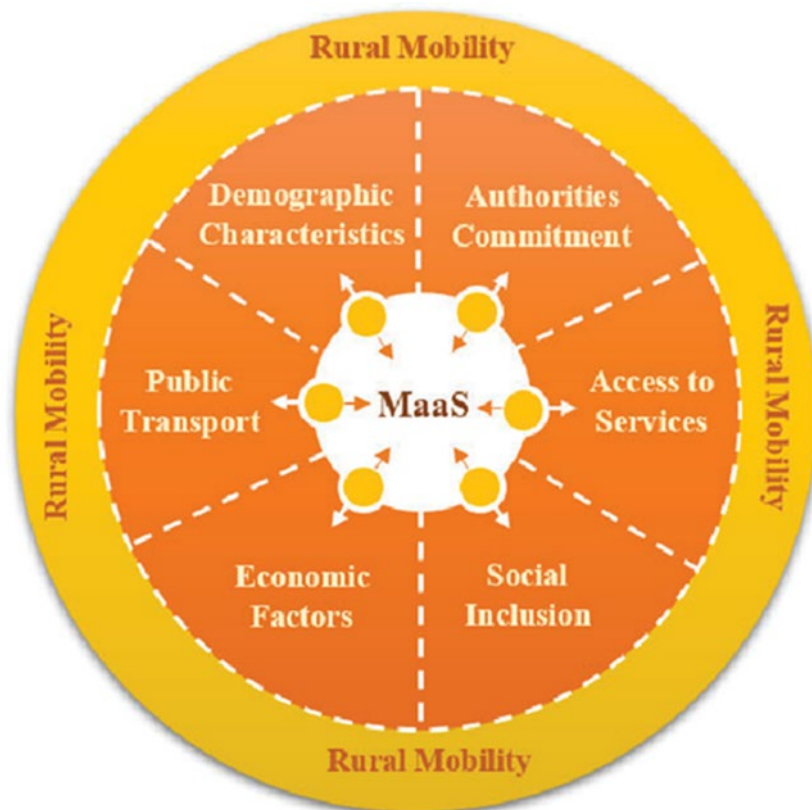# Design of a Regional Town and Rural Hinterland (RTRH) MaaS Blueprint

RTRH MaaS - Summary of the three locations

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Introduction

Three locations in NSW, Nowra, Dubbo and Coffs Harbour, have been selected for primary data collection (in-depth interviews and an online survey), This short note summarises some of the key characteristics of each of the three towns.

Defining the hinterland

With a focus on the regional towns and their rural hinterlands[1] which desire access to other key locations such as regional centres and State capitals, RTRH MaaS should be seen as spatially diverse to recognise and deliver, as appropriate, mobility services beyond the boundary of a regional town.

Figure 1 shows for each of the three regional towns the area reachable within 40, 60, 90 and 120 mins travel time by car.
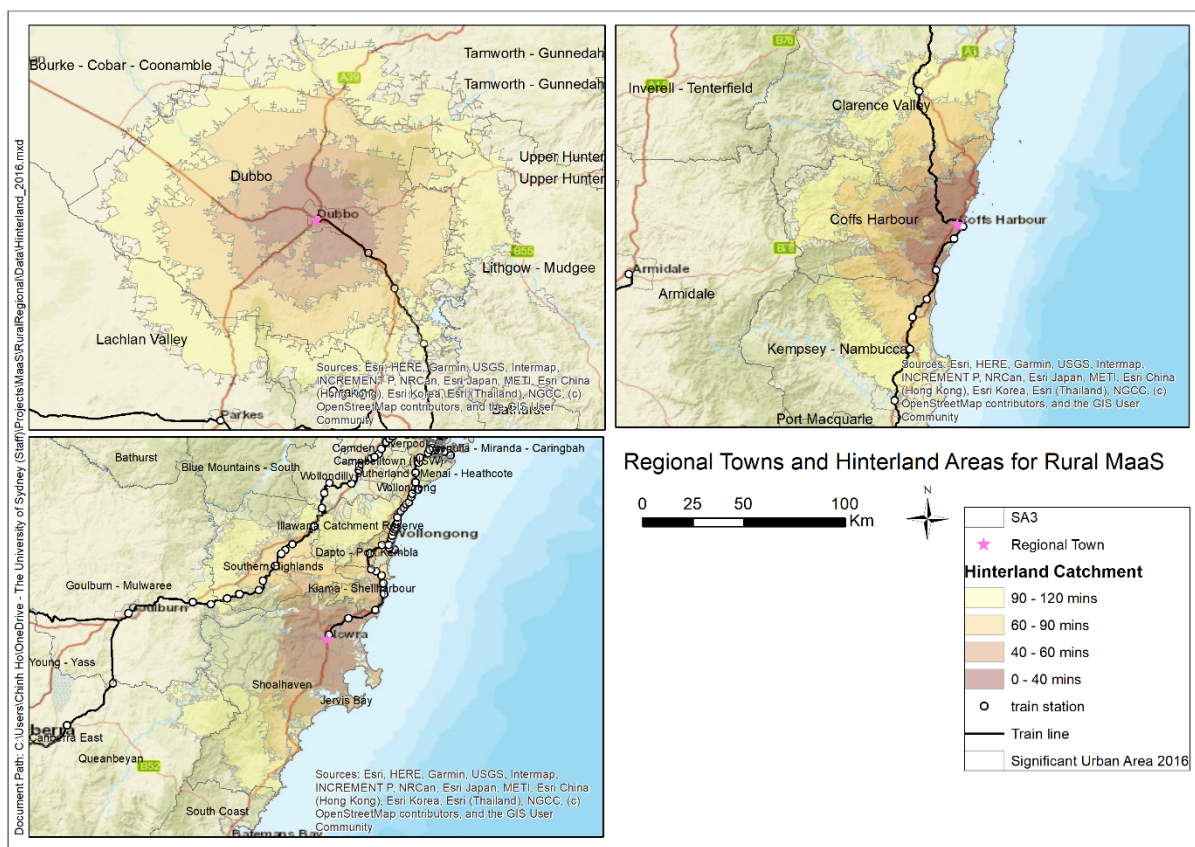

Figure 1: Hinterlands in Dubbo, Coffs Harbour and Nowra

Dubbo

Dubbo is a city[2] located at the intersection of the Newell, Mitchell, and Golden highways. The nearest city, Orange, is about 144 km (89 mi) away. Dubbo is 303 km north-west of Sydney (400 km by road) and is a major road and rail freight hub to other parts of New South Wales.

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[1] By way of definition, hinterland is a region, either rural or urban or both, that is closely linked economically with a nearby town or city.

[2] The term city and town are used interchangeably in NSW. Most official communications refer to the three locations as cities.

Demographics

In June 2018, the population of Dubbo was 38,392; 51.9% of residents were female and 48.9% were male. The median age is 36, slightly younger than the national average of 38. People aged 0–14 constitute 21.2% of the population compared to 18.7% nationally, and 14.6% of residents are Aboriginal or Torres Strait Islander (the median age in this group is 21). About 84.5% of residents report being born in Australia, notably higher than the national average of 66.7%. Other than Australia, the most common countries of birth are England (1.0%), India (0.9%), New Zealand (0.8%), Nepal (0.5%), Bangladesh (0.5%), and the Philippines (0.5%). The most common reported ancestries in Dubbo are Australian, English, and Irish. There is an average of 16% households with Aboriginal and/or Torres Strait Islander person(s).

Economy

The city's largest private employer is Fletcher International Exports, which exports lamb and mutton globally. Other local industries reflect the city's status as a regional base for surrounding agricultural regions. Dubbo is also considered a major shopping centre for the surrounding regional areas in the Central and Far Western districts of New South Wales. Dubbo has many shopping districts, including the large and very recently renewed Orana Mall (East Dubbo), Macquarie and Talbragar Streets (City Centre), Centro Dubbo, Riverdale, and Tamworth Street local stores (South Dubbo).

Public transport

Dubbo railway station lies on the Main Western railway line between Sydney and Bourke. Dubbo station is the terminus for the daily NSW TrainLink Central West XPT service from Sydney with connecting road coach services to Broken Hill, Bourke, Cootamundra, Lightning Ridge and Nyngan. The Mindyarra Maintenance Centre is currently under construction and will be the home depot for the NSW TrainLink Regional Train fleet. Dubbo Buslines[3] operate services within the city (Figure 2). BusBiz operate coach services under contract to NSW TrainLink and maintain a depot in the city. Dubbo City Regional Airport has flights to Sydney, Newcastle, Canberra and other small outback New South Wales towns. In common with each of the three locations Dubbo is part of the 16 cities bus improvement program[4], which is a regional cities services improvement program to improve bus services. The dispersed nature of regional NSW makes the provision of effective and economically viable public transport services difficult. In response, a regional demand responsive transport (DRT) service was introduced between Tottenham and Dubbo[5]. Community Transport services are operated by LiveBetter[6], which provides safe, easy-to-access travel, especially for those who have difficulties using public transport or do not have their own transportation. Uber has recently started operations and the local taxi service was acquired by 13cabs around 18 months ago. There is also a new point-to-point bus service (Wilba[7]) which serves the zoo and airport and aims "to make affordable and reliable transportation accessible to everyone in Dubbo so that we can get to our desired destination on time".

The Public Transport Accessibility Level (PTAL) Model calculates an accessibility score (PTAI) for every 2016 ABS Mesh Block in New South Wales. The PTAI is based on walking distance and time to nearby public transport stops as well as frequency of public transport of services at each stop. PTAI is a tool to measure accessibility at various location in a city and spatially visualise it.

Figure 3 shows that PTAL in Dubbo is within level 1 (low) ~ level 2 (low-medium), indicating that public transport accessibility in Dubbo is currently very poor.
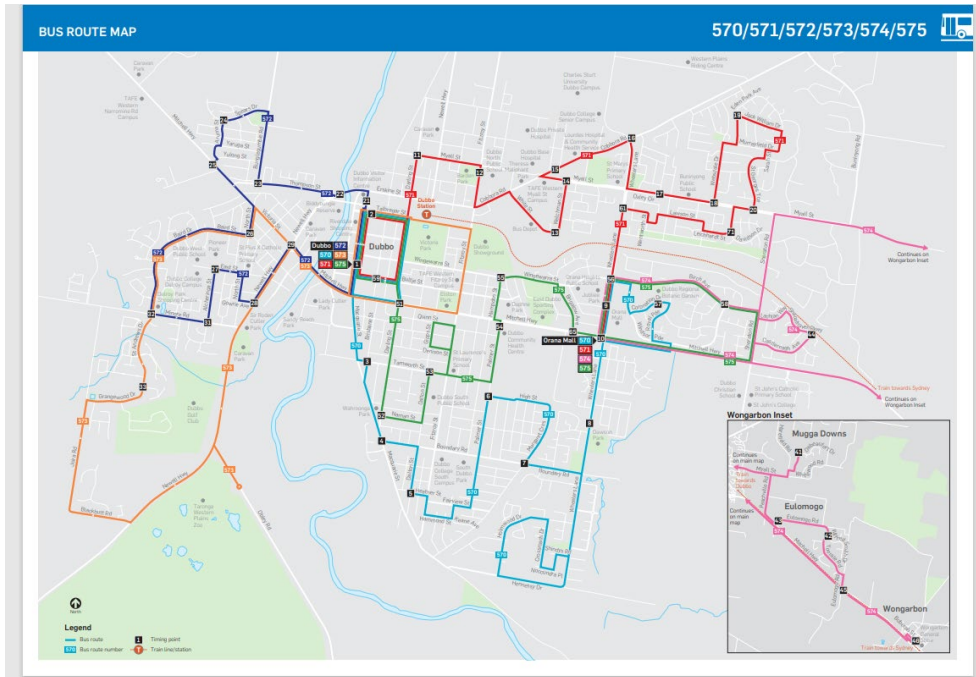
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[3] https://www.buslinesgroup.com.au/dubbo/
[4] https://www.transport.nsw.gov.au/projects/programs/16-regional-cities-services-improvement-program
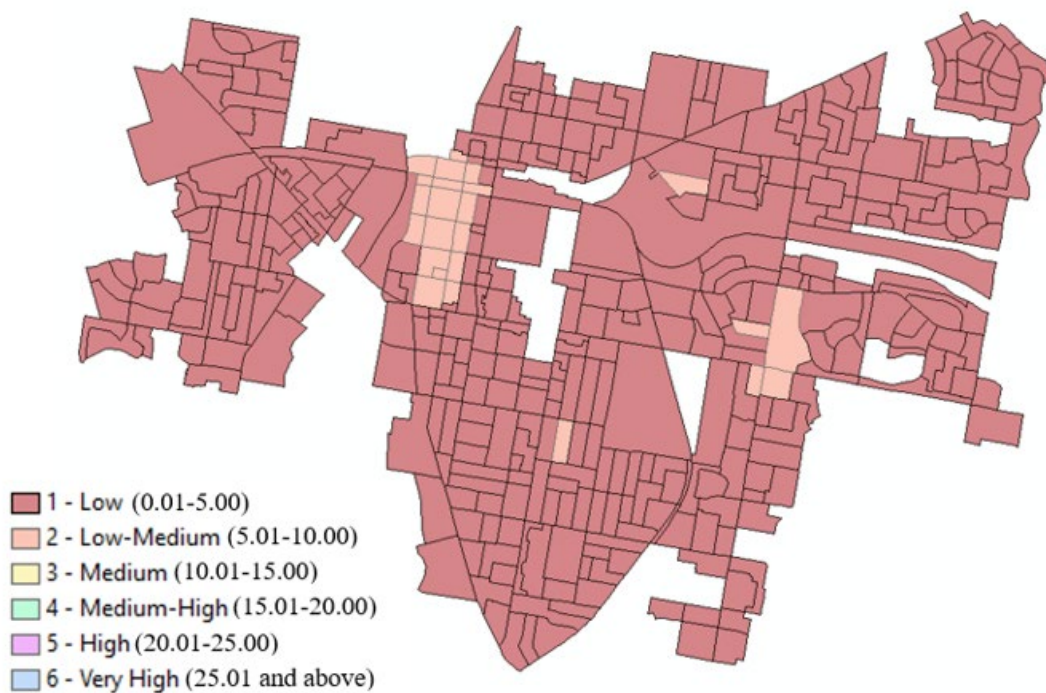[5] https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Australia.pdf
[6] https://livebetter.org.au/other-services/regional-transport-services/community-transport/
[7] https://wilba.com.au/

Figure 2: Dubbo Bus lines – Network map

Figure 3: Public transport Accessibility Level in Dubbo

Figure 2 displays the Bus lines of 570/ 571/572/573/574/575 in Dubbo. Updated real-time timetables for bus stops and route maps are available through moovit[8].

Autonomous ute trial

The world's first autonomous ute trial began testing in late 2021 in Dubbo[9]. As part of the project a Ford Ranger ute is being converted by Conigital into an automated vehicle capable of partial driverless travel. The trial focuses on customer mobility use cases and investigates the benefits and challenges involved in introducing emerging connected and automated vehicle technology to NSW and the country. The trial will operate in real world environments and help the project partners develop scalable transport solutions that improve safety and mobility outcomes in regional Australia.

Method of travel to work

An average of 73% of people travel to work by driving their own private cars, 6.9% of people travel to work as passengers of private cars, 0.5% of people travel to work by taking buses, 1% of people travel to work by using trucks, and 0.6% of people travel to work with motorbikes. 0.5% of people travel to work with bicycles, 2.8% of people walk to work, and 15% of people work from home or do not work in Dubbo.

Suitability for RTRH MaaS

Dubbo is considered an ideal precinct for MaaS, particularly for the remote communities to the north and west of the city – e.g., connecting Trangie, Nyngan, Warren, Mendooran, Coolah, etc. It is also a location with a significant First Nations population. Selection of this location will allow investigation of interesting nuances around isolation and distance while keeping a focus on addressing transport and social disadvantage. There are known unmet mobility needs (which will be confirmed by the user surveys) and RTRH MaaS can address these constraints for both residents and visitors. For example, the ABS 2016 Census data shows that the distance to work for most of the most population (66.2%) in Dubbo region is 10-30 km, and over 70% of households own one or two motor vehicles to solve the first and last mile problems. Moreover, over 80% people living in Dubbo travel to work by driving or as a passenger in a private car. Only 3.2% of people travel to work by active transport and the figure for bus 0.5% which is less surprising given the poor PTAI score. It is anticipated that RTRH MaaS can attract more private vehicle users by providing them with cost-effective mobility services. Moreover, the non-mobility services provided by RTRH MaaS, such as delivery services and online medical services and library services should also prove attractive for those who work from home or do not go to work (15%). Due to the low public transport accessibility in Dubbo, most people do not find the bus services attractive, however, based on our RTRH MaaS blueprint it is anticipated that transport accessibility will be significantly improved.

Coffs Harbour

Coffs Harbour is a city on the Mid North Coast of New South Wales, Australia, 540 km (340 mi) north of Sydney, and 390 km (240 mi) south of Brisbane. It is one of the largest urban centres on the North Coast

Demographics

According to the 2016 Census, the population of Coffs Harbour is 25,752. This is an increase from 24,581 in 2011. 52.5% of the population is female in contrast to the national average of 50.7%. The average age is 43, which is higher than the national average of 38. Aboriginal and Torres Strait Islander people made up 5.6% of the population. 75.5% of residents reported being born in Australia; higher

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[9] https://www.transport.nsw.gov.au/data-and-research/future-mobility/our-projects/dubbo-automated-smart-ute-project

than the national average of 66.7%. Other than Australia the most common countries of birth are England (3.2%), New Zealand (1.3%), Myanmar (1.1%), India (0.9%) and Germany (0.5%). 62.2% of residents also reported both their parents being born in Australia, considerably higher than the national average of 47.3%. There is an average of 6% Household with Aboriginal and/or Torres Strait Islander person(s).

Economy

Coffs Harbour's economy was once based on timber and agriculture. Over recent decades, tourism has become an increasingly important industry for the city. Once part of a region known as the Banana coast, today the tourist city is part of a wider region known as the Coffs Coast.

Public transport

There are regular passenger flights each day to Sydney, Melbourne and Brisbane departing from Coffs Harbour Airport. Coffs Harbour is also accessible by road, by NSW TrainLink, and by regular bus services. Beaumonts, Busways, Forest Coach Lines, Newcombe and Sahdras all run services throughout Coffs Harbour and the surrounding areas. The main operator is Busways[10]. Greyhound Australia and Premier Motor Service long-distance coach services which run along the east coast also stop at Coffs Harbour. Forest Coach Lines runs frequent buses to the northern suburbs of Coffs Harbour and some less frequent services to Grafton. Most of the Beaumonts buses in 2011 were bought by Newcombe (originally Beaumonts bus service ran in the Orara Valley carrying high school and primary school students from the city of Coffs Harbour to their rural homes). Coffs Harbour is serviced by NSW TrainLink. Three northbound and three southbound XPT trains stop at Coffs Harbour station each day. Local taxis are run by Holiday Coast Transportation and operate as 13cabs. Coffs Harbour Airport is regularly serviced by Fly Corporate, Qantas and Virgin Australia. The passenger terminal is accessible via Hogbin Drive. The Coffs Harbour Woopi Connect ODT[11] operates as part of the TfNSW pilot program (Figure 4). The CT operator is the Community Transport Company[12].
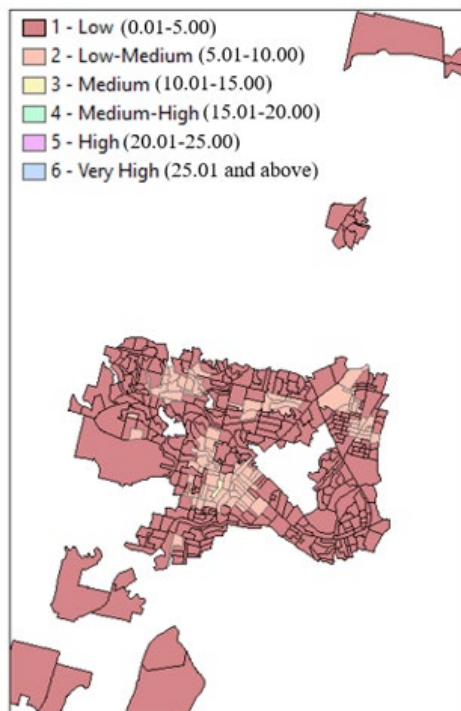

Figure 4: Woopi Connect, Coffs Harbour

Figure 5 shows that PTAL in Coffs Harbour is within level 1 (low) ~ level 2 (low-medium), indicating that public transport accessibility in Coffs Harbour is poor.

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[10] https://www.busways.com.au/
[11] https://woopiconnect.com.au/
[12] https://www.communitytransport.net.au/

Figure 5: Public transport Accessibility Level in Coffs Harbour

Autonomous bus

Coffs Harbour public transport customers have been the first in the world to travel on a fully automated bus in a public setting. Busways launched its "BusBot" automated shuttle bus in Coffs Harbour at the beginning of 2019 in the first of three trial phases intended to test an EasyMile E10 driverless shuttle at varying levels of complexity. BusBot went through trials starting with a nine-week trial at the Coffs Harbour Northern Breakwall, followed by a second phase at the Toormina Marian Grove Retirement Village during 2019, and a third phase at the North Coast Regional Botanic Garden until the beginning of 2020. More than 10,000 people were involved in that trial. The final stage of the trial saw the fully driverless, remotely monitored vehicle operate at the Coffs Harbour Botanic Gardens. The trial concluded in November 2021[13].

Method of travel to work

An average of 70% of people travel to work by driving their private cars, 6.5% of people travel to work as passengers of private cars, 0.8% of people travel to work by taking buses, 1% of people travel to work by using trucks, and 0.8% of people travel to work with motorbikes. 1.2% of people travel to work with bicycles, and 4.8% of people walk to work, while 14% of people work from home or do not work.

Suitability for RTRH MaaS

Coffs Harbour is interesting as a potential location for RTRH MaaS because there are already a variety of different types of transport including on-demand (which has been successful), local buses, Community Transport, long distance trains, air and road. It is also an attractive tourist destination. Coffs Harbour hosted a 3-year driverless bus trial (BusBot) which ended in November 2021. The ABS 2016 Census data shows that the distance to work of the most population (64.2%) in Coffs Harbour is 2.5-10 km, and over 80% of household owns one or two motor vehicles to solve the first and last mile problems. Moreover, 70% of people living in Coffs Harbour travel to work by driving their private cars. An average of 6.8% of people travel to work as passengers and 6.9% of people travel to work by active transport. RTRH MaaS has the potential to attract current private vehicle users by offering access to the variety of transport services available.

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[13] https://www.busways.com.au/news-items/bye-bye-busbot-thanks-helping-shape-our-transport-future

Nowra

Nowra is a city in the South Coast region of New South Wales, Australia. It is located 160 kilometres south-southwest of the state capital of Sydney (about 120 kilometres as the crow flies).

Demographics

As of the 2016 census, Nowra has an estimated population of 20,039. Situated in the southern reaches of the Sydney basin, Nowra is the seat and commercial centre of the City of Shoalhaven. According to the 2016 census, Nowra has a population of 20,039. This covers suburbs only south of the Shoalhaven. The population is slightly younger than the state and country as a whole, with an average age of 37 compared to 38 for both Australia and New South Wales. However, the population is bimodally distributed, with a larger percentage of children and the elderly than the state and national averages. 79.8% of the population were born in Australia and 83.9% speak only English at home, both above the state and national averages. Nowra has a significantly lower level of education than typical for the state and nation. Only 8.6% of the population of Nowra hold a bachelor's degree or higher, compared to 22% of Australia and 23.4% of New South Wales. The proportion who left high school before finishing year 12 is also above average. The top five reported ancestries in Nowra at the 2016 census were Australian (32.1%), English (29.4%), Irish (7.9%), Scottish (6.3%), and German (2.9%). There is an average of 9% Household with Aboriginal and/or Torres Strait Islander person(s).

Public transport

Nowra Coaches operates services from Nowra to Bomaderry, Huskisson, Vincentia and Jervis Bay. Shoal Bus operates services from Nowra to Berry, Gerringong and Sussex Inlet. Premier Motor Service operates express services along the Princes Highway from Sydney to Eden that call at Nowra. The dominant operators are Premier (Nowra Coaches)[14] and Shoalbus[15]. Nowra has no direct rail connection, but the Illawarra railway line terminates at nearby Bomaderry railway station with NSW TrainLink operating services to Kiama and Sydney. The CT operator is Coast and Country Community Services[16].

As shown in Figure 6, PTAL in Dubbo is within Level 1 (low) ~ Level 3 (medium), which is the only location with medium PTAL among the selected three locations.
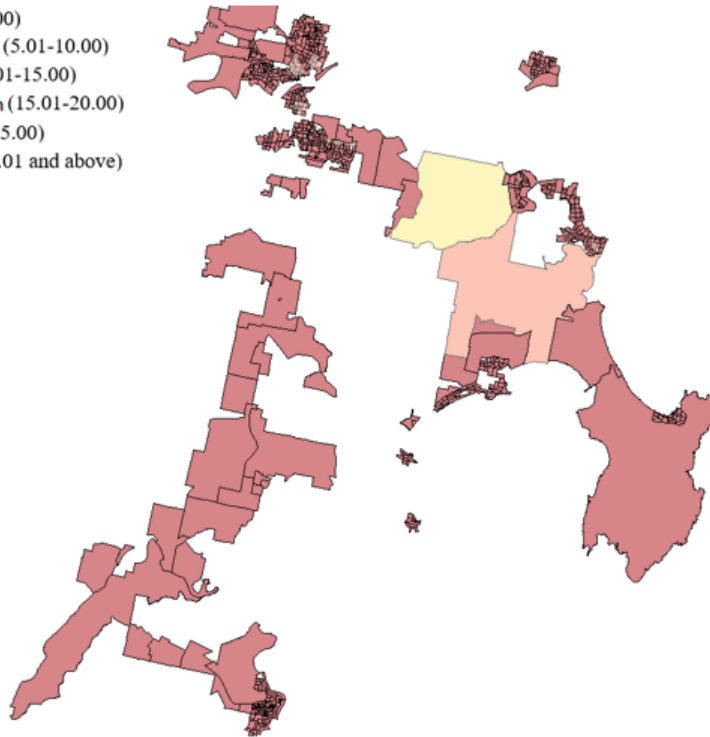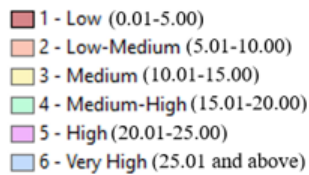
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[14] http://www.nowracoaches.com.au/
[15] https://www.shoalbus.com.au/
[16] https://cccsl.org.au/

Figure 6: Public transport Accessibility Level in Nowra

Method of travel to work

An average of 70% of people travel to work by driving their private cars, 5.5% of people travel to work as passengers of private cars, 0.4% of people travel to work by taking buses, 1% of people travel to work by using trucks, and 0.7% of people travel to work with motorbikes. 1% of people travel to work with bicycles, 3.1% of people walk to work, 15.7 % of people work from home or do not work.

Suitability for RTRH MaaS

Nowra is considered a good option for MaaS since it has a reasonable degree of public transport provision and accessibility (although feedback from public transport users is mixed). It is suggested that the focus in Nowra should be connecting the rural villages and towns around the St Georges Basin like Vincentia, Huskisson, etc., as well as Sussex Inlet, with feeder services into Nowra. An additional attraction is that Nowra can be seen as a hub to connect to the ACT, thus allowing the study of inter-regional MaaS. Including a location with a better PTAI score will also widen the transferability of the work and potential to apply the blueprint to other locations. The ABS 2016 Census data shows that there are 0.3% of people living in Nowra but working in ACT, and the distance to work of most of the population (58.7%) is 2.5-10km, followed by 0-2.5 km (16.4%) and 10-30 km (15.0%), respectively, while over 80% of household owns one or two motor vehicles to solve the first and last mile problems. Moreover, 70% people living in Nowra travel to work by driving their private cars. An average of 6.3% people travel to work as car passengers and 4.5% people travel to work by taking active transport. The non-mobility services provided by RTRH MaaS, such as delivery services and online medical services and library services will also attract those work from home or don't go to work (15.7%). Moreover, the medium PTAL and the predominance of shorter distance journey to work trips also lay a basis for the development RTRH MaaS in Nowra.

Appendix
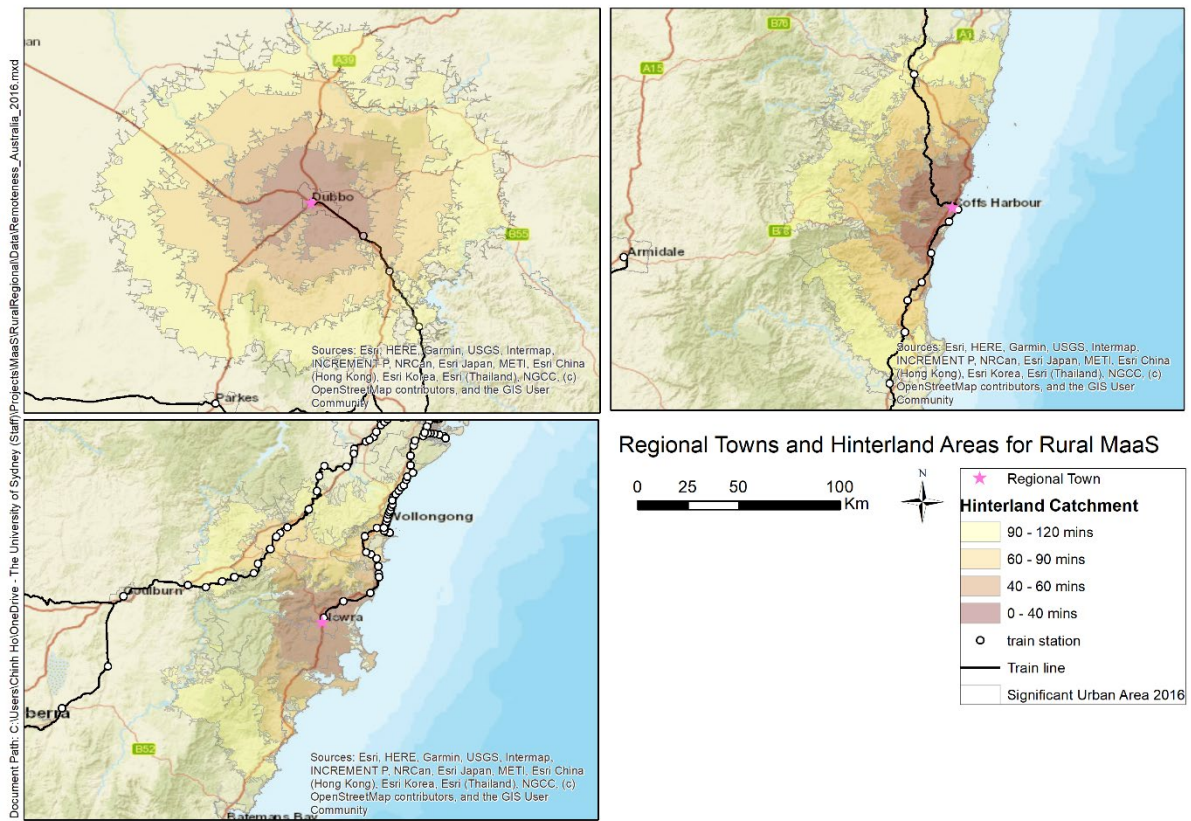
Figure A1: The selected locations marking the boundaries of different travel times by car