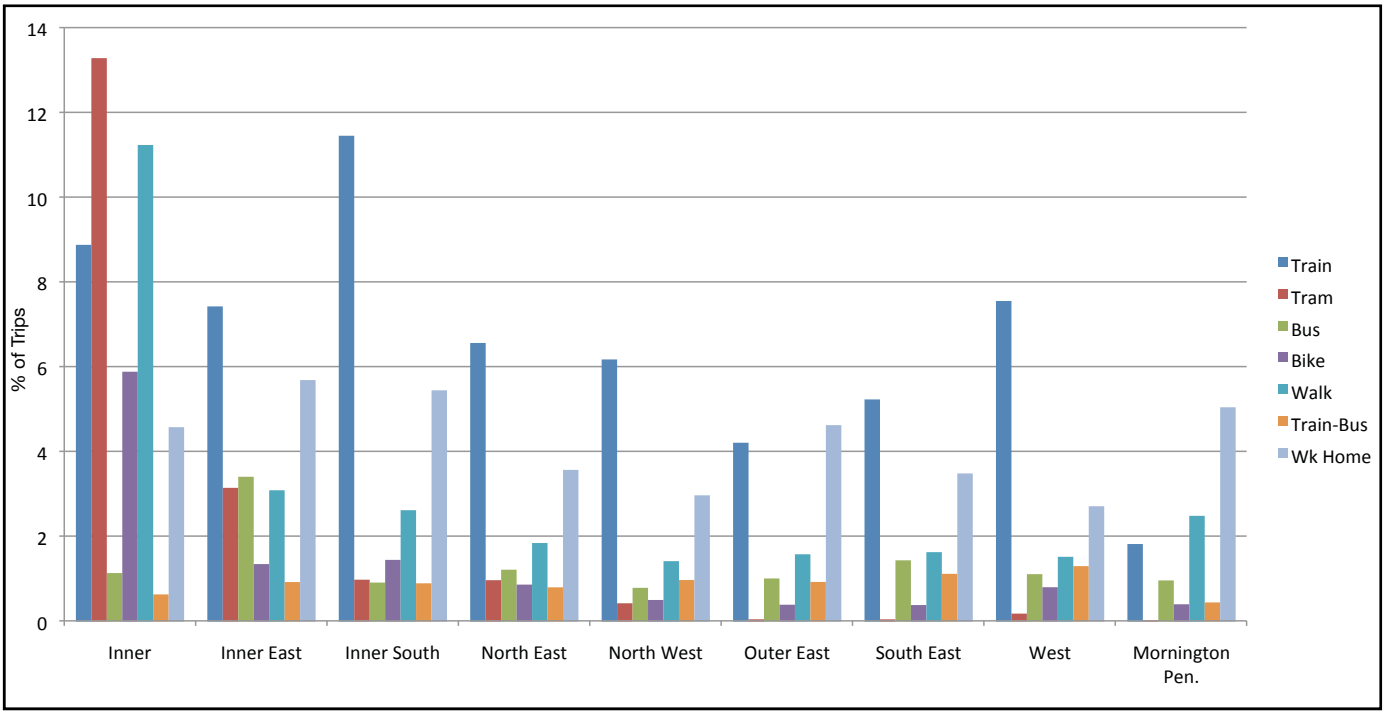
4.1 Broad setting

Figure 3 shows that nearly half the journeys to work in Inner Melbourne (a relatively high density, mixed-use area) are already undertaken either by public transport (about one in four trips), bicycling (6%), walking (11%) or involve working at home (5%), all likely to involve relatively short trips (particularly the last!). However, this share falls off to 10-15% in total across these modes (including work at home) for outer suburbs, where densities are lower and mixed land uses less common.[17] These numbers indicate that, to deliver a series of 20 minute cities for work trips in a city like Melbourne, the major focus will need to be on built form and access opportunities in middle and outer suburbs.

The same general pattern applies for other trip purposes. For example, in Melbourne, average travel times for various trip purposes tend to increase as you move from inner to middle and then outer suburbs, although local provision of educational services in outer suburbs breaks this pattern (for this trip purpose). Average trip times for 'shopping' and 'other' trips are less than 20 minutes across the whole city, which is prima facie promising in terms of the 20 minute city concept, but the numbers will be dominated by car travel (not intended to be part of the 20 minute city concept). 'Work' and 'educational' trips in all broad segments of Melbourne exceed the 20 minutes threshold, on average, and so do 'social' trips for all except the inner area.

The same general findings would arise for all Australian capital cities, indicating that that there is much to be done to make our major cities function as a series of 20 minute cities. This work needs to focus on accessibility, which involves both the distribution and intensity of land uses/activities throughout our cities, particularly the middle and outer areas, and the availability/quality of travel opportunities. This, in turn, implies a need to focus on links between travel and the built environment to identify those measures that are most likely to be supportive of moving towards the 20 minute city. Section 4 considers such matters.

Figure 3: Journey to work in Melbourne by area (percent share, excluding car).



Source: Derived from data in Department of Transport (2014).

17 This is, in part, a matter of urban location economics but is also influenced by policy opportunities, particularly in areas such as transport (e.g., public transport service availability, frequency and operating hours) and also with respect to some service location decisions (for example, in the education and health sectors careful location choices can help promote neighbourhood job opportunities).

4.2 Improvements to grow local public transport use

If public transport service is provided, solid patronage levels will encourage service continuity and, if volumes are sufficient, service improvement. A wide range of initiatives can be used to promote use of local public transport. Ensuring a suitable service frequency and span of operating hours within 400 metres walking distance of most residences is the key starting point. This can be supported by, for example:

- linking transit routes in new residential developments directly to routes serving existing urban development, without gaps or circuitous routing. This should include provision of service early in the development stage of a new estate
- providing bus priority treatments at intersections and along main trunk corridors, to improve speed and reliability (this will encourage transfers from local to trunk services at interchange points)
- ensuring good service marketing and customer experience, throughout the journey and in journey planning.[18] For example, as buses do not operate on fixed rails, route information is vital. Neighbourhood local buses need good information on routes, timing, good way-finding signage and trip-planning tools, as well as mode connections. The electronic signalling of time, as used with SmartBus, is a valuable information source
- a range of fare offerings. For example, Toronto offers a day pass which can be used any day for a month, which is very convenient for visitors and casual users. Fares which include bike sharing, parking payment, short distance fares, for example, could be offered
- transit and active transport supportive land use initiatives, such as focussing urban growth around transit nodes and along transit corridors, providing a full range of land uses in these locations (e.g. jobs, retail, recreational, personal business, cultural, institutional, etc),[19] providing good connectivity for walking and cycling access to transit (including minimising unbroken block lengths and avoiding the need for back-tracking), avoiding impermeable street frontages. Section 3 explores such built form matters associated with walking in particular, in more detail
- linking transit to neighbourhood open space and natural areas.

MOT Ontario (2012) provides further examples. By supporting use of public transport and active transport, such initiatives will help to build strong, healthy communities.

4.3 Minimum service levels

If mobility is important for social inclusion, what can we say about public transport service levels that might support such inclusion, an important part of planning for a 20 minute city?

Public transport services can be broadly classified as mass transit, where the emphasis is on longer distance trunk movements, and local transit, where the focus is on providing a local access service, with connection to trunk services. Mass transit is about getting in and out of your neighbourhood and/or 20 minute city; local transit is about getting around your neighbourhood/20 minute city.

The current interest of public transport service providers in many cities in concentrating services in the trunk mass transit movement category creates risks in terms of accentuating problems of achieving the 20 minute city, because it downplays the importance of complementary local transit. It also risks increasing social exclusion. This service trade-off is currently exercising the minds of transit providers in Toronto (at Metrolinx) and Vancouver (at Translink), with whom two of the current authors have recently discussed this issue. As noted in Section 3.3, the minimum boarding rates of about 5-6 passengers per service hour are sufficient for an economically warranted local route bus service, if about two in three users are at risk of mobility-related social exclusion, recognising the substantial social inclusion value of these services. Section 3 discussed development densities that should support consistent achievement of this boarding rate, or higher.

To provide a social safety net public transport service for social inclusion purposes in the middle and outer suburban parts of Australia's largest cities, where the greatest urban needs exist with respect to achieving a 20 minute city, local bus services must be the prime focus. No other mode has the service economics to do the job. The aim should be to provide a service level that enables most people to do most of the things they want to do, most of the time, without needing a car, subject to meeting the boarding rate benchmark (5-6/hour). This is likely to require a 30 minute minimum service frequency on local services for about 15-18 hours a day, with increased peak frequencies being justified if loadings suffice. Vancouver's community shuttle services,[20] for example, typically operate at frequencies of between 30 and 60 minutes, depending on demand.[21] We have argued above, however, that a 20 minute frequency would better align with the intentions of a 20 minute city.

These local services need to be complemented by trunk services operating at the same, or higher, frequencies and over more direct routes, with a synchronised timetable. This mass transit/local transit combination will give people the certainty that they can achieve their trip purpose(s) without long waits, when they need or wish to travel. It will also reduce the need for car ownership.

18 Train stations have many features not included or not routinely included at bus stops: seating, shelter, lighting, information, often toilets and food outlets (Daniels and Mulley 2013). Better bus stops are offered in some international cities. In Portland, Oregon, bus shelters were fitted with solar lighting, better customer information, and safe street crossings to reach stops (Hansen 2010).

19 Subject, of course, to market realities about financially viable land uses.

20 A brand name they have used for what are essentially local services.

21 Translink BC is currently reviewing its service operating standards.

5. Low patronage services

5.1 Densities and minimum service levels

There are substantial parts of Australia's capital cities that fall short of having 35-40 residents plus jobs/hectare (Stanley 2014). These areas will struggle to achieve efficient public transport service levels at 20-30 minute frequencies and will, in consequence, tend to be highly car dependent. A land use planning priority should be to increase resident numbers and jobs in most of these areas, towards reaching these density figures and higher, with 50 residents plus jobs per hectare being a preferred target for a 20 minute city. Achievement will support improved public transport service levels, reduce the external costs of car use and support more efficient urban settlement patterns.

Census data suggests that, in outer areas, jobs are relatively scarce compared to population numbers. For Melbourne, Figure 4 shows that in 2011 there were about 1000 jobs per 1000 residents in what we call 'inner Melbourne', excluding City of Melbourne (i.e., the Cities of Yarra, Port Phillip and Maribyrnong). This ratio drops to 440 (rounded) in middle/outer suburbs (including Greater Dandenong and Frankston) and 330 in outer suburbs. The lowest ratio for any metro Melbourne municipality in 2011 was Melton, at less than 200 jobs/1000 residents. The vast majority of jobs in outer suburbs will be population serving and, while the jobs/population ratio has increased in outer areas, manufacturing job losses in recent years will have put downward pressure on the ratio. Outer suburbs that sustain jobs/population ratios much above 300/1000 in the coming years will be faring relatively well in terms of local employment.

Converting this discussion to jobs/ha, it is notable that, for example, Boroondara (which includes the relatively affluent areas of Camberwell, Kew and Hawthorn) had only about 13 jobs/gross ha in 2011, or about 18 if net developable area is 70% of gross area, with Maroondah having a similar number of jobs/NDha. Job densities will be higher, of course, in business centres. Fringe areas have very small job numbers per net developable hectare, such that the large majority of threshold residents plus jobs/ha in outer areas will need to be derived from increasing residential densities.

One way to encourage job growth in outer areas is to focus on building a good neighbourhood structure, building social capital and sense of place and developing a sense of community. This is likely to encourage local purchasing and to support local job opportunities, because of local purchasing but also from the role of local networks in opening up access to jobs. Focussing suitable employment opportunities in or adjacent to neighbourhood centres (e.g., schools, health facilities) can help to create a small local economic cluster that might lead, for example, to extra employment opportunities in the business services area and in local retail. Such initiatives will not have dramatic additional employment generating effects but, when jobs are scarce, every bit helps. This can be supported by providing good local public transport and walking opportunities. This adds up to a focus on improving place and the opportunities for a good life that are available at neighbourhood level (including affordable housing), as well as providing opportunities to easily connect by public transport, walking and cycling to activities, including job opportunities. This, in turn, needs to be supported by connecting middle and outer suburban neighbourhoods to strong employment clusters by fast and frequent trunk public transport, a critical element in sharing employment opportunities across the city.

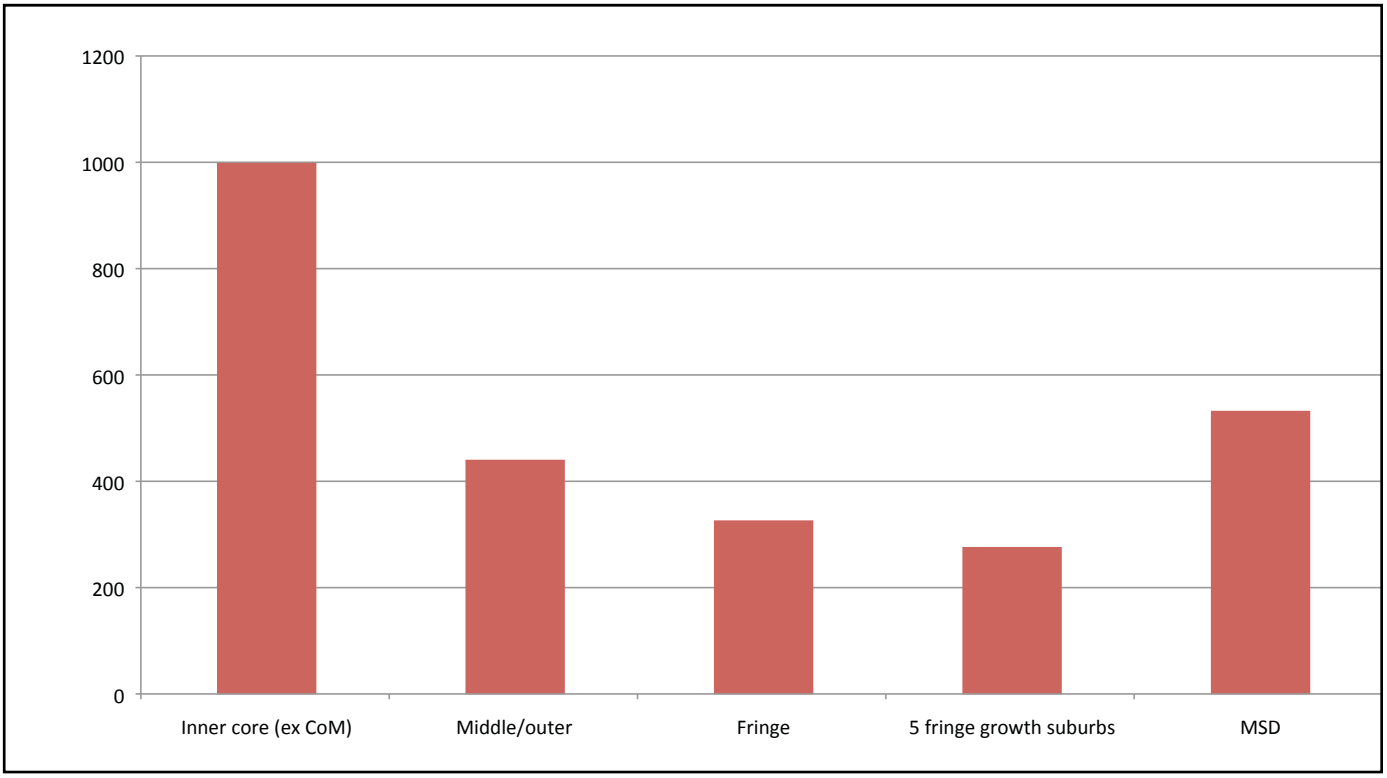
Increasing densities will take time. In the meantime, what public transport service levels should be provided in lower density areas?

The target minimum boarding rate of about 5-6 passengers per hour, which is sufficient to economically justify a route bus service, can be considered in multiples. Thus, for example, if an hourly service attracts 5-6 or more boardings per hour, this meets the target. If two 30 minute frequency services each meet the target, then a 30 minute service would be justified. Individual services can be subjected to this test. If a service fails to meet the benchmark boarding rate, options include:

- replacing it with a lower cost service, which might involve (for example) using smaller buses, shifting to a more demand responsive service, implementing a social enterprise type approach, as is currently being trialled in Warrnambool, or some combination thereof. These options are considered in Section 5.2
- continuing the service, particularly if deleting the service would lower boarding rates on other services. For example, running additional later services under Victoria's Meeting our Transport Challenges served to increase boardings on existing services, because of the greater flexibility that later services provided (Loader and Stanley 2011). Knock-on effects are to be expected if any service is removed and need to be considered in assessing the case for removal/continuation. A better approach may be to market the service more intensively and offer other improvements, even a more frequent service!

Under Meeting our Transport Challenges, implementation of minimum hourly bus service frequencies for about 15-18 hours a day on weekdays and Saturdays, with slightly shorter service spans on Sundays, demonstrated that this should be considered as a minimum acceptable service level; anything less is not sufficient to encourage a reasonable base level of use (Loader and Stanley 2011). 30 minutes is a preferred 'minimum' for social safety net purposes, with 20 being more consistent with the idea of a 20 minute city.

Figure 4: Jobs per 1000 population across Melbourne, 2011. (Authors' calculations from NIEIR data base information)



5.2 Improving public transport service efficiency in low volume settings

Smaller buses

Capital costs of route buses typically account for about one quarter of total costs. Smaller buses have lower capital costs and, prima facie, might be expected to reduce total service delivery costs. Translink in Vancouver has analysed this question in some detail, concluding that (Brian Mills, Translink, pers. comm.):

> *...most of the benefits are from reduced operating cost and not from reduced capital cost. On capital, the vehicles are less expensive to buy, per vehicle, than standard transit buses but have a shorter life-cycle. As a result the annual debt service cost is comparable to that of a standard bus.*

Operating cost savings in Vancouver arise on the fuel side, in maintenance and on wages, where a separate industrial agreement has been negotiated for drivers of smaller vehicles.

The major problem with smaller buses is that if passenger loads at any time exceed the capacity of a smaller bus, then another bus (or other vehicle) is needed.[22] If this necessitates acquisition of another vehicle, costs will clearly increase.

If a spare vehicle is available or is purchased in on an 'as-required' basis, then the need for (and marginal cost of) an additional bus would be reduced. Either way, the potential cost savings, from a smaller bus, are likely to be quite small.

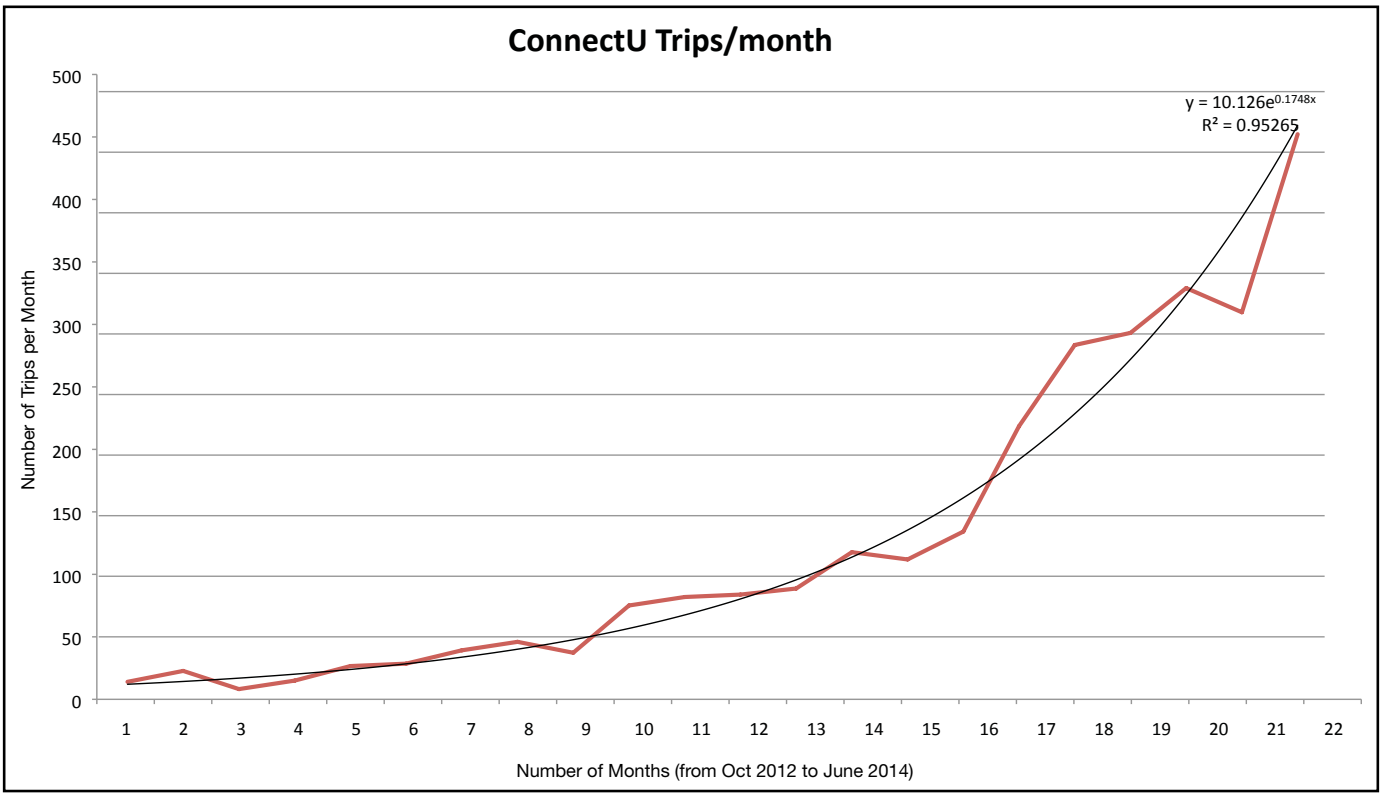
Demand responsive/flexible services

Demand responsive and flexible transit services are advocated by some analysts in low volume settings. Demand responsive services typically have no set routes, customers being picked up and dropped off at those locations and times agreed with the service provider (just like a taxi service). Flexible transit involves a variation from a main route and stopping pattern, such as a deviation to drop-off or pick-up a passenger. Various evaluations of such schemes have been reported and they typically reflect the inherently costly nature of more closely aligning service provision with the requirements of individual clients. Such a demand responsive service may also lead to difficulties in building passenger numbers amongst those who wish to regularly use a time-tabled bus service, to meet time commitments.

Labour primarily drives the cost of various forms of public transport service, accounting for about half the cost of a route bus service (for example). The key to providing cost-effective public transport services in a low patronage setting is thus labour cost, not vehicle cost. Vancouver has introduced an industrial agreement that allows drivers of some vehicles to be paid at a lower rate than drivers of others. This is in the nature of a training wage. It was introduced in a context of service expansion, such that existing drivers were not disadvantaged. This possibility should be explored for Australian cities, in a context of increasing the provision of local bus services.

22 Or people could simply be denied a trip, which our research on social exclusion shows has a high cost (~ $20/trip foregone, on average, for a person on average income, or higher if income is lower).

Figure 5: ConnectU patronage



Social enterprise model: ConnectU

BusVic research in Warrnambool (Stanley and Stanley 2004) showed substantial unmet travel demand from people who were largely unable to use existing public transport, due either to the absence of a service and/or to personal difficulties in use, and without another ready form of mobility. At the same time, the research identified underutilised transport assets in the community, particularly community buses and cars owned by service providers, local government and other agencies. ConnectU, a local social enterprise using volunteers, commenced in 2012 to address these issues in Warrnambool and surrounds. The service seeks to provide improved local public transport services, including transport service for those with mobility difficulties, through coordinating local transport. Where possible, people are moved to existing public transport or another form of independent transport. The ConnectU service also provides a little extra assistance if needed, such as taking the person in to a medical appointment.

Figure 5 shows the enormous growth in the number of clients carried since commencement of ConnectU, averaging 17.5% per month. This considerable growth has occurred without the service being advertised, because ConnectU is unwilling to turn away clients where it lacks the resources to provide service. If ConnectU is able to secure sustainable funding, a target of 1000 trips per month is in reach in 2015.

This service currently has a net cost of about $23.80/trip, or $28.10 gross cost/trip (one-way). Given customer characteristics, the present service provided by ConnectU has much in common with Canada's specialised transit services. In 2012, the net cost of Canadian specialised services was C$24.17/trip, almost identical to the Connect U net cost,[23] given similar exchange rates between the two currencies. ConnectU has, therefore, reached the stage of operating in accordance with external cost benchmarks.

Examining ConnectU's current operation, the benefit cost ratio sits at 2.8 (Wines et al. 2014). This estimate is conservative due to the many intangible benefits that have not been included in the assessment. Such benefits include forgone costs to society, such as where a medical condition is prevented, or savings in Newstart payments, as the person has been able to obtain a skill-based education, therefore possibly future employment, due to the ConnectU service. In addition, the benefits to volunteers, such as increased social capital and connection to the community, have not been included in the analysis.

Given the growth trend in passengers, costs per trip could be lowered by further expanding the service. If more underused community transport vehicles from the area were made available to ConnectU, service expansion could take place at very low marginal cost. Passenger numbers could probably be doubled, with net costs closer to $16/boarding. This is likely to be well below the costs of community transport services and is similar to the cost/boarding of local public transport with 6 boardings/hour. If this cost level can be achieved with a primarily volunteer-based service, it confirms the 5-6 boardings/hour as a benchmark minimum for mainstream local public transport service.

The ConnectU model should be tested for extension of service provision in low volume outer urban settings, as a complement to (not replacement for) the route bus service.

23 Data sourced from the Canadian Urban Transit Association data base.

Operating it in this way would save some back-office costs and reduce the costs per passenger carried. It would widen the range of vehicles available to the bus operator to provide service and open up the possibility of better matching vehicles with demand levels, from increased fleet diversity (i.e., cars, people movers and small buses could be available).

This approach to service provision in low volume settings is consistent with conclusions reached by the UK House of Commons Transport Committee in its very recent report on Passenger transport in isolated communities. That Committee concluded (UK House of Commons Transport Committee 2014, p. 3):

> *'Total transport' involves pooling transport resources to deliver a range of services. For example, it might involve combining hospital transport with local bus services. That new approach could revolutionise transport provision in isolated communities by making more efficient use of existing resources. We recommend that the DfT initiates a large-scale pilot to test the concept in practice.*

Warrnambool is already well down this track.

A similar approach has been proposed by the Ontario Ministry of Transport (MOT Ontario 2012, p. 105):

> *All public transportation services within a community should be coordinated to expand or provide more efficient transit service. This can include coordination between conventional or specialised agencies; long term care agencies; social service agencies; hospitals, ambulance and patient transfer operators; school boards and school bus companies; intercity bus companies; taxi operators; and volunteer groups.*

The UK PTEG report (2014) recommends the establishment of a 'Connectivity Fund', with contributions from a range of government departments, such as health and education, thus recognising the importance of transport in achieving the desired outcomes of these departments. It would be reasonable to ask other organisations to share transport costs to better enable their passengers to access their services, in recognition of the value that transport offers to these services and their client populations, as detailed earlier. However, the Auditor General of Scotland and the Accounts Commission (2011) notes the difficulties that can be associated with convincing agencies to release some control and to work at breaking down silos of responsibility for the greater good, as there are long established practices and boundaries between different policy areas. A similar challenge has been found in Warrnambool. As evidenced with ConnectU, such a total transport arrangement has a number of advantages beyond offering a transport service in a low density area. It offers a service to those who have few mobility options and are at risk of social exclusion due to infrequent travel, whatever the housing density. Despite the presence of both route bus and community transport services, an examination of transport in Warrnambool (population ~35,000) found that there is a potential market of unmet trips amounting to perhaps 150,000 trips a year (Stanley & Stanley, 2012). The groups of people with unmet travel needs include those not connected with a welfare agency, elderly frail people, those on a low income who cannot afford a car, single parents, those with chronic or short term medical problems and, particularly, youth.

The local mobility coordination function should be performed by the entity best placed to do this in any local context. In many cases it will be the local route bus operator, who will most likely be the largest service provider and should be well placed to provide a cost-effective coordinating service. A larger service provision role by the coordinator is likely to be efficient, given scale economies. Thus, for example, in Warrnambool the ConnectU model should be incorporated in to the route bus service, and transport tasks undertaken by other non-specialist transport providers should also be coordinated with these broader transport services. The 'bus operator' could then provide a client transport service for those agencies, on a fee-for-service basis, covering matters similar to those suggested by the Ontario MOT (MOT Ontario 2012, p. 105):

> *The level of coordination between agencies should be tailored to local conditions, and can include shared information or referral, joint acquisition and sharing of supplies and services, use of excess capacity, joint use of resources, and centralised services for intake and dispatch.*

6. Conclusions

Neighbourhoods are key building blocks to achieve a well-functioning and sustainable city, and strong communities arise from well-resourced and well-functioning neighbourhoods. Such neighbourhoods are good for people, the environment and economic participation. They help meet essential needs. The ability to be mobile is a fundamental ingredient required for achievement.

The concept of a 20 minute city is a useful way to think from the 'bottom up' about a sustainable city. A 20 minute city implies a population catchment of 200,000+ within a 5 km radius. It requires a wide range of local activities plus local mobility choices, particularly an adequate local public transport service level and safe, convenient walking and cycling opportunities. Local public transport service frequencies, which will largely be bus services, should achieve 30 minute headways within 400 metres of residences, for about 18 hours a day, with 20 minutes being preferable to support a 20 minute city. These local services need to be co-ordinated with high frequency trunk services. In outer growth areas, where delivery of the 20 minute city is most problematic, these public transport services should be available at an early stage in the estate development cycle, to reduce the need for multiple car ownership.

To enhance opportunities for delivering a city that consists of a series of smaller 20 minute cities, which include a range of local activities and supportive mobility options, minimum density benchmarks should be set, particularly for outer growth areas. This minimum should be no less than 35-40 residents plus jobs per net developable hectare. Development densities lower than 35-40 are not conducive to 30 minute public transport service frequencies over extended hours and are a barrier to progressing towards a 20 minute city. A target of 50, rather than 35-40, is consistent with public transport service frequencies of 20- 30 minutes, which is more supportive of the 20 minute city and will better support strong communities, social inclusion and wellbeing of residents.

Densities in outer growth suburbs will reach these levels more quickly if the number of active new development fronts is managed in line with the capacity for early funding of infrastructure and services. This will avoid the time lags in provision that currently disadvantage residents in many outer growth areas and often result in the purchase of additional cars.

Given the time it takes to influence land use, improved local public transport, walking and cycling opportunities should be a high and early priority for delivering Australian cities that are comprised of a series of 20 minute cities. The generally low densities in middle and outer suburbs, where the availability of public transport is relatively poor, means that this is where most attention needs to be focused. Earlier provision of public transport, in conjunction with higher density targets, will provide a foundation for the 20 minute city.

If public transport boarding rates on particular local services regularly fall below 5-6 per hour, then alternative service delivery methods should be explored, with the Warrnambool ConnectU social enterprise model worthy of more widespread trialling. This trial is moving towards the 'total transport' concept promoted recently by the UK House of Commons Transport Committee. Formal adoption of minimum public transport service boarding rates, with agreed processes for working through alternative service options, would help to de-politicise service planning and improve service efficiencies.

Achieving Australian capital cities that function as a series of 20 minute cities should lead to a number of desirable outcomes: reduced air pollution and greenhouse gas emissions, reduced congestion, better health, improvements to wellbeing and social inclusion, stronger social capital, improvements in the quality of local community and associated economic and social opportunities for people, now and in the future.

Image adapted from the Sheridan Station 20 Minute Neighbourhood Implementation Strategy[24]

24 West Line Corridor Collaborative, 2013, "Sheridan Station, 20-Minute Neighbourhood Implementation Strategy", http://www.westlinecorridor.org/20MinuteNeighborhood/

Appendix 1
Visual Representation of Connecting Neighbourhoods: The 20 Minute City Possible Governance Framework

The BIC, in developing this policy paper, looked at a range of policies, strategies, programs and investments that are currently in place, have been previously implemented or considered including some new ideas, with a view to presenting a possible governance structure to deliver connected neighbourhoods and the 20 minute city concept. The governance flow chart on page 25, is a visual representation of this. The aim is to add to the national debate on the Federal Government's role in the growth and development of our cities and how we move people, including public and active transport.

"Connecting Neighbourhoods: the 20 minute city", presents a range of programs and investment within a policy framework that encompasses transport and infrastructure networks and strategic land use planning.

Below provides a brief explanation of the Policies and Strategies, Program and Investments elements in the governance flow chart. Further information and detail is available by contacting the BIC.

Policies and Strategies

Infrastructure Australia: National Infrastructure Plan

The National Infrastructure Plan to provide funding for Public and Active Transport Infrastructure.

The National Infrastructure Plan:

> Identify and assess road congestion "Hot Spots" that incur high productivity losses.

> Invest in infrastructure through the 'Unlocking Our Roads: National Program for Reducing Congestion', referred to later in this appendix.

Infrastructure Australia Urban Transport Strategy

This strategy outlines assessment criteria that can be applied to investment in urban transport infrastructure projects.

These assessment criteria should be applied in the evaluation (pre and post build) of public and active transport infrastructure projects.

Modified criteria for regional infrastructure projects can be developed on the basis of those outlined in the strategy.

COAG Criteria for Capital City Planning Systems

The COAG Capital City Planning Systems Criteria agreed between Federal, State and Territory Governments provides a set of guidelines for the development of strategic plans for major cities and growing regional centres.

Our Cities, Our Future—A National Urban Policy for a Productive, Sustainable and Liveable Future

The Our Cities, Our Future policy document developed by the Major Cities Unit within the Federal Department of Infrastructure, Transport and Regional Development provides a foundation for the delivery of connected neighbourhoods and the 20 minute city concept.

Creating Places for People—an Urban Design Protocol for Australian Cities

The "Creating Places for People - an Urban Design Protocol for Australian Cities" was developed in 2011 by a range of not for profit organisations, all Governments (except NT), and all members of the Federal and State Planning Officials group. This design protocol should be used to provide design principles for urban and regional development and renewal projects.

Programs and Investment

Connecting Neighbourhoods – the 20 Minute City suggests two key programs and one investment fund to drive the key outcomes for a 20 minute city:

> National Public and Active Transport Infrastructure Fund.

> Unlocking Our Roads: A National Program to Reduce Congestion.

> Stronger Neighbourhoods Program.

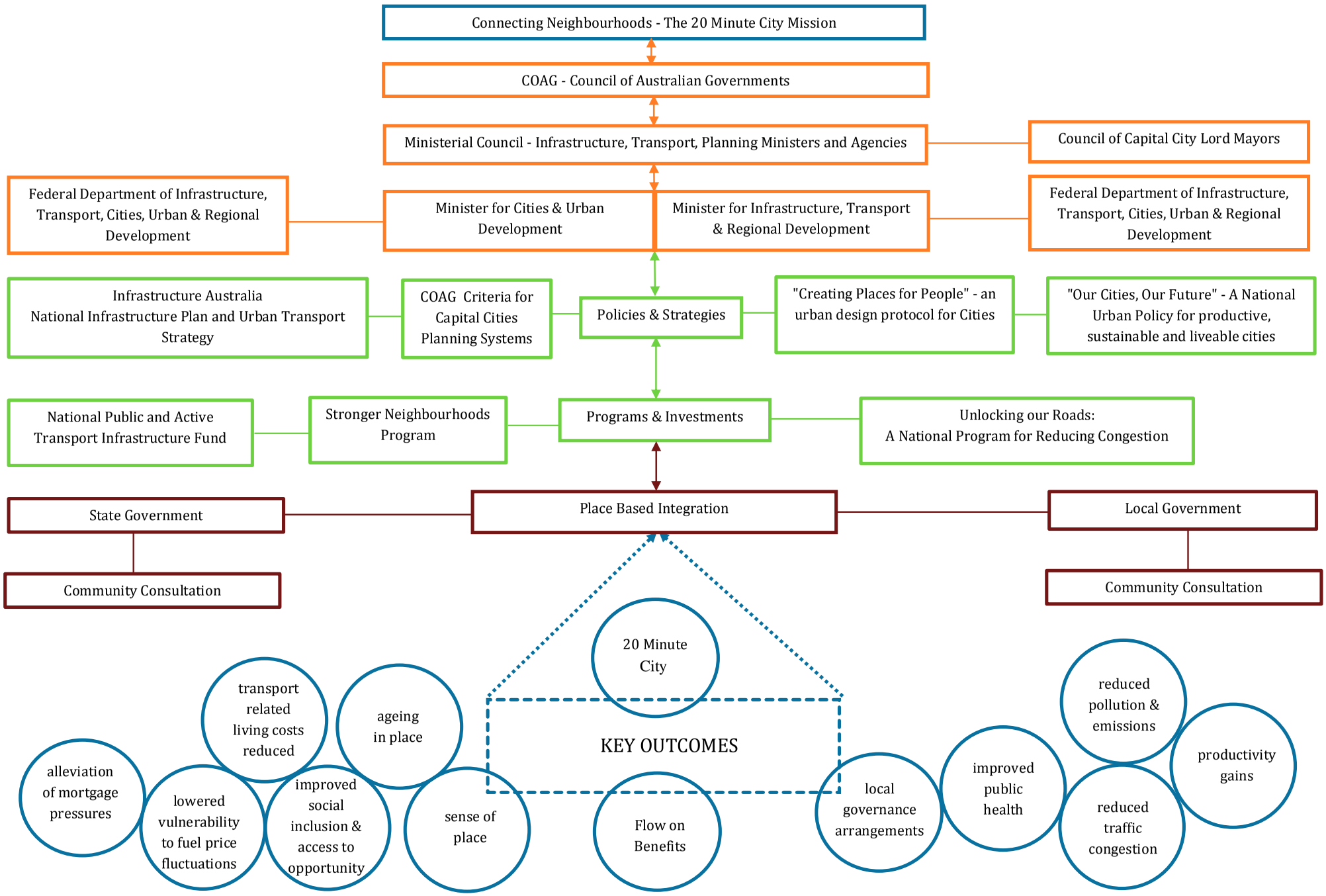
National Public and Active Transport Infrastructure Fund

The National Public and Active Transport Fund could:

> Provide funding to State and Local Government public transport systems in areas of identified need.

> Deliver start-up capital and investment into public transport projects designed by State and Local Governments.

> Provide funding for identified areas of need to increase service frequency and reliability and reduce travel costs.



Source: Apps/Neelagama 2015

Stronger Neighbourhoods Program

The Federal Government supports local communities by facilitating best practice land use and transport integration.

The Stronger Neighbourhoods Program could include:

> Support for State, Territory and Local governments in meeting the challenges of improving the quality of life in our capital cities and major regional centres by providing support for planning and design of projects and funding of demonstration projects.

> Support for State, Territory and Local governments to plan and help deliver employment opportunities close to residential areas in growing areas of Australia's major cities.

> Regional community and development funds to strengthen community outcomes in regional centres.

Projects that could be supported by the Stronger Neighbourhoods Program

> Projects that deliver urban and regional development and enhancements which facilitate Transit Oriented Development.

> Demonstration projects that feature best practice innovation in architecture, renewal and development for capital, major and regional cities.

> Strategic planning focused on integrated transport and land use plans.

> Precinct planning focused on integrated transport and land use plans.

> Design projects that promote public and active travel network planning efficiency.

> Corridor planning and protection for future urban and regional growth areas.

> Feasibility assessment studies for rapid transit projects.

Unlocking our Roads: A National Program for Reducing Congestion

Traffic congestion has significant impacts across the economy, environment and society.

Unlocking Our Roads is a National Program for reducing congestion in Australia's major cities and regional centres to fit within a broader Connecting Neighbourhoods package of policies, strategies, programs and investment.

Unlocking Our Roads uses five measures that fit together to form a National Program:

> Measure 1 – Identify the congestion reduction value of existing and future transport infrastructure investment.

> Measure 2 – Develop a national congestion hotspots program.

> Measure 3 – Encourage travel demand management strategies.

> Measure 4 – Promote travel behaviour change programs.

> Measure 5 – Tax and financial incentives for increasing public transport patronage.

Place Based Integration

Place-based integration is the integrated planning of services such as land use, transport, housing and health at a local level, which may be a neighbourhood or 20 minute city, as distinct from planning of these functions at a wider level, such as city-wide or state-wide, where there may be functional integration but silos are more likely.

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