RMIT UNIVERSITY | Centre for Urban Research

Quarterly internal update
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NEWSLETTER no 08

Early delivery of equitable and healthy transport options in new suburbs: Critical reforms and tools

Source: Nearmap and PSP Melton North

Welcome

Welcome to the eighth newsletter of the "Early delivery of equitable and healthy transport options in new suburbs: Critical reforms and tools" project. This internal newsletter is to update RMIT's project partners on activities both undertaken and planned, and to report preliminary insights. This project is funded by RMIT's Urban Futures Enabling Capabilities Platform, the Victorian Planning Authority, the City of Casey, the City of Wyndham and Stockland Corporation.

Activities this quarter

In the last few months the project team has kept the focus on the modelling work and alternative funding options. We've also continued with the analysis of the resident interviews. Work across the three work streams "Policy and process analysis", "Funding approaches and modelling" and "Resident Research" has included:

- Further development and discussion of the public and active transport scenarios of low, medium and high quality, in relation to different stages in development for the active transport network with relevant stakeholders
- Collection and aggregation of costs for transport scenarios
- Work on the 'Funding Working Paper'
- Participation in webinars on the impact of COVID-19 on mobility, transport and urban development, impacts of active transport and effecting change in sustainable transport.
- Organisation of project workshops and seminars in November and December.

Some preliminary insights from the resident interviews

Housing affordability and investment

One reason for buying in the specific greenfield areas was low house prices: 85% of survey respondent said that this was important or very important for their decision to move. Some interviewees stated that they couldn't afford anything else; for others it was a trade-off between house size and location. As they wanted or needed a 'big' house they moved further out. Others again could have afforded higher prices but preferred to use their money for other items, for example for investment properties.

"So for the price of what we wanted to spend, if we stayed in the area that we had, we could have had a small townhouse with a little courtyard. But having dogs we knew that wasn't possible." BM – Allura

"When we first bought, basically this was the only area we could afford." KF – Selandra Rise

"We looked at a lot of retirement places that were closer to the city, because I'd lived in the city, I had worked in the city. But they weren't really in my price range for what I could get for my house that I had. What they had close to the city was much more, it wasn't affordable. Whereas here coming further out, I could afford to buy this and have some money left over." LS – Selandra Rise

"And because personal financial goals are different, that's where I chose not to spend a lot of money to move closer to the city, so I can free up that borrowing capacity to invest. And the trade-off is that I have to travel a bit." KS – Allura

Access to train stations

From the resident survey we know that access to train stations is to a large extent by car with half of the respondents almost always driving to the station and three quarters driving occasionally to almost always. 4% of respondents cycle to the station occasionally to almost always and 30% of respondents use the bus occasionally to almost always. 53% never use a bus to go the station.

Reasons cited in the interview are for example the distance to a bus stop, the time the bus (or drive) takes and the waiting time involved.

"Yes, I drive to Cranbourne Station. (…) Initially I used to use the bus. But what was the problem is for some reason the train and the bus wouldn't sync properly. So, I would reach Cranbourne from work, say around 6:30, but the next bus will be another 20 minutes away from that. And if I have a car I could reach it like under seven minutes. It's a lot of time wasted over there. So that's why I came back again for the car." BK – Selandra Rise

"So, my husband (…) works in the city. So, I drop him off and then he takes the train. Or he bikes. (…) He enjoys the biking component because you get there quick. Because if I go drop him off, pick him up, I could be stuck in traffic for 45 minutes. Just from here to Williams Landing." KI – Allura

Update from the "Modelling stream"

Our modelling work has included development of low, medium and high-quality scenarios for public and active (walking and cycling) transport.

For public transport, the scenarios will include different levels of service frequency, connectivity to destinations such as activity centres and train stations, and 'coverage' in the sense of residential population within walking distance of stops. Active transport scenarios will provide for differing levels of connectivity within the estate and to nearby destinations. Higher levels, for instance, could include paths for both practical and leisure use, for a higher standard of cycle path construction, and for connectivity to a greater range of destinations.

Modelling some scenarios requires assumptions about the extent of development that has occurred. For example, more paths must be constructed to serve an estate that is 100% built than one that is only 50% built - though establishing connectivity between disconnected parts of a 50%-built estate could benefit from early construction of some paths that would otherwise remain uncompleted until later.

From examining developer staging data, supported by ground-truthing using tools such as Google Earth's historical imagery, we found in each of Allura and Selandra Rise that around 30% of the residential land was developed every 18-24 months, in the approximate order illustrated in Figure 1. Hence, we have created our modelling for low, medium and high scenarios at 30%, 60% and 90% of development.

Figure 1: Development stages at Allura and Selandra Rise

Update from the “Modelling stream” - continued

Focusing on the public transport scenarios, interesting issues arise in assessing the quality of services when considering speed, directness and ‘coverage’. Direct routes along main roads provide access to railway stations and other destinations more quickly than meandering routes that wind around an estate, but at the cost of requiring people to walk further to reach a bus stop. The direct routes may be preferable for those requiring speed, and indeed some research finds that people will walk further to get to a more direct and fast service; whereas, meandering routes suit those with mobility constraints. For an individual estate, both needs can be met by a shuttle that winds around the estate then travels directly to a station; but such routes downplay the importance of connectivity between estates. A route that meanders through multiple estates will be very slow for those at the end of the line.

‘Coverage’ is measured in Planning Scheme requirements for new subdivisions as the percentage of residences within 400m walking distance of a bus stop. This is a broadly-used measure, but does not account for the likelihood that people would be prepared to walk further for a faster and more frequent service. Figure 2 illustrates some of the trade-offs between directness and coverage, by showing several possible bus route configurations, and their respective coverages, for Allura. The existing routes serve only a small part of the estate. Adding a kink to an existing route and a new meandering route (Alternative 1) could place almost 80% of residences within 400m walking distance of a stop. A new direct route (Alternative 2) would provide faster trips, but people would need to walk up to 600m to achieve a coverage percentage

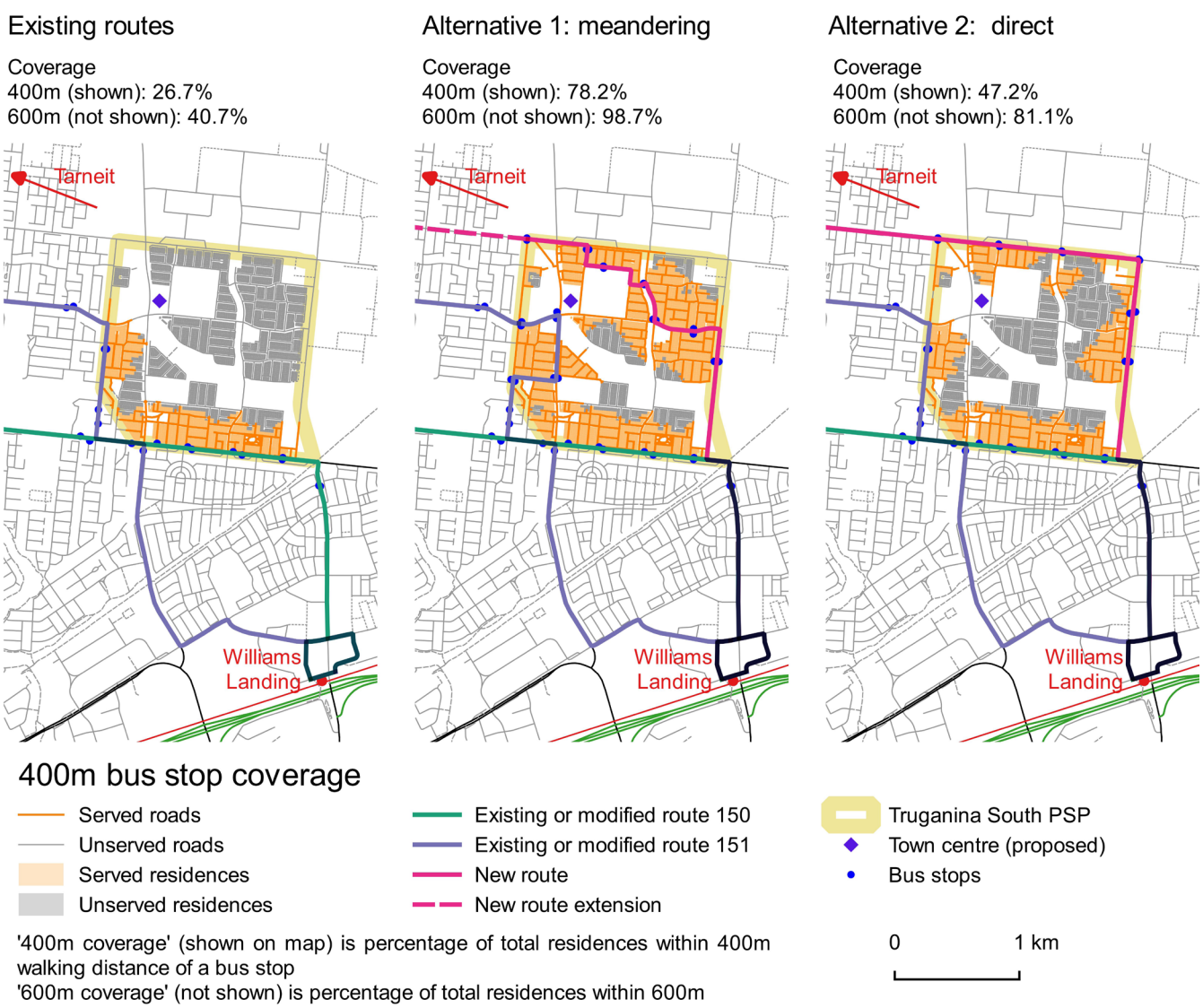

Figure 2: Possible configurations of bus routes at Allura, and resulting ‘coverage’

Overview of community transport

Community transport is another transport option, mostly understood as services that are not for profit, based on community need, and consisting of targeted and flexible services, often organised by local communities (e.g. local government or voluntary organisations) rather than transport authorities (Mulley et al. 2020; Mulley &Nelson 2012; Mulley et al. 2018). Community transport may be, and often is, demand-responsive with use of technology (e.g. through apps) facilitating the operation of community transport.

Australian community transport tends to focus on provision of transport for frail or elderly community members and funding has been more geared towards these groups. In comparison, North America and the UK community bus services are often provided for all community members, in areas lacking conventional public transport and fare charging is allowed for both target clients and general public (Mulley & Nelson 2012).

In Australia, community transport is generally organised/ funded by the State, although there is also an Australian Community Transport Association and many smaller providers deliver the actual services. Community transport more or less started in NSW where from 1986 it has been substantially funded by the Home and Community Care (HACC) program. As NSW funded 40% of the program – with the rest funded by Federal government – interest in community transport also increased (Denmark & Stevens 2016). Community transport in NSW is a mix of paid and volunteer drivers, using a mix of vehicles (e.g. car, small bus) for either general (any purpose, such as attending appointments/visits) or specific (e.g. group shopping) trip types (Mulley, Nelson & Wright 2018).

In Victoria, the HACC program never had a transport sub-program, and community transport developed much more strongly as services provided by non-for-profit organisations or charities. Increasingly, local governments are involved in the provision of community transport. Community transport in Victoria is provided largely by volunteer drivers, however, fees or fares can only be charged if the operator has accreditation (Denmark & Stevens 2016).

With the roll-out of the NDIS funding regulations have changed. Whereas previously block funding was provided to community transport providers, who then served all desiring the service, the funding is now going to users, and NDIS clients have to 'pay' full cost from their NDIS funding. This means users can choose the service they want to use and it may become cheaper for them to use taxis instead of community transport services (Denmark & Stevens 2016). As a consequence, community transport services could lose cross-subsidies that were built into the system, however, they are also freed from restrictions to serve only a designated group, and could increase their passenger group (Mulley, Nelson & Wright 2020).

In growth suburbs community transport services could be utilised to improve the provision and coverage of transport services, if the general public transport network should focus on providing more direct services with shorter distances between larger destinations. For example, if about 75% of dwellings have access to direct bus routes within 400m, community transport could be deployed to provide access for the remaining 20-25%.

Sources:

Denmark, D & Stevens, N 2016, 'Community Transport in Australia', in C Mulley & JD Nelson (eds), Paratransit: Shaping the Flexible Transport Future, Emerald Group Publishing Limited, vol. 8, pp. 263-87.

Mulley, C, Ho, C, Balbontin, C, Hensher, D, Stevens, L, Nelson, JD & Wright, S 2020, 'Mobility as a service in community transport in Australia: Can it provide a sustainable future?', Transportation Research Part A: Policy and Practice, vol. 131, pp. 107-22.

Mulley, C & Nelson, JD 2012, 'Recent developments in community transport provision: Comparative experience from Britain and Australia', Procedia-Social and Behavioral Sciences, vol. 48, pp. 1815-25.

Mulley, C, Nelson, JD & Wright, S 2018, 'Community transport meets mobility as a service: On the road to a new a flexible future', Research in Transportation Economics, vol. 69, pp. 583-91.

The pros and cons of demand-responsive transport

Demand-responsive transport (DRT) is a (public) transport service that responds to changes in demand by either altering its route and/or its timetable; is generally provided by low capacity road vehicles such as small buses, vans or taxis and is available to the general public (Davison et al. 2014). DRT services can be quite diverse going from services that need to be booked a week ahead (e.g. a weekly "shopping trip service") to services that can be booked immediately through an app or on the phone (e.g. the Northern Beaches Keolis service in Sydney).

DRT is perceived as both expensive (Pettersson 2019) and cheaper than fixed-route alternatives (Davison et al. 2014). To some extent this depends on the expectation and potential demand for public transport services. If the goal is to provide at least some basic level of service for an area rather than none and the demand is low, then the provision of DRT can be cheaper up to a certain point of demand. If this point of demand is achieved DRT services can be changed into fixed-route services (Parker 2020). Low ridership means DRT is typically more expensive on a per-passenger basis, compared to high volume fixed route services (Walker 2018, 2019). Pettersson (2019) cites a Toronto example where DRT has lower production costs than fixed-route services in the same area (CA$5.71 per trip compared to CA$7.28), however, the DRT service provides only peak-hour services compared to the all-day fixed-route bus. So again, the relevant question is what kind of quality is desired/necessary.

An advantage of DRT is flexibility through the ability to provide door-to-door (or, at least, closer) service than fixed stops, and in some cases also through the absence of fixed timetables (Kaufman 2020). However, for some services there is also a need to book ahead, decreasing flexibility of the user (Parker 2020). Also, flexible pick-ups and drop-offs impact on the time taken to reach specific destinations, and make overall travel time less reliable.

Pettersson (2019) provides a thorough overview of varying types of DRT services in the UK, Europe, US, Canada and Australia with a focus on DRT implemented via smartphone app or web page, and automated (and not solely manual) despatch. He concludes that so far, there is limited evidence for new technology and on-demand services resulting in any significant productivity improvements for DRT.

Similar to community transport demand-responsive transport provides an option for improving the coverage of the overall public transport network and offers the opportunity to provide some basic level of service rather than no service at all. However, while this may change in the future with the advent of fully autonomous vehicles, for now, demand-responsive transport services are generally more expensive to provide and thus a decision to fund DRT is a decision to divert available funding away from greater numbers who could be served by fixed-route services that require greater walking (Walker 2018, 2019). However, as the Toronto example has shown there might be some opportunity for peak-hour on-demand shuttle services to higher-frequency public transport stops.

Sources:

Davison, L, Enoch, M, Ryley, T, Quddus, M & Wang, C 2014, 'A survey of Demand Responsive Transport in Great Britain', Transport Policy, vol. 31, pp. 47-54.

Kaufman, B 2020, 1 million rides and counting: on-demand services bring public transport to the suburbs, viewed 29 May 2020 2020, <https://theconversation.com/1-million-rides-and-counting-on-demand-services-bring-public-transport-to-the-suburbs-132355>.

Parker, P 2020, Flexible route buses - cure or curse?, 12 May 2020, <https://melbourneontransit.blogspot.com/2020/05/timetable-tuesday-74-our-flexible-route.html>.

Pettersson, F 2019, 'An international review of experiences from on-demand public transport services', K2 working papers.

Walker, J 2018, Microtransit: What I Think We Know, 23 February 2018, <https://humantransit.org/2018/02/microtransit-what-i-think-we-know.html>.

Walker, J. 2019, What is 'Microtransit' For?, 28 August 2019, <https://humantransit.org/2019/08/what-is-microtransit-for.html>.

International example – Freiburg Vauban

The suburb Vauban in Freiburg, Germany, is a well-known example of car-reduced living, and for a high-quality offer of public and active transport options. Vauban was built from 1998 to 2012 on the site of former military barracks. It was built as an "eco-friendly" suburb with local heating, ecological building materials, car sharing, a foot and cycle path network, public transport and the option to live car-free (i.e. without a parking space). While two local and one regional bus routes were available from the beginning, since 2006 a tram route to the city has complemented the public transport offer. Construction for the tram had started in 2003. A car-sharing service is also available. While Vauban could be classified as an "outer" suburb of Freiburg, the distance to the city centre is only about 3-4 km (as the crow flies) so that cycling is also a feasible option to travel to the inner city (Stadt Freiburg 2017).

In accordance with the building regulations every household in Vauban must provide evidence of a parking space. Residential parking is concentrated in parking garages on the fringe of the suburb so that residents need to walk or cycle to their car. There is no public car parking in the residential streets, but they can be used for loading and unloading. Only the main road provides paid parking spaces. Households can pledge to live car-free and own a "virtual" car space, i.e. they sign an agreement with the car-free association and the city and only have to provide formal proof of a parking space (FIS 2019). These "virtual" parking spaces are officially located on open space provisions within the area. If the existing parking garages did not provide sufficient space for residential parking because more households wish to own a car these open spaces could be used to build additional parking garages. But for now, they provide public open space for the residents (Sperling & Linck 2016).

Tram in Vauban; Source: FrancoisFC, https://commons.wikimedia.org/wiki/File:Vauban_3.jpg

In 2017 residents in Vauban owned 191 cars per 1,000 residents; in comparison to 520 cars in Germany and currently 598 in Victoria (SG21 2020, ABS 2020). 40% of households do not own a car and there are 0.42 residential parking spaces per dwelling. 2,591 dwellings exist in Vauban with about 5,700 residents living in the suburb (Stadtteil Zentrum Vauban).

The timely completion of vital social infrastructure was significant for the community. The primary school opened in 2000 and has been extended subsequently due to increased demand. The first kindergarten opened in 1999 with two more having been built. A community centre opened in 2001 in one of the existing buildings from the former barracks. It was initiated by the community and is administered by a non-profit organisation, supported through the local council through a leasehold. The community centre is home to many groups and has become the central point of contact for many residents (Stadt Freiburg 2017, Stadtteilzentrum Haus 036 2006).

While a one-on-one comparison between Vauban and Melbourne's growth suburbs is arguably not possible, due to the shorter distance to the inner city as well as the lower growth pressure, Vauban still provides food for thought and is a good example of early delivery of transport and social infrastructure, innovative transport solutions and community participation.

Sources:

ABS 2020, 93090DO001_2020 Motor Vehicle Census, Australia, 2020

FIS - Forschungsinformationssystem, 2019 Familienfreundlicher Stadtteil Vauban in Freiburg available under https://www.forschungsinformationssystem.de/servlet/is/323576/

SDG21 Webdatenbank, 2020, Nachhaltiger Modellstadtteil Vauban, available under https://siedlungen.eu/db/nachhaltiger-modellstadtteil-vauban

Sperling, C. & Linck, H. 2016 Collaborative Planning and Mobility Concept of Freiburg-Vauban, available under http://www.carstensperling.de/pdf/vauban_paper_web2016.pdf

Stadt Freiburg, 2017 Quartier Vauban, available under https://www.freiburg.de/pb/,Lde/208732.html

Stadtteilzentrum Haus 037, 2006, Geschichte, available under https://www.haus037.de/geschichte

Stadtteilzentrum Vauban, no date: https://stadtteil-vauban.de/en/quartier-vauban-2/

Miscellaneous

Webinar Workshops

Save-the-date invitations have been disseminated for project-related webinars in November and December:

- 18 November: Workshop for Project Partner staff members plus further organisations
- 26 November: Workshop for Local Government staff
- 2 December: Workshop for Project Partner staff members

Please register your interest in any of those workshops by sending an email to Annette Kroen: annette.kroen@rmit.edu.au

Connecticut DOT to run first automated transit bus in the US

The Connecticut Department of Transport received a US$2 million federal grant to launch the first automated technology program for buses in North America. Automated technologies that will be developed and tested include steering, precision docking at station platforms, and platooning. During the testing phase a driver will be present to take control if necessary. Before buses are tested on a bus rapid transit corridor, extensive testing will occur at an off-road test facility. The novelty of the approach is the focus on larger buses as most research on autonomous vehicles has focused on smaller fleets or ride-hailing services. The goal of the project is to advance the technology, demonstrate the use of automated technology on public roads, and collect relevant data.

More information: https://portal.ct.gov/DOT/News-from-the-Connecticut-Department-of-Transportation/2020/CTDOT-Receives-37-Million-in-Federal-Grants

Article on "Policy, People and Place" in Transport & Health

An article on the findings from the project has been published in the journal "Transport and Health". The following link allows downloading the article for free until 24 August 2020: https://authors.elsevier.com/c/1bLxd7tR-3CW3C

Planned activities

- Finalise work on modelling and funding approaches
- Dissemination of findings (e.g. through webinars and articles)
- Project Advisory Group: 12th August 2020 9.30-11.30 am as an online meeting.

Contact

Professor Robin Goodman
Dean School of Global, Urban and Social Studies, Lead Researcher
+61 3 9925 8216,
robin.goodman@rmit.edu.au

Dr Annette Kroen
Research Fellow, Centre for Urban Research , Project Member
+61 3 9925 9921
annette.kroen@rmit.edu.au

Website: http://cur.org.au/project/early-delivery-equitable-healthy-transport-options-new-suburbs/