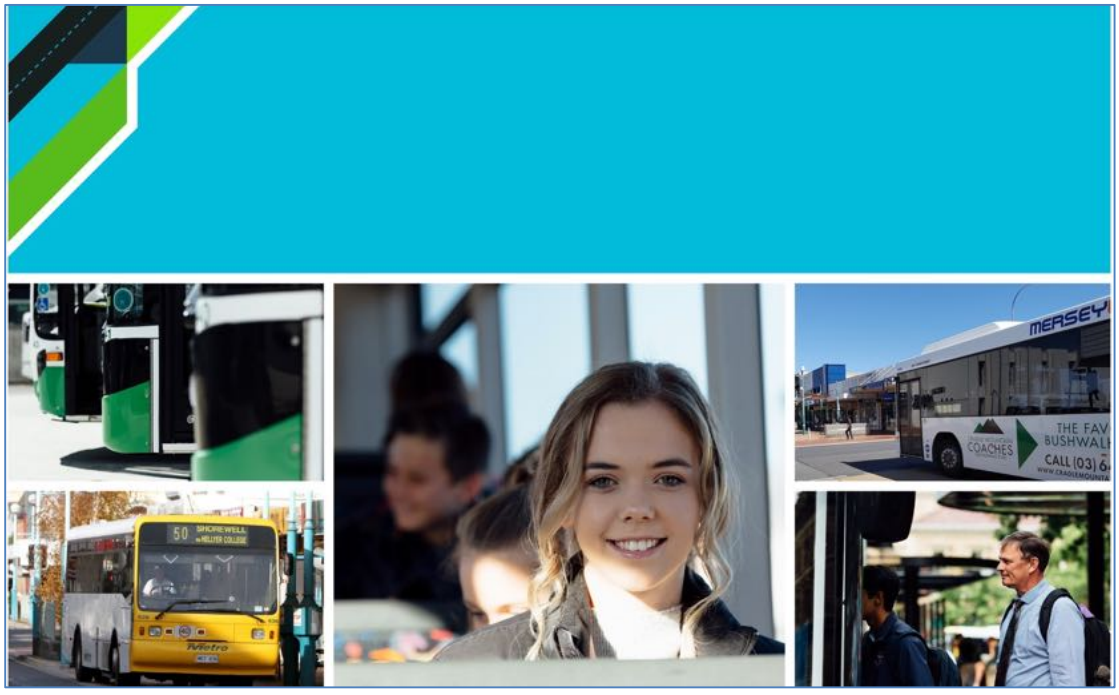
PHILLIP BOYLE & Associates

Devonport and Burnie Urban Bus Reviews



Final Report

18 November 2017

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& Associates

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Executive Summary

Phillip Boyle & Associates (PBA) has reviewed the Burnie and Devonport Bus Networks for the Department of State Growth (State Growth). The review is one of many to be conducted across Tasmania and is a key input into bus service improvements planned by the government. The primary objective of each Bus Network Review (BNR) is to develop an efficient bus network that will serve community needs now and into the medium-term future. More specifically, this implies achieving:

- Increased patronage
- Improved connectivity and accessibility
- Improved efficiency of service provision.

The two networks were reviewed at the same time, but are distinct from one another. They are separated by 40km and connected by urban fringe bus routes (which serve Penguin, Ulverstone and other towns on the North-West coast). The urban fringe routes have been reviewed internally by State Growth, although this report provides thoughts and improvement options that arose during the process.

The 'urban area' is defined that those that have a density of over 15 dwellings per hectare. The bus service review was focussed on government objectives of ensuring urban areas are provided with adequate bus services to meet their needs. To ensure a holistic outcome, all routes in the broader study area were considered. However, to keep the scope of detailed analysis manageable, analysis and recommendations are focussed on 'urban areas' of Burnie and Devonport (including Somerset and Latrobe).

The Burnie urban network consists of 21 routes (with several additional urban fringe routes operating to Penguin, Ulverstone and Wynyard). The Burnie service area includes Somerset and totals around 24 square kilometres of land with an urban area residential population of approximately 18,000 people. On average, there are approximately 1,250 boardings per weekday and 240 boardings on a Saturday.

The Devonport urban network consists of 12 routes (with several additional urban fringe routes operating to Port Sorell and Ulverstone). The Devonport service area includes Latrobe and Spreyton. In the Devonport-Latrobe area this urban area totals around 17 square kilometres of land with a residential population of approximately 23,000 people. On average, there are approximately 850 boardings per weekday and 110 boardings on a Saturday.

Community consultation consisted of two rounds of public workshops held in both Burnie and Devonport and gathering submissions over the course of 2017. The first round of workshops was attended by 50 members of the public who provided approximately 450 individual comments. The second round of workshops were attended by 41 members of the public who provided approximately 280 comments. There was a total of 8 written submissions received from community members, local stakeholders and Council in May and June 2017, as well as feedback and individual consultation meetings with the bus operators - Metro (Burnie) and Merseylink (Devonport).

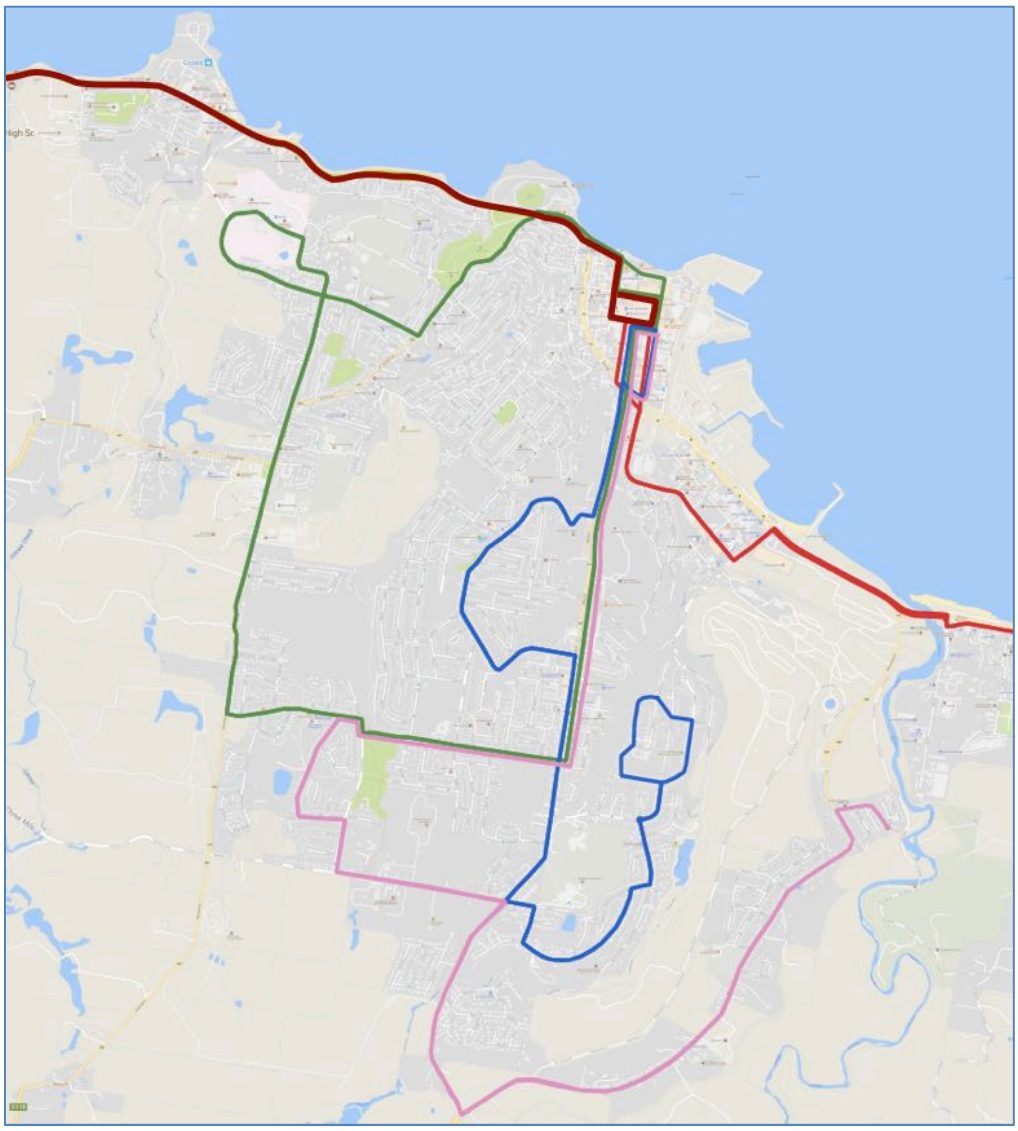
The recommended bus network aims to improve the quality of public transport within the review area, generating patronage growth through improved service qualities. This includes:

- Improving directness and efficiency of each route (getting passengers to their destination faster)
- Providing higher frequency corridors between key destinations
- Maintaining coverage and connections that are currently used by higher numbers of passengers

- Serving additional destinations that have become important since the last network review

The recommended Burnie bus network is shown in Figure 1 below.

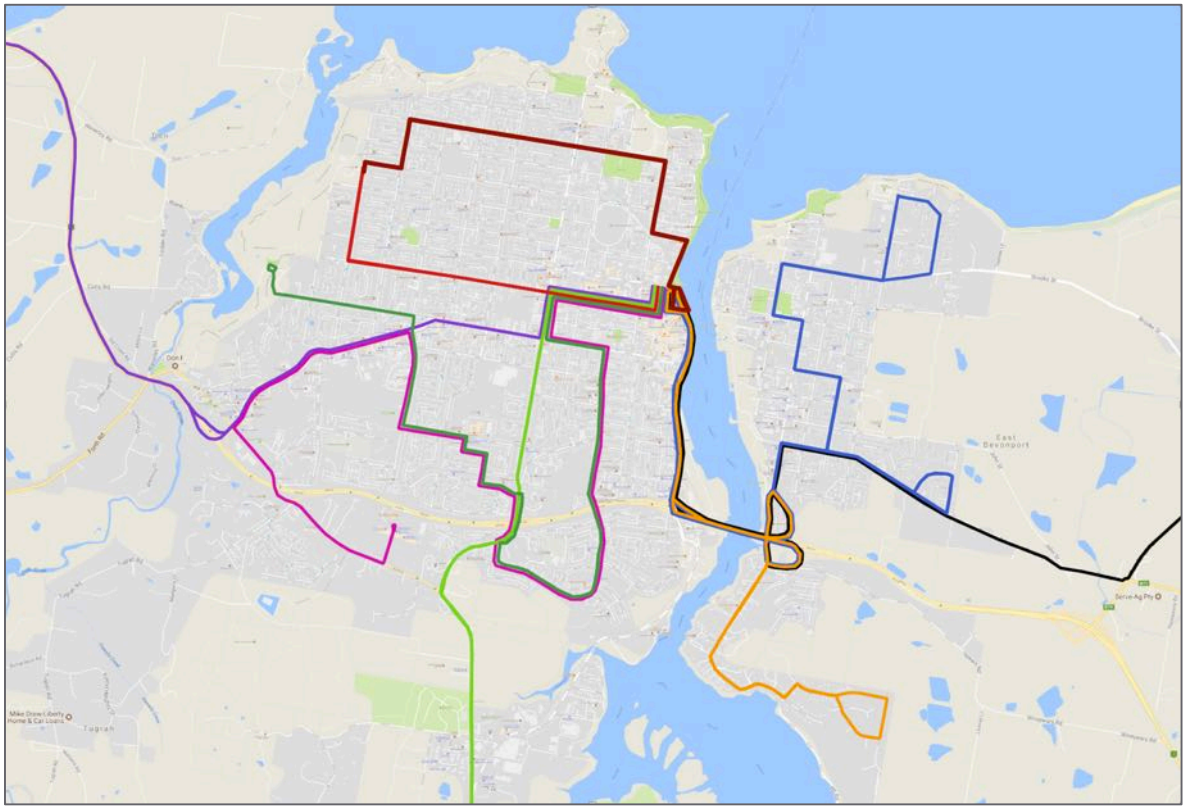
FIGURE 1 – RECOMMENDED BURNIE BUS NETWORK



Source: Google Maps, PBA Analysis

The recommended Devonport bus network is shown in Figure 2 below.

FIGURE 2 – RECOMMENDED DEVONPORT BUS NETWORK



Note: *Includes Urban Fringe Routes*
Source: *Google Maps, PBA Analysis*

The network catchment indicates areas within 500 metres, or approximately 5 minutes' walk, from a bus service. The recommended improvements to the public transport network in this report provide coverage to over 95% of households in Burnie (including Somerset) and over 98% of households in Devonport (including Latrobe).

In a small number of areas, the coverage buffer enforces a longer walk, but this is typically because of improved route directness, which is in turn associated with improved journey times for customers across the route. The areas recommended to be outside the nominal primary catchment (over 500m from the bus route), and the risks involved are discussed in this report.

To achieve these outcomes the Burnie route network has been simplified from 21 routes to 5 routes. The Devonport route network has been simplified from 12 routes to 7 routes. Additional resources may be required to operate these routes over longer service spans. The network has been achieved within the existing resource constraints (such as the peak bus requirement).

It is expected that the simplified network and increased service levels will increase patronage across the network, while improving operating efficiencies.

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1. Introduction

Phillip Boyle and Associates (PBA) has undertaken the Devonport and Burnie Bus Network Reviews for the Department of State Growth (State Growth). The primary objective of the Bus Network Review programme is to develop a bus network that will serve community needs both now and into the future.

This report presents service improvement options identified by PBA, in conjunction with extensive consultation with State Growth, bus operators, local councils and the public, as part of the Bus Network Reviews.

1.1. OBJECTIVES

The overall objective of the Bus Network Reviews is to develop a network that meets our future transport needs and provides a fair and equitable level of service to communities within the budget constraints of the Tasmanian Government. Broad objectives include:

- Increasing patronage
- Improving span and frequency of services
- Improving the directness of routes
- Meeting State Growth targets for coverage of the service area.

The desired outcomes of this project are to:

- Propose a bus services network that will facilitate an increase in patronage on bus routes within the review areas
- Ensure that local bus services connect facilities, such as community and shopping centres, which have developed over time without any corresponding change in bus services
- Provide accessible transport for social inclusion
- Review route structures to ensure geographic coverage is maximised
- Review route structures to make bus routes more direct
- Review route structures to minimise route variations which may confuse current and prospective users
- Review bus timetables, to simplify services and make them easier to understand (as a follow-on from this project)
- Determine the need for any new routes
- Delivery of operational solutions within the overall strategic objectives.

1.2. STRUCTURE OF THIS REPORT

This report is structured as follows:

- Section 2 presents a summary Baseline Conditions analysis conducted in the first phase of this project, establishing the existing conditions of the review areas
- Section 3 outlines the approach and outcomes from the first round of consultations with stakeholders, including bus operators, local councils and the public
- Section 4 outlines the network and service planning principles adopted in designing the network
- Section 5 describes the outcomes from the second round of consultations, in which a draft network was outlined to stakeholders and the public

- Section 6 outlines the bus network recommendations and rationale for the Devonport network
- Section 7 outlines the bus network recommendations and rationale for the Burnie network
- Section 8 outlines recommendations with regard to the service quality of the Devonport and Burnie networks
- Finally, section 9 highlights the operational issues which would need to be addressed for the recommended Devonport and Burnie networks to be delivered by an operator.

2. Existing Conditions

Analysis of existing conditions provides a means for appraising the provision and operation of bus services, and to assist in identifying opportunities for bus network and service improvements within the review areas. In considering the provision of bus services in both Devonport and Burnie, detailed analysis was conducted, including:

- Examination of existing strategies and reports
- Current land use and any specific plans for changes to land use
- Resident demographics
- Bus route patronage and running times, as well as overall network structure
- Comments made by local government including councillors, bus operators and the public.

The following sub-sections summarise the findings, providing an overview of the current public transport conditions within the review areas.

2.1. STUDY CONTEXT - WHAT KIND OF PUBLIC TRANSPORT NETWORK DO WE WANT?

While State Growth considers Tasmania's existing public transport network as adequate, there are some areas which are not well serviced despite the demand and need for services. The development of an improved public transport network aims to provide cost effective services to areas based on the needs of the area, funded within the available government resources.

The improved network will aim to provide better services by:

- **Adopting an evidence based approach**: The intent of the improved network is to provide services to areas equitably. Areas with the most need and patronage should receive a greater number of services. For example, the network needs to provide more services in areas of high demand, such as central business districts, residential areas with higher numbers of people, and low-income areas.
- **Providing consistent and regular services**: Services should run as consistently as possible throughout and across days of operation – that is, they should run at the same times every day and on a 'clock-face' headway. Passengers find it easier to understand timetables and use buses when the services are regular and predictable.
- **Making routes simple and direct**: Routes need to follow a direct path between major destinations and operate in both directions. This will make most travel times quicker, but might mean that some people will have to walk further to get to the bus stop. The design of routes should consider the existing road design and terrain as well as servicing areas where there are more people.
- **Providing more cost-effective services**: The design of the bus network should avoid duplication between routes or having routes too closely spaced together. The network should complement other urban fringe services.

Where possible the network should aim to coordinate different services, so that passengers can travel beyond their nearest major centre to other destinations. Better integration of services will make it easier for passengers to transfer between services and finish their trip in a reasonable time.

Changes to the public transport network will mean that services will increase in some areas but fall in others. Some people might also need to travel further to get onto a bus route. Once

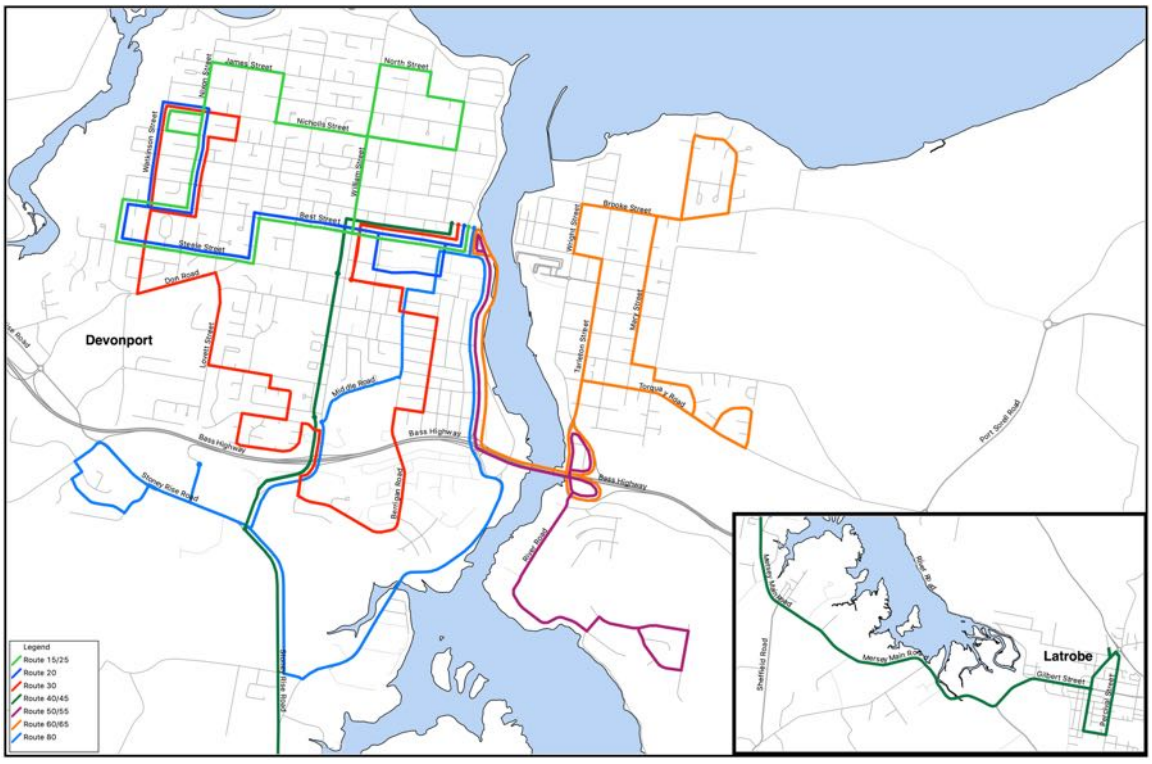
passengers are on the bus, the service will take them to where they are going more quickly, as the route will be more direct. This is a necessary redistribution of resources to ensure transport needs in each community are met in a fair and consistent manner.

2.2. EXISTING DEVONPORT BUS NETWORK

The Devonport review focuses on the urban bus network. Whilst a review of non-urban services is important and will be carried out by State Growth, it is not in the scope of this exercise. As such, non-urban routes such as Route 70 (Devonport-Port Sorell) or Route 72 (Devonport-Ulverstone) are excluded from this review. Similarly, all school services operated in Devonport are out of scope for this review, but are being reviewed separately by State Growth.

Urban passenger services (12 routes) are currently operated by Merseylink. State Growth has responsibility for determining what services to purchase through a contract with the operator. Existing features of the urban bus network are illustrated in Figure 3 below. Note that route variants are not shown, to keep the map easy to read.

FIGURE 3 – DEVONPORT URBAN BUS NETWORK



Source: PBA

The current network serves several activity centres and main destinations, including:

- Devonport CBD
- Don College
- Latrobe
- East Devonport
- 'Four Ways' (broadly the area bordered by Oldaker Street, Best Street, Barker Street and Kempling Street)
- TasTAFE

- A number of schools, including St Brendan-Shaw College, Devonport High School and Nixon Street Primary School
- The Homemaker Centre

Summary of current patronage

Over the period 20/02/2017 - 13/03/2017 inclusive, there were an average of 852 weekday boardings on the urban Devonport, as detailed in Table 1 below.

TABLE 1 - DEVONPORT BOARDINGS BY ROUTE

	WEEKDAY		SATURDAY	
ROUTE	AVERAGE BOARDINGS	AVERAGE BOARDINGS PER SERVICE	AVERAGE BOARDINGS	AVERAGE BOARDINGS PER SERVICE
65	84	17	13	7
40	160	16	37	6
60	143	16	24	6
30	203	15		
45	38	10		
15	87	7	14	3
25	87	8		
55	31	8		
20	2	2		
80	10	2	2	1
50	7	1		
35			24	4
Total	**852**	**10**	**114**	**5**

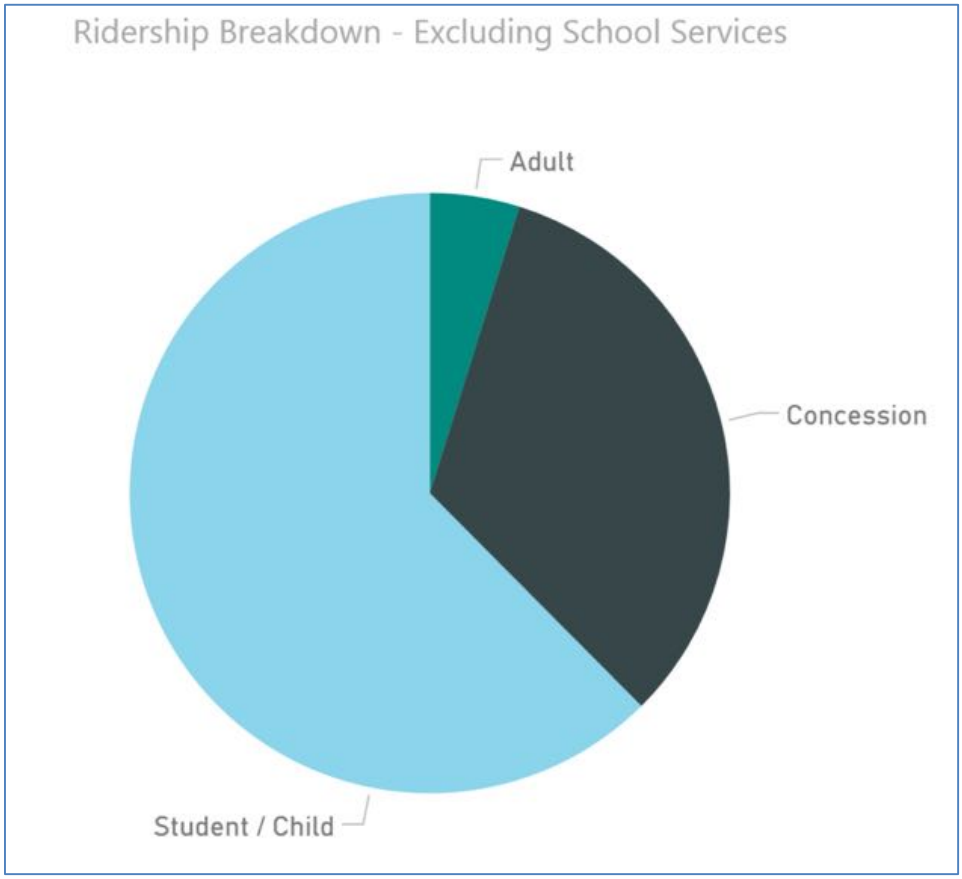
Source: PBA analysis based on data provided by Merseylink, 20/02/2017 - 13/03/2017 inclusive

Boardings were largest on Route 30 (South Devonport), with 203 per weekday. However, if the two East Devonport Routes (60 and 65) are considered together, they make up a slightly larger total (227 boardings on an average weekday).

Average boardings per service on Saturdays are currently half of the level of an average weekday (five boardings per service on Saturdays, compared to 10 boardings per service on an average weekday).

Analysis of fare type on Devonport urban services shows that only a very small proportion (5%) of customers are travelling on full Adult fares (see Figure 4 below).

FIGURE 4 – DEVONPORT PASSENGERS BY FARE TYPE



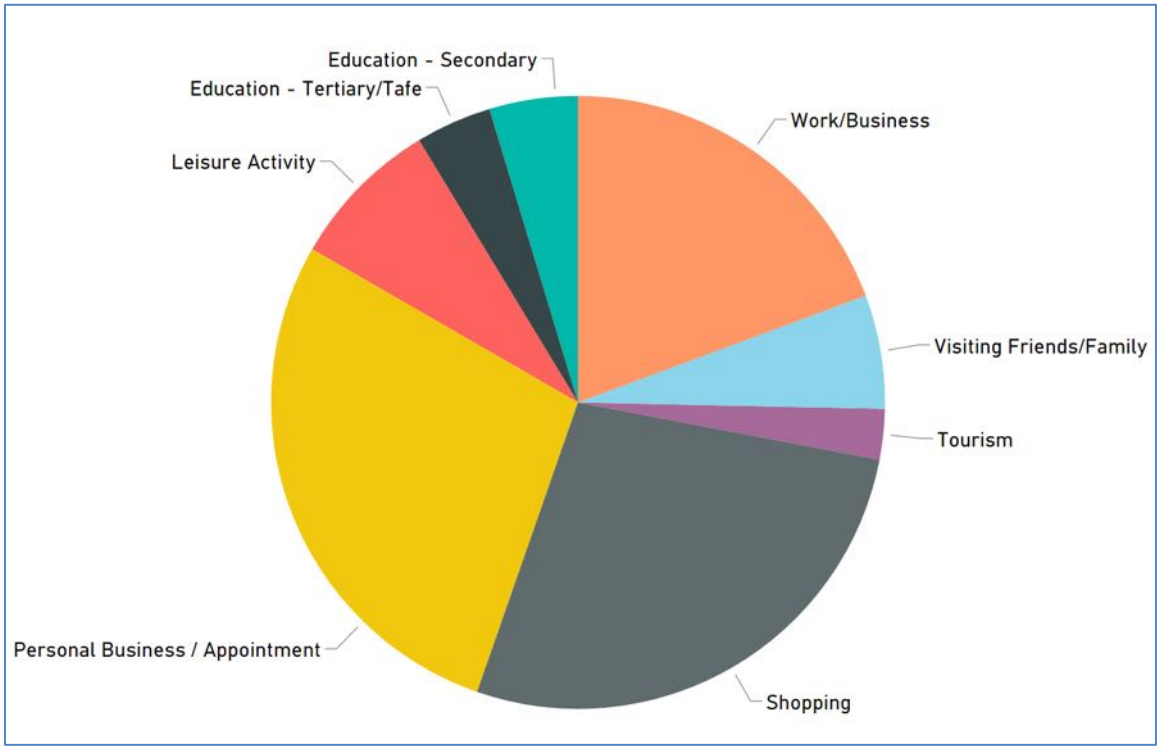
Source: PBA analysis based on data provided by Merseylink

2.3. DEVONPORT PASSENGER ANALYSIS

As part of this review exercise, an extensive program of passenger interviews and counts were carried out from Tuesday 28th February - Saturday 4th March (inclusive).

The interviews were only carried out with adults on Devonport urban services. Figure 5 below shows that the largest category for journey purpose was personal business / attending an appointment, closely followed by shopping.

FIGURE 5 – DEVONPORT PASSENGER JOURNEY PURPOSE



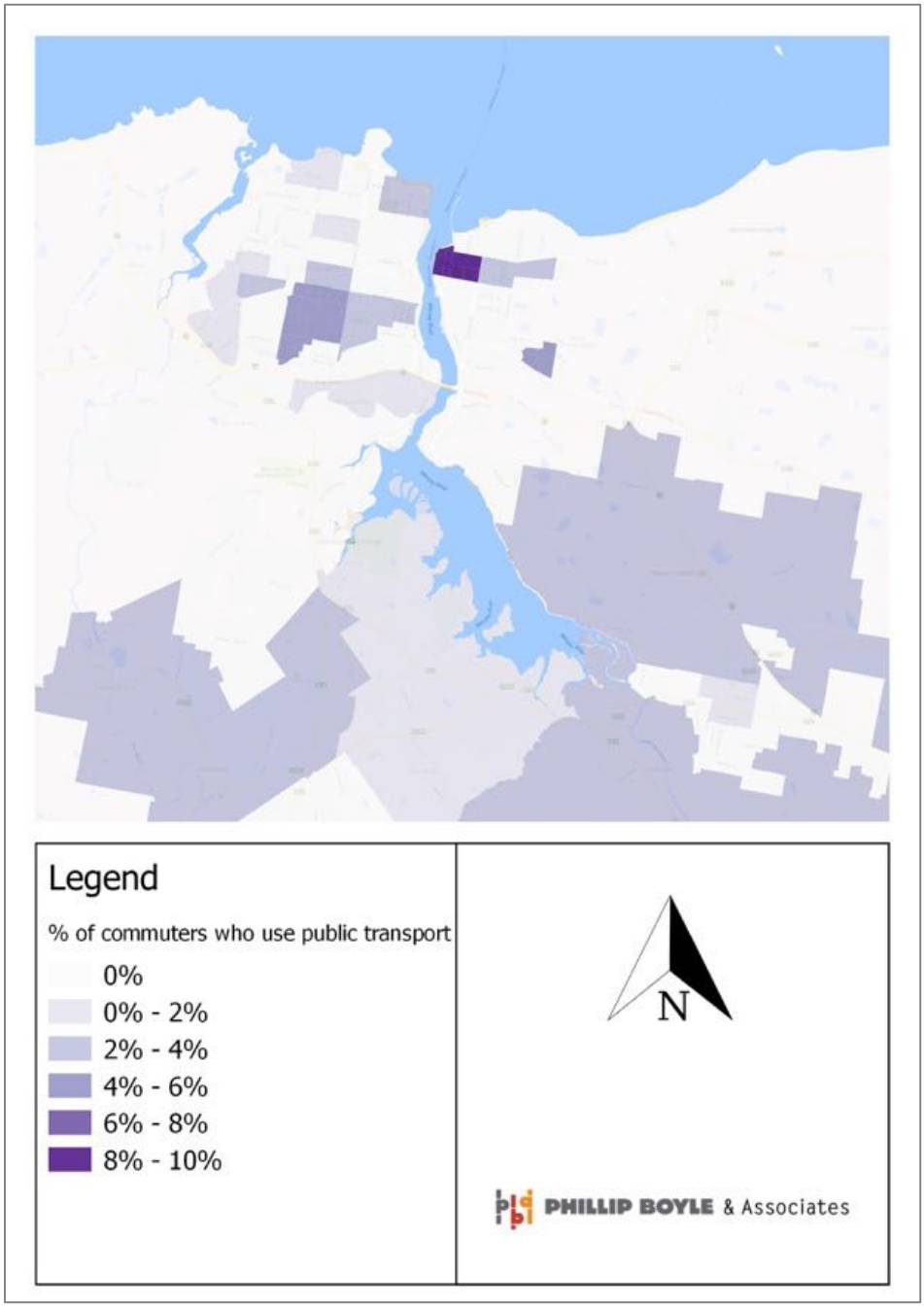
Source: PBA surveys and analysis; sample size = 165

Journeys are typically either discretionary (that is, the customer has an element of choice in making them, typically reflecting some flexibility about timing or urgency) or non-discretionary (the journey has less flexibility on timing). Journeys made to a place of work typically reflect a non-discretionary choice (the customer will likely have set hours of work that they need to observe).

When a large proportion of work trips are made by public transport, this typically suggests a strong and sustained level of patronage - these trips will continue to be made as long as the customer is in work. Across Devonport however, 91% of workers are choosing to use their car to get to work, with public transport used by less than 1% of workers. Walking accounted for just over 5% of trips to work, with other modes (including bicycle and taxi) accounting for around 3%.

There are some small pockets of higher public transport use amongst workers in East Devonport, as shown in Figure 6.

FIGURE 6 - PROPORTION OF COMMUTERS USING PUBLIC TRANSPORT IN DEVONPORT



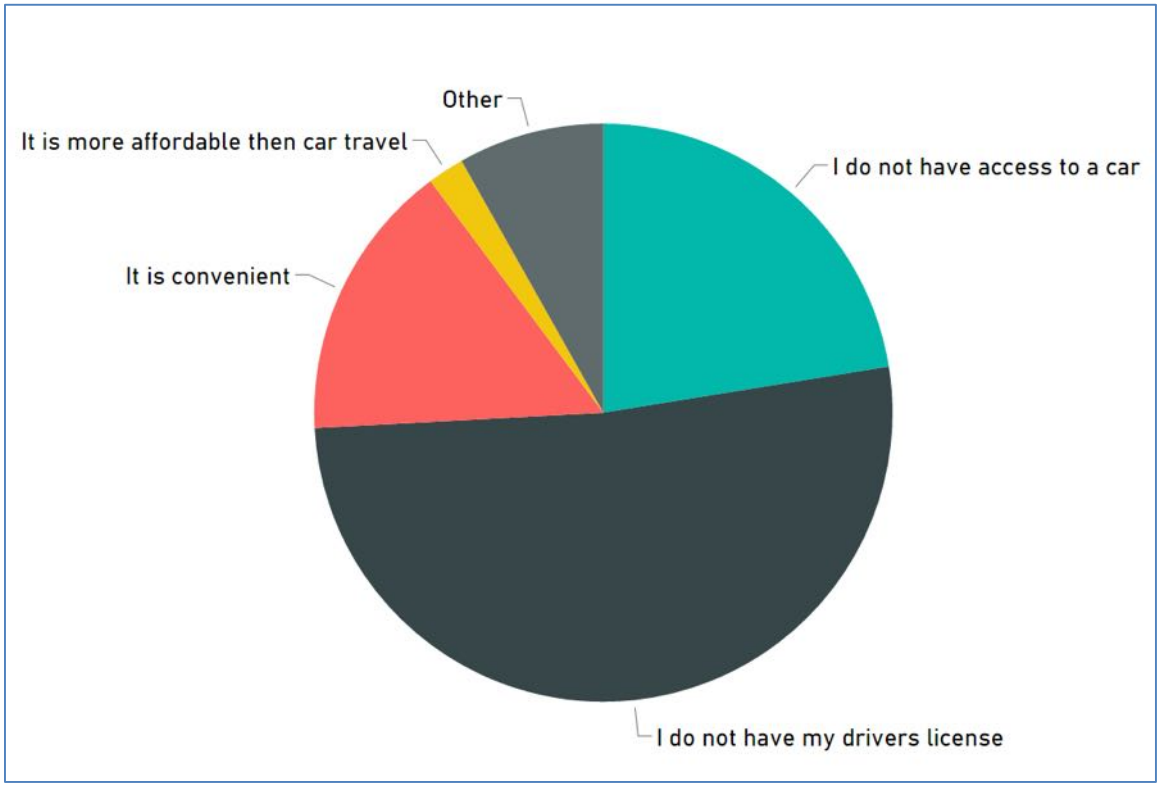
Source: ABS Census with PBA analysis

2.4. REASONS FOR TAKING THE BUS IN DEVONPORT

The on-board interviews also asked why customers were taking the bus. The survey established:

- Almost 74% of adults were using the bus because they did not have access to a car or a driver's licence
- Only 2% said that affordability compared to car travel was factor
- 15% said that convenience of the bus was a reason for using the bus

FIGURE 7 – WHY DEVONPORT PASSENGERS ARE USING THE BUS



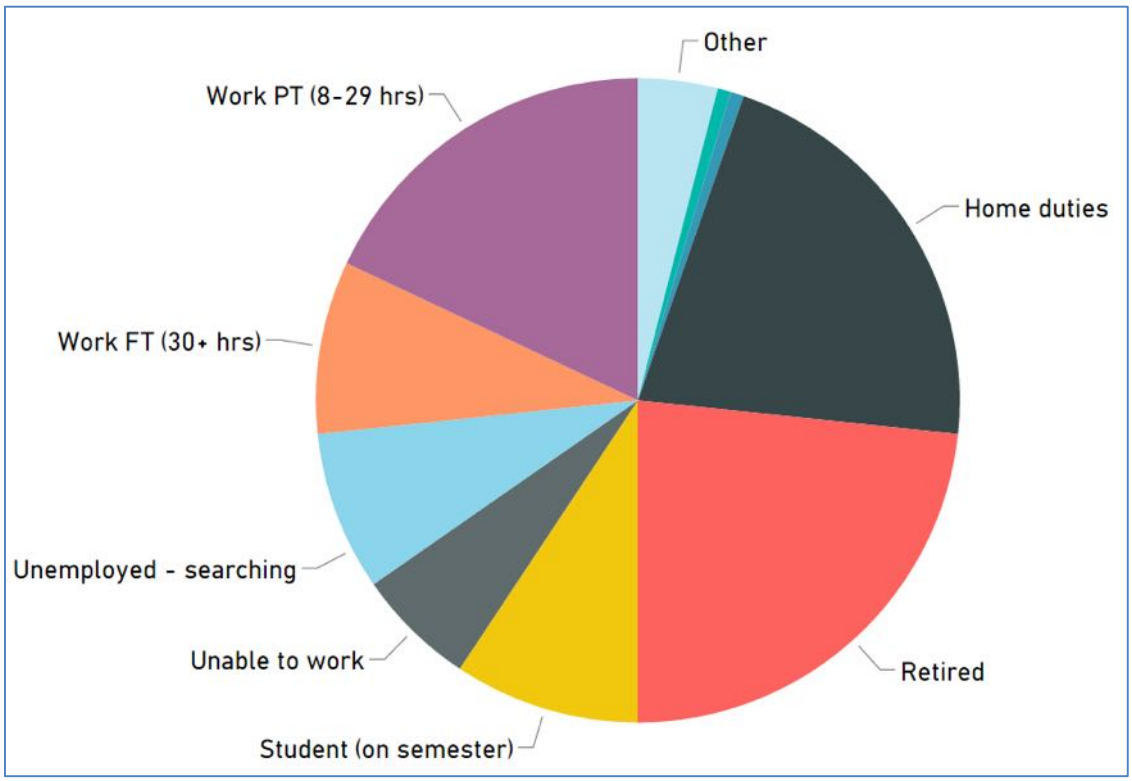
Source: *PBA surveys and analysis; sample size = 165*

2.5. ECONOMIC FACTORS

Economic activity information was also collected through the on-board interviews. A shown in Figure 8 below, the survey established that:

- The retired were the largest single category, closely followed by those on home duties
- Part time work was a much larger group than full time workers

FIGURE 8 – ECONOMIC ACTIVITY OF DEVONPORT PASSENGERS



Source: PBA surveys and analysis; sample size = 165

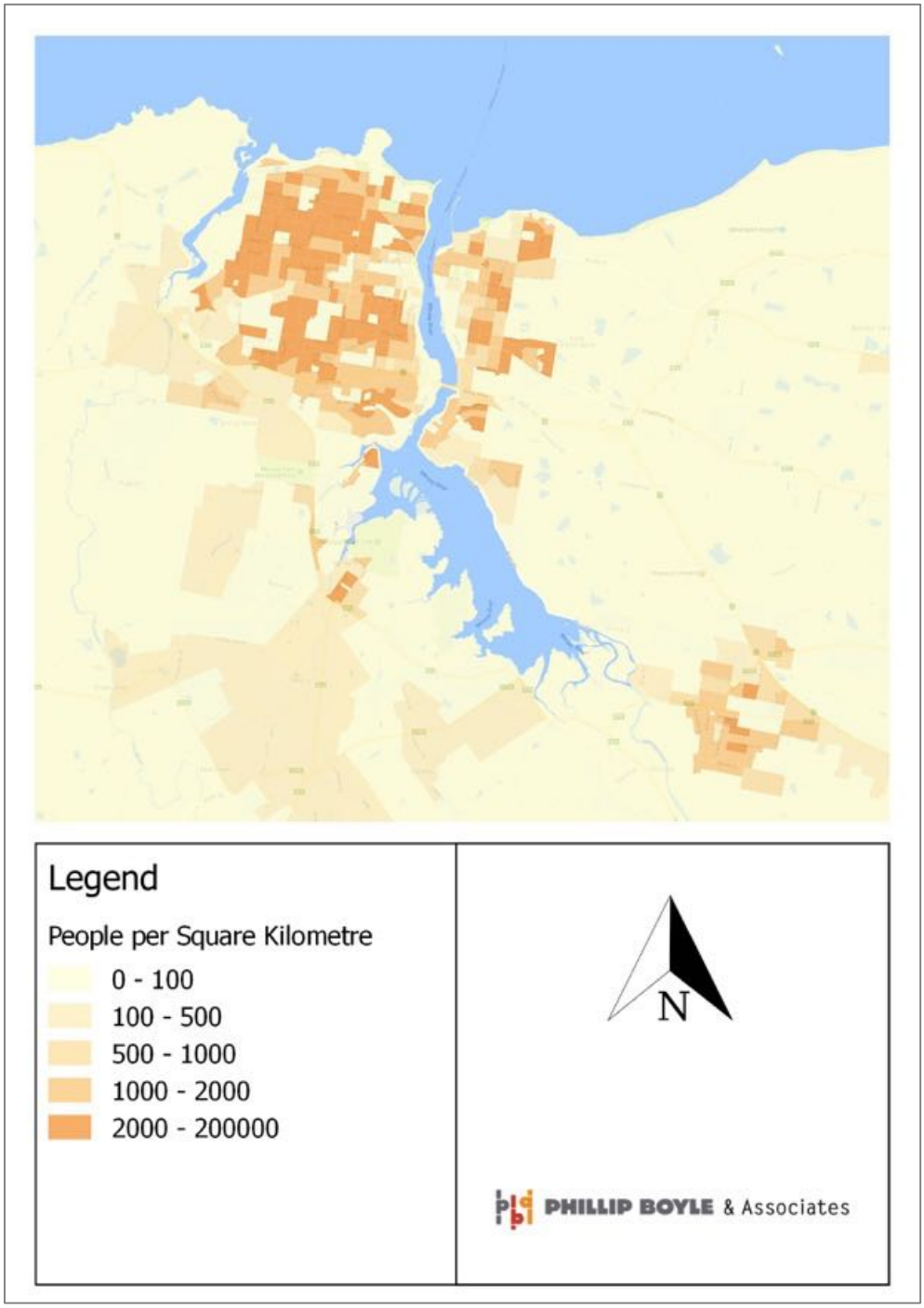
2.6. FACTORS WHICH INFLUENCE CURRENT BUS USAGE IN DEVONPORT

There are four factors which influence the level of patronage that a bus service can expect to experience; these are each examined in turn in the following sections.

Population - density

Bus patronage will typically be higher where population is most densely located. Figure 9 below shows that, as would be expected, population density is highest around Devonport's CBD.

FIGURE 9 – POPULATION DENSITY IN DEVONPORT

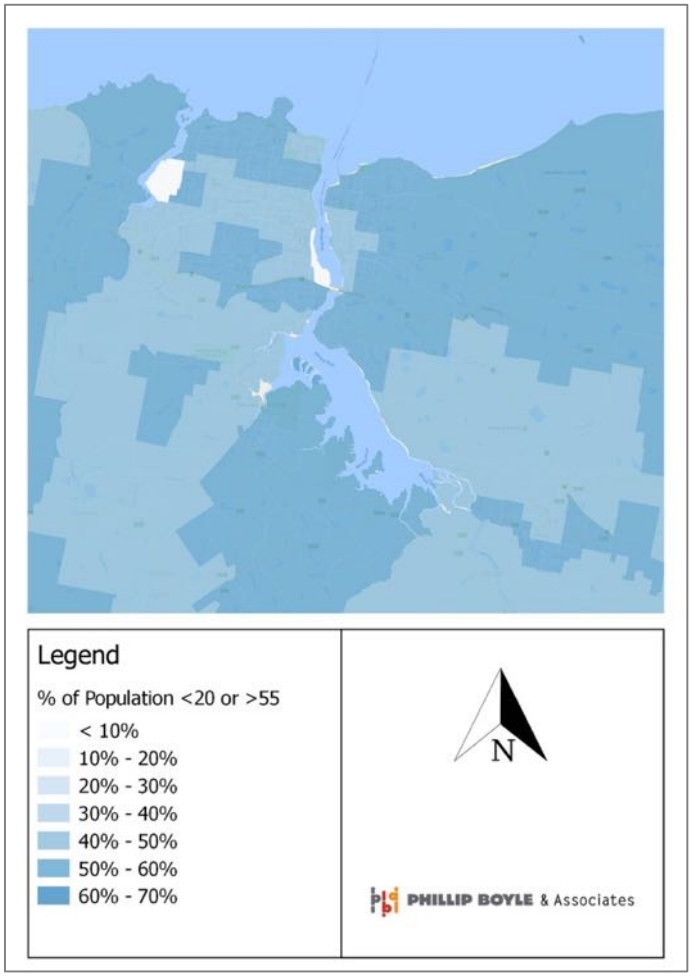


Source: *ABS Census with PBA Analysis*

Population - age

The young and the elderly are typically more intensive users of public transport than the rest of the population. As such, the number of young and elderly in the overall population will have an influence on the level of bus patronage across the study area. Figure 10 below shows that there are a high proportion of both young and old people in many areas within the study region, particularly East Devonport and Latrobe.

FIGURE 10 - AGE PROFILE OF DEVONPORT AREA

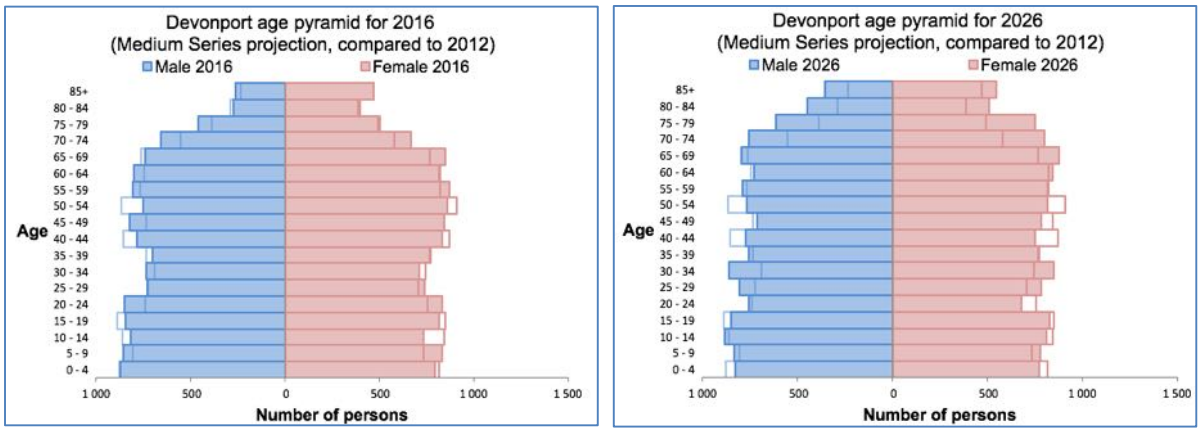


Source: ABS Census with PBA Analysis

The extent to which the age profile of the population will change over time might also be expected to have a bearing on the potential for future bus patronage.

Figure 11 shows that, when comparing 2016 data with projections for 2026, the majority of expected population growth is in the older age groups (that is, those more likely to use buses).

FIGURE 11 - PROJECTIONS OF CHANGE IN AGE PROFILE FOR DEVONPORT



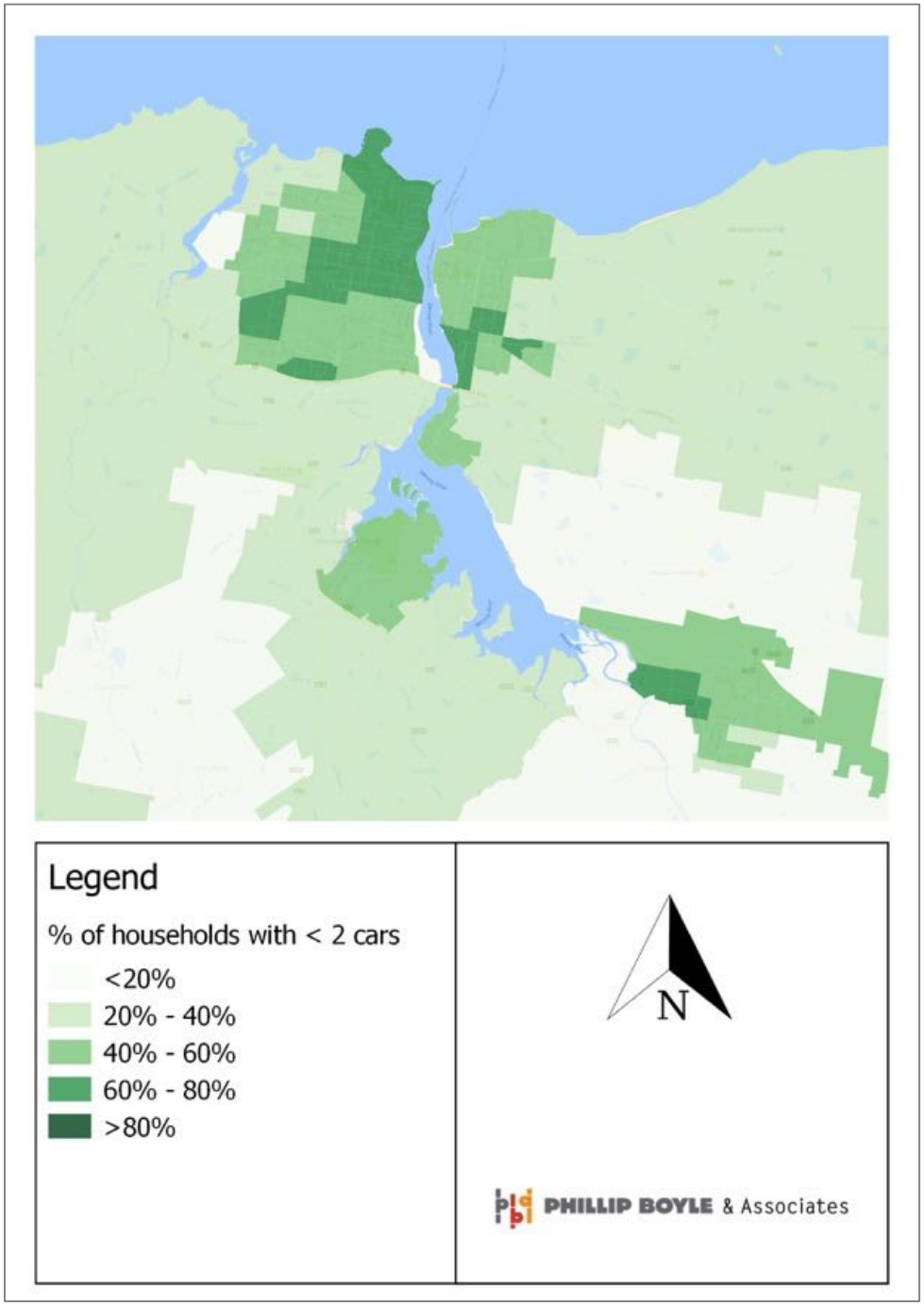
Source: Tasmanian Treasury (2014)

Levels of car ownership

As levels of access to a car grow, the likelihood of using public transport decreases.

Figure 12 shows that Devonport has higher car ownership in rural areas, with the CBD area (along with parts of East Devonport and Latrobe) having lower levels of ownership.

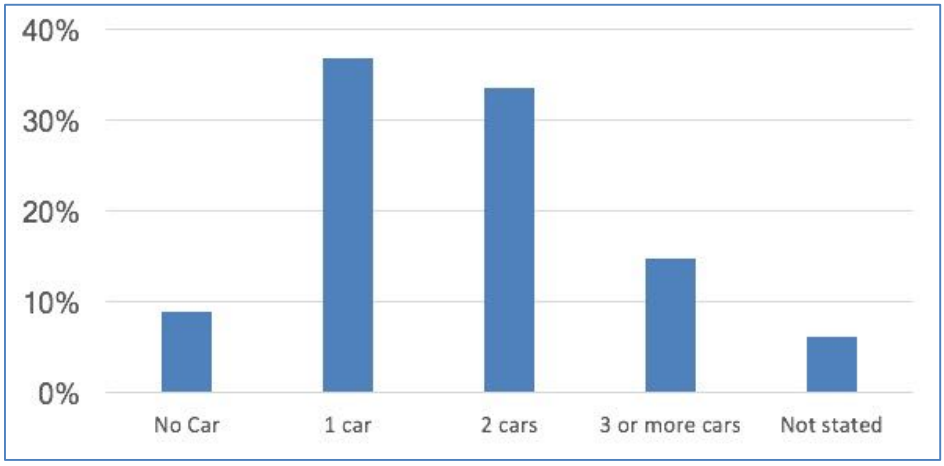
FIGURE 12 - PROPORTION OF DEVONPORT HOUSEHOLDS WITH LESS THAN 2 CARS



Source: ABS Census with PBA analysis

In addition, when examining the proportion of households with 0 to 1 car, Devonport has a higher number of low-car access households (46%) than across Tasmania (43%).

FIGURE 13 - LEVELS OF CAR OWNERSHIP IN DEVONPORT

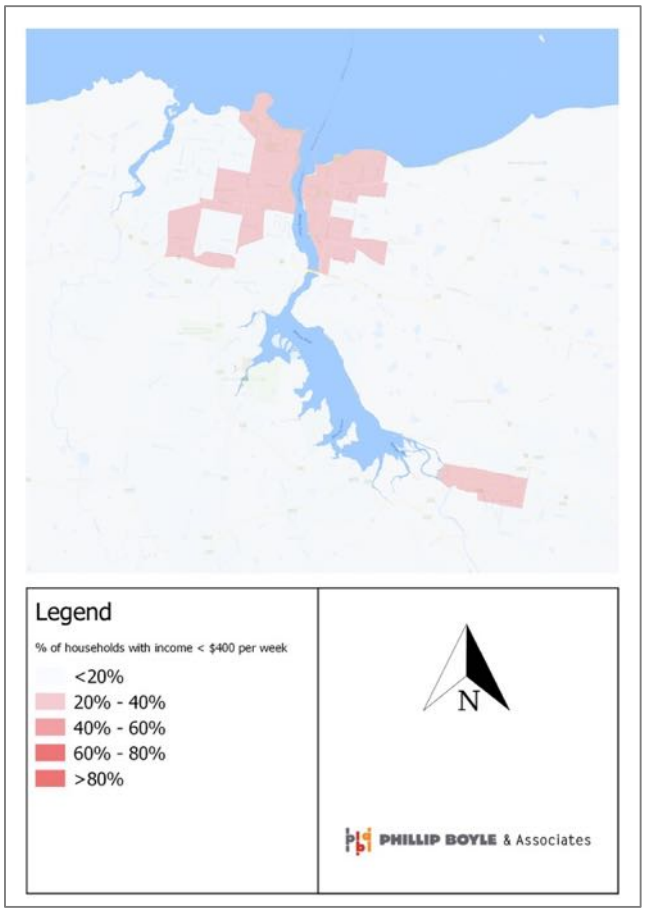


Source: ID (2011 census data) and PBA Analysis

Household income

Higher household income is usually associated with increased access to a car, and is therefore inversely correlated with propensity to use public transport. Figure 14 below shows that the proportion of households with income of less than $400 per week is highest in East Devonport and parts of the CBD.

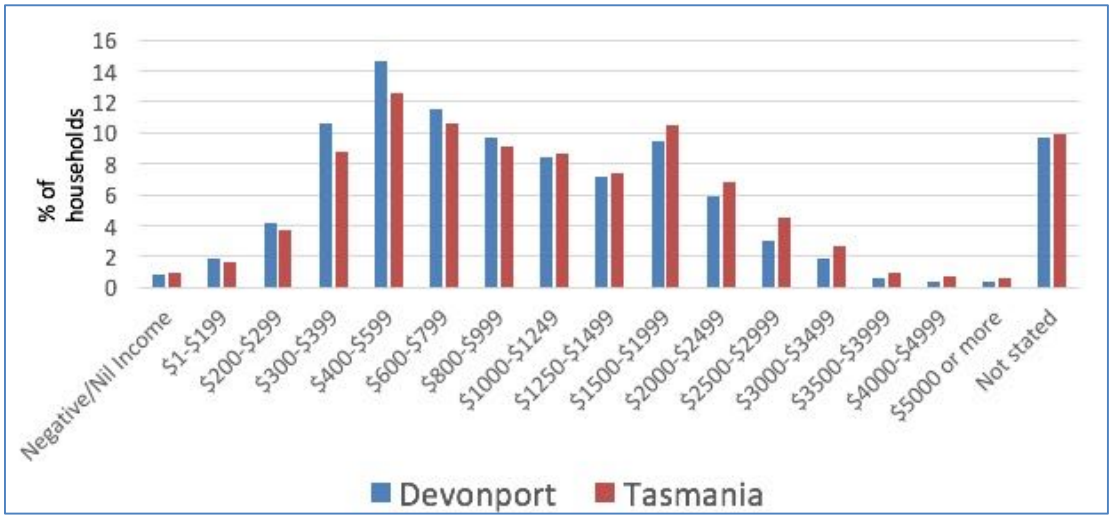
FIGURE 14 - DISTRIBUTION OF HOUSEHOLD INCOME IN DEVONPORT



Source: ABS Census with PBA analysis

In addition, when comparing to the whole of Tasmania, it can be seen there are a higher proportion of households with income of less than $1,000 per week in Devonport (53%) than the state average (47%).

FIGURE 15 - INCOME DISTRIBUTION IN DEVONPORT COMPARED TO TASMANIA

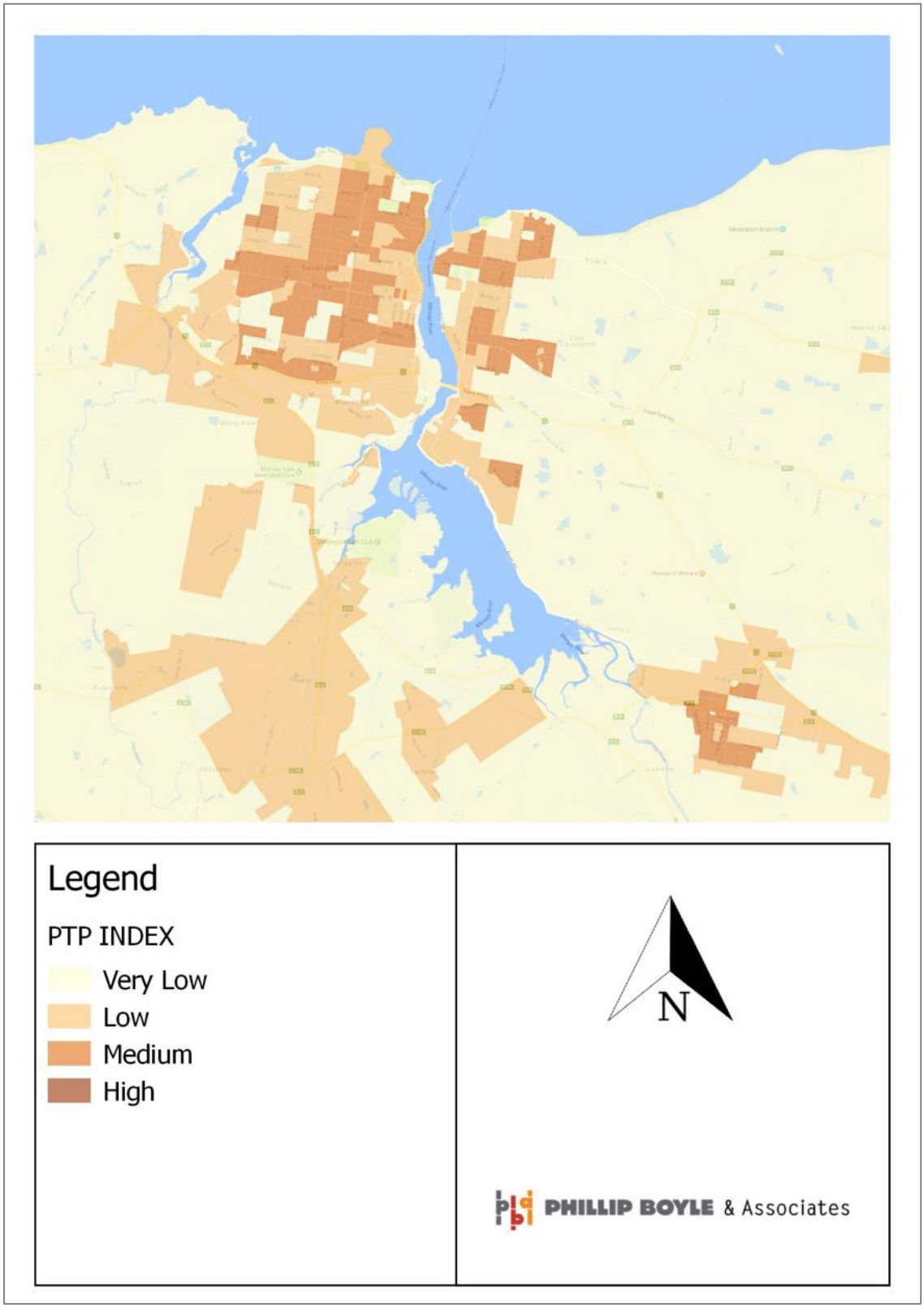


Source: ID (2011 census data) and PBA analysis

2.7. OVERALL PROPENSITY TO USE PUBLIC TRANSPORT

By pulling together the four categories listed above, it is possible to create a Public Transport Propensity Index (PTPI). This is designed to show the areas where people are most likely to use public transport. Figure 16 shows that the PTPI for Devonport highlights that the areas most likely to generate high public transport usage are in Devonport CBD, East Devonport and Latrobe.

FIGURE 16 - PUBLIC TRANSPORT PROPENSITY INDEX FOR DEVONPORT



Source: ABS Census with PBA analysis

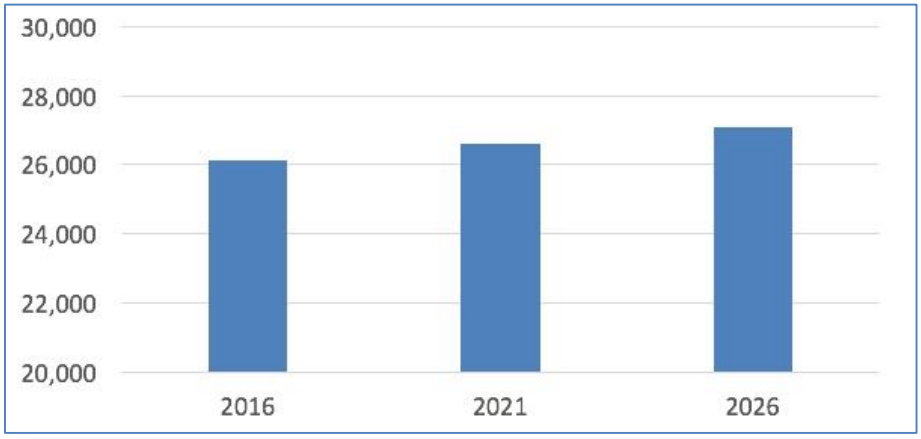
2.8. OTHER FACTORS WHICH MAY INFLUENCE FUTURE BUS PROVISION IN DEVONPORT

The extent to which the population in Devonport grows over time, and the extent to which land use changes, may influence the future bus provision. As such, these factors should be examined and noted.

Population - size

Devonport's overall population is projected to grow by a modest 4% between 2016 and 2026 (as per Figure 17 below). This suggests relative stability in the overall market of potential bus users and, for example, that the current bus fleet will likely be able to meet the need of future provision.

FIGURE 17 – PROJECTIONS OF CHANGE IN DEVONPORT POPULATION

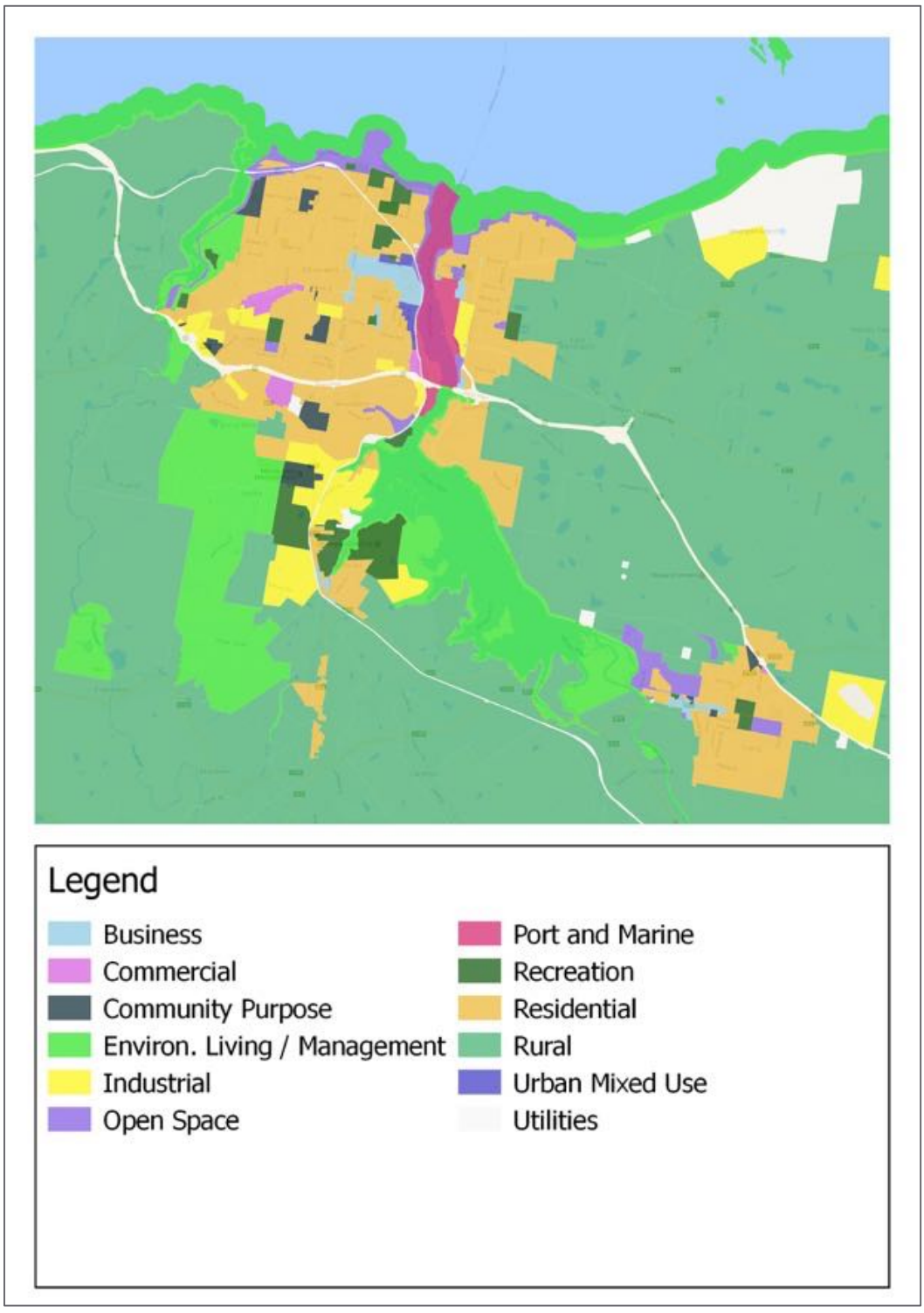


Source: *Tasmanian Treasury (2014)*
Note: *Includes total Devonport population (not just urban area population)*

Land use

The proportion of available land set aside for residential property will have an impact on the expected level of public transport usage. As Figure 18 below shows, Rural and Environmental Living / Management are the dominant categories across the review area. If these are excluded, then Residential accounts for just over half of the remaining land use in the study area.

FIGURE 18 - LAND USE ZONING IN DEVONPORT



Source: City of Devonport & PBA analysis

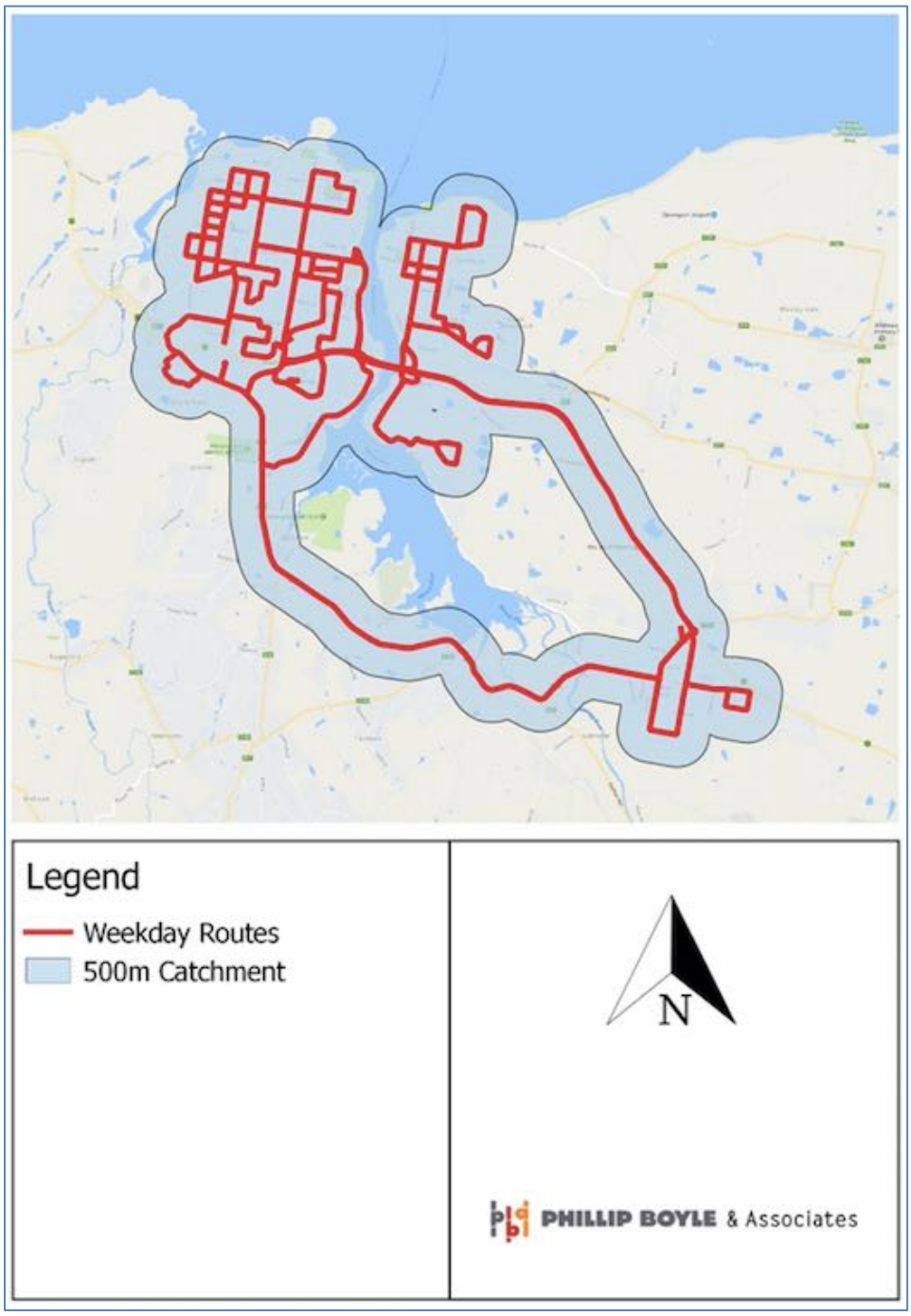
PBA reviewed the Urban Planning Strategies and land use maps to ensure we understand the likely future land use and how it will influence travel patterns and needs in the area. The main changes envisaged in Devonport and Latrobe include intensification of activity in Devonport CBD (through the Living City project) and expansion of urban areas on the fringe of Latrobe.

2.9. EXISTING NETWORK - SPATIAL COVERAGE

The Department of State Growth aims to provide public transport within 500 metres of at least 90% of urban dwellings in Devonport. Half a kilometre represents a walk of approximately five minutes.

The existing bus network provides very high spatial coverage of the urban area (over 99% on weekdays) as shown in Figure 19 below.

FIGURE 19 - PUBLIC TRANSPORT NETWORK COVERAGE - WEEKDAY



Source: *Merseylink GTFS data with PBA analysis*
Note: *An area is defined as urban when there are 15 or more properties per hectare*

Gaps in the public transport coverage are typically areas that have a low density of urban activity. On Saturdays, the number of routes in operation is reduced and the coverage of urban areas drops to 97%. The directness of trips also reduces on Saturdays when some loop routes are only operated in one direction.

An examination of the current coverage suggests several potential issues which it may be possible to address in the network review:

- Many areas appear saturated (coverage is duplicated between routes)
- Customers must determine which street to wait in to minimise journey time (for example, passengers at the intersection of Nicholls and William Streets need to choose between two stops within 200 metres – due to the route alignment the travel time between the two stops by bus is 4-5 minutes)
- There may be some inefficient bus movements (including one way loop services)

2.10. EXISTING NETWORK - SERVICE LEVELS

Of the twelve existing urban routes in Devonport, none operate before 7am or after 6pm. Saturday services are offered on five of the twelve urban routes and one additional route that only operates on Saturdays (Route 35). The level of service on each route on Saturday is much lower than on a weekday (resulting in 70% less Saturday services than on a weekday). There are no services on Sunday.

A total of 435 services per week operate across the urban network (this excludes dedicated school routes). There is a total of 592 services per week across the network, composed of 82 services on each of five weekdays, and 25 services on a Saturday. Numerous route variations occur each day. This results in a total of 43 variants for the twelve routes as shown in Table 2 below.

TABLE 2 - DEVONPORT BUS SERVICES PER WEEK

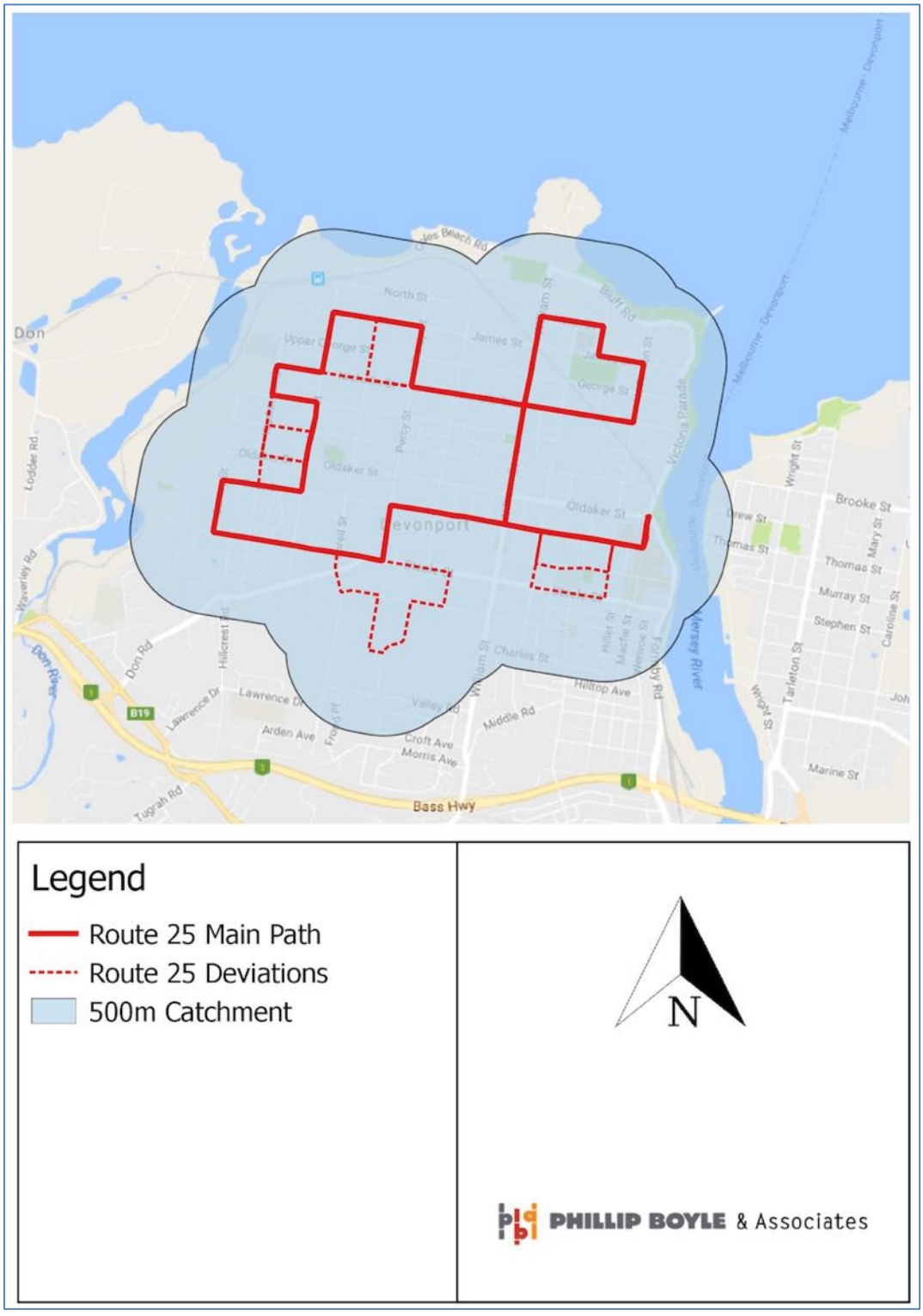
ROUTE	SERVICES PER WEEKDAY	SERVICES PER SATURDAY
30	14	NIL
15	12	5
25	11	NIL
40	10	6
60	9	4
50	6	NIL
80	6	2
65	5	2
45	4	NIL
55	4	NIL
20	1	NIL
35	NIL	6
Total	**82**	**25**

Source: Merseylink; data as at February 2017. Note that any each loop service is counted twice

2.11. EXISTING NETWORK - DIRECTNESS

Some of the existing routes on the Devonport network are very indirect as illustrated in Figure 20 below. This uses Route 25 as an illustration and highlights significant potential for improvement.

FIGURE 20 - ROUTE DIRECTNESS - ROUTE 25



Source: PBA analysis of Merseylink GTFS feed

Customer journey times can be reduced if bus routes run as directly as possible between the key attractors on the route. However, this is not always possible as several operational factors must be considered:

- There are constraints which the existing road network may impose
- Road layout and topography of the area may make certain paths between locations impractical
- Roads may not be suitable for buses.

2.12. EXISTING BURNIE BUS NETWORK

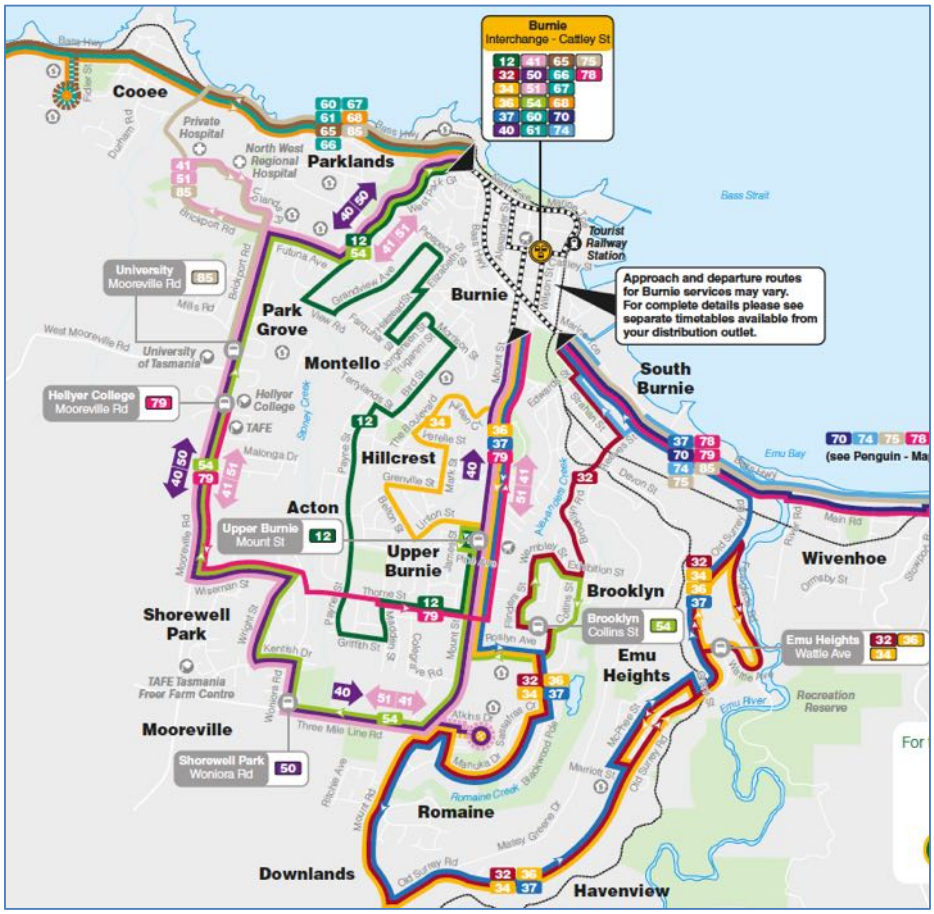
The Burnie review focuses on the urban bus network. A full review of urban-fringe and regional services is being carried out by State Growth, and is not duplicated by this project. However, services in Somerset, Wynyard and Wivenhoe have been included within this review to ensure network recommendations can be integrated into the review of those urban-fringe services.

All school services operated in Burnie are out of scope for this review, but are being assessed separately by State Growth. Route 85 (HospitalLink) is also out of scope.

State Growth is responsible for contracting the public transport bus services in Burnie. Excluding HospitalLink, there are 21 urban and non-urban routes (although of these, Route 67 only operates in school holidays). All services are currently operated by Metro.

The core of the existing urban bus network is shown in Figure 21 below.

FIGURE 21 – BURNIE URBAN BUS NETWORK



Source: *Metro Tasmania*

The current network serves several activity centres, including:

- Burnie CBD
- TAFE and Hellyer College
- Upper Burnie
- Somerset
- University of Tasmania
- Burnie Hospitals
- Several schools, including Montello Primary School and Romaine Park Primary School

Summary of current patronage

In 2017, from 19 February – 11 March inclusive, there were an average of 1,246 weekday boardings on the urban Burnie, as detailed in Table 3 below.

TABLE 3 - BURNIE BOARDINGS BY ROUTE

	WEEKDAY		SATURDAY	
ROUTE	AVERAGE BOARDINGS	AVERAGE BOARDINGS PER SERVICE	AVERAGE BOARDINGS	AVERAGE BOARDINGS PER SERVICE
12	109	5	22	2
32	32	3	19	2
34	78	8		
36	7	7		
37	37	37		
40	55	55		
41	159	14	33	8
50	7	7		
51	155	17	48	10
54	31	31		
60	324	22	83	17
61	8	8		
65	10	3		
66	22	11		
68	34	34		
70	121	8	39	7
74	14	14		
75	2	1		
78	32	32		
79	10	10		
Total	**1,246**	**11**	**244**	**7**

Source: PBA analysis based on data provided by Metro, 19/02/2017 - 11/03/2017 inclusive

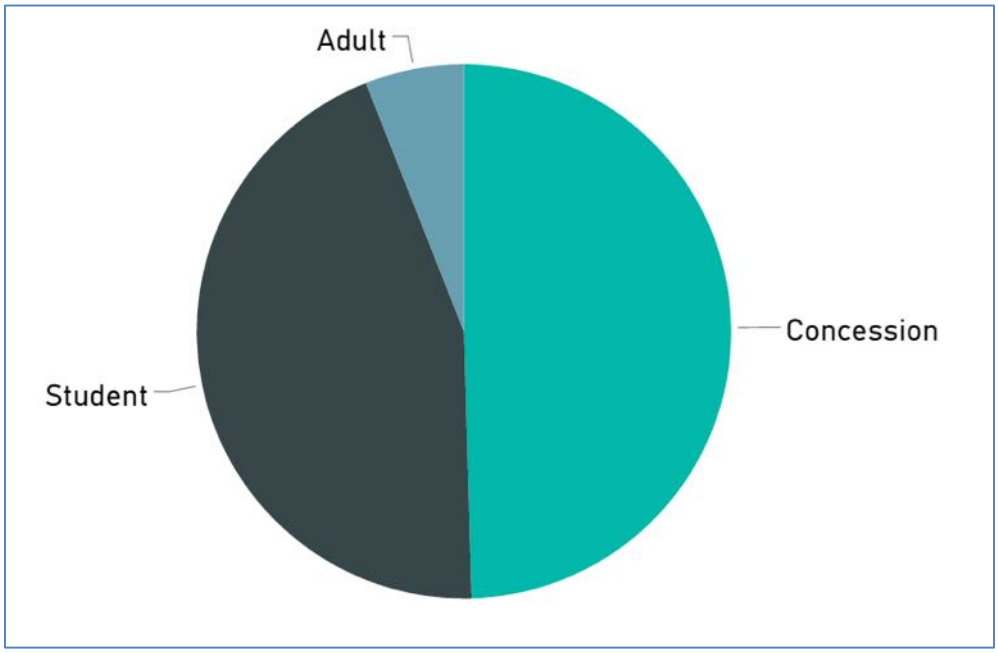
Boardings were largest on Route 60 (Wynyard-Burnie) with an average of 324 boardings every weekday. There was also a large number of boardings on Routes 41 and 51 with 159 and 155

average weekday boardings respectively. These two routes (41 and 51) are single direction routes that together form a bi-directional loop of the bulk of Burnie's urban area.

Average boardings per service are 30% lower on Saturdays compared with an average weekday.

Analysis of fare type on Burnie urban services shows that only a very small proportion (6%) of customers are travelling on full Adult fares (see Figure 22 below).

FIGURE 22 – BURNIE PASSENGERS BY FARE TYPE



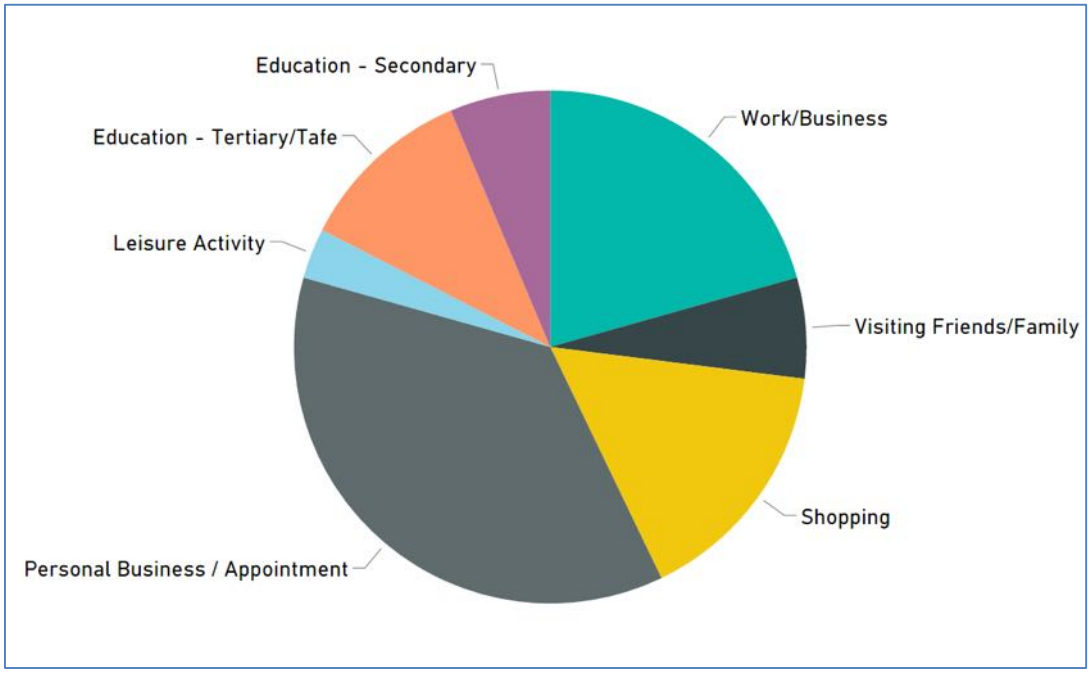
Source: *MetroTas data with PBA analysis*
Note: *School services are excluded and all children are classified as a Student Fare (not concession)*

2.13. BURNIE PASSENGER ANALYSIS

As part of this review exercise, passenger interviews and counts were carried out on two of the busiest routes (Routes 41 and 51) from Tuesday 28th February - Saturday 4th March (inclusive).

The interviews were only carried out with adults on these services. Figure 23 below shows that the largest category for journey purpose was personal business / attending an appointment, closely followed by work / business.

FIGURE 23 – BURNIE PASSENGER JOURNEY PURPOSE



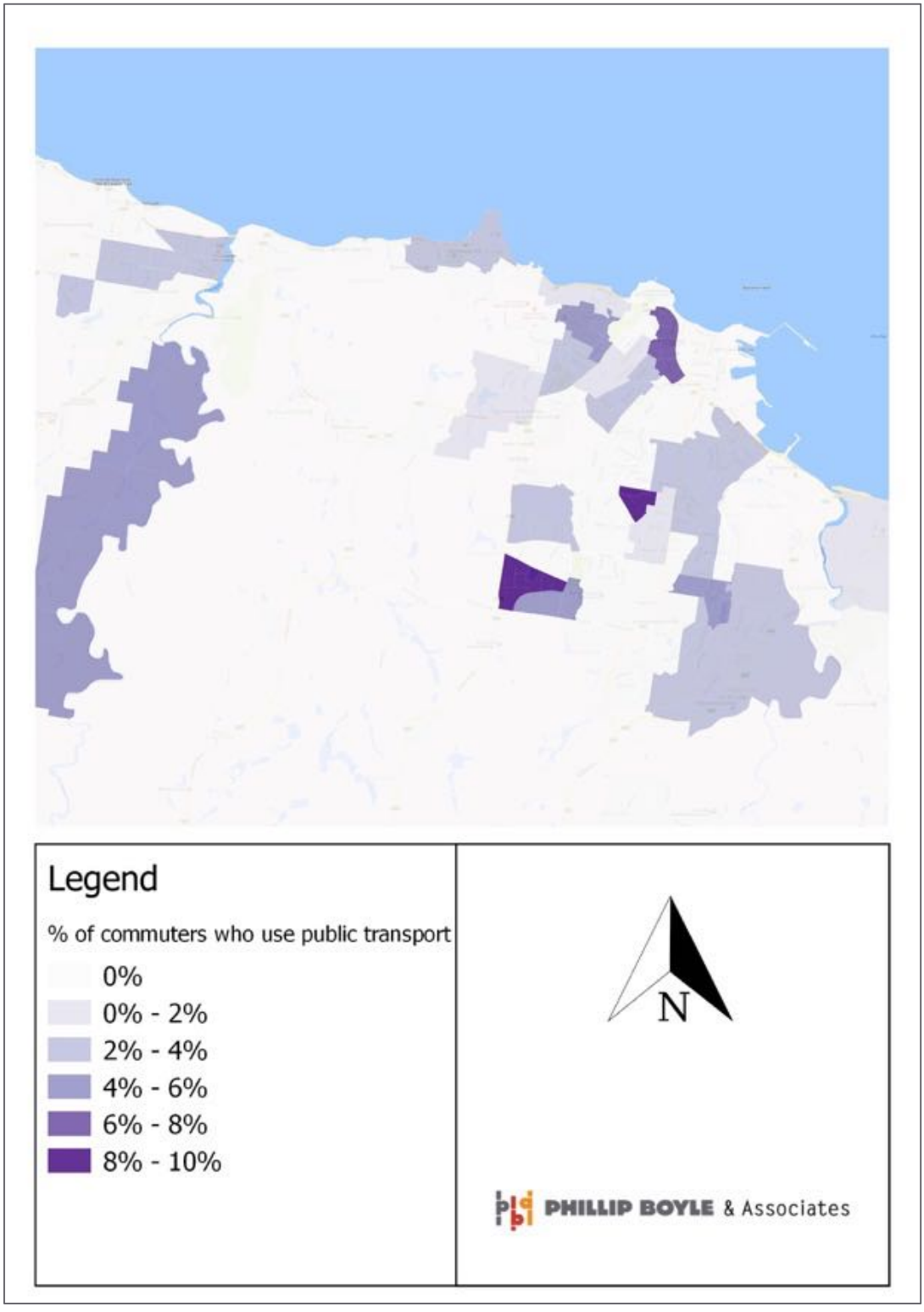
Source: PBA surveys and analysis; sample size = 64

Journeys are typically either discretionary (that is, the customer has an element of choice in making them, typically reflecting some flexibility about timing or urgency) or non-discretionary (the journey has less flexibility on timing). Journeys made to a place of work typically reflect a non-discretionary choice (the customer will likely have set hours of work that they need to observe).

Across Burnie, over 90% of workers are choosing to use their car to get to work, with the bus network used by only 1% of workers. Walking accounted for just over 5% of trips to work, with other modes (including bicycle and taxi) accounting for around 3%.

There are however small pockets of higher public transport use amongst workers in Burnie CBD, Acton and Shorewell Park, as shown in Figure 24 below.

FIGURE 24 - PROPORTION OF COMMUTERS USING PUBLIC TRANSPORT IN BURNIE



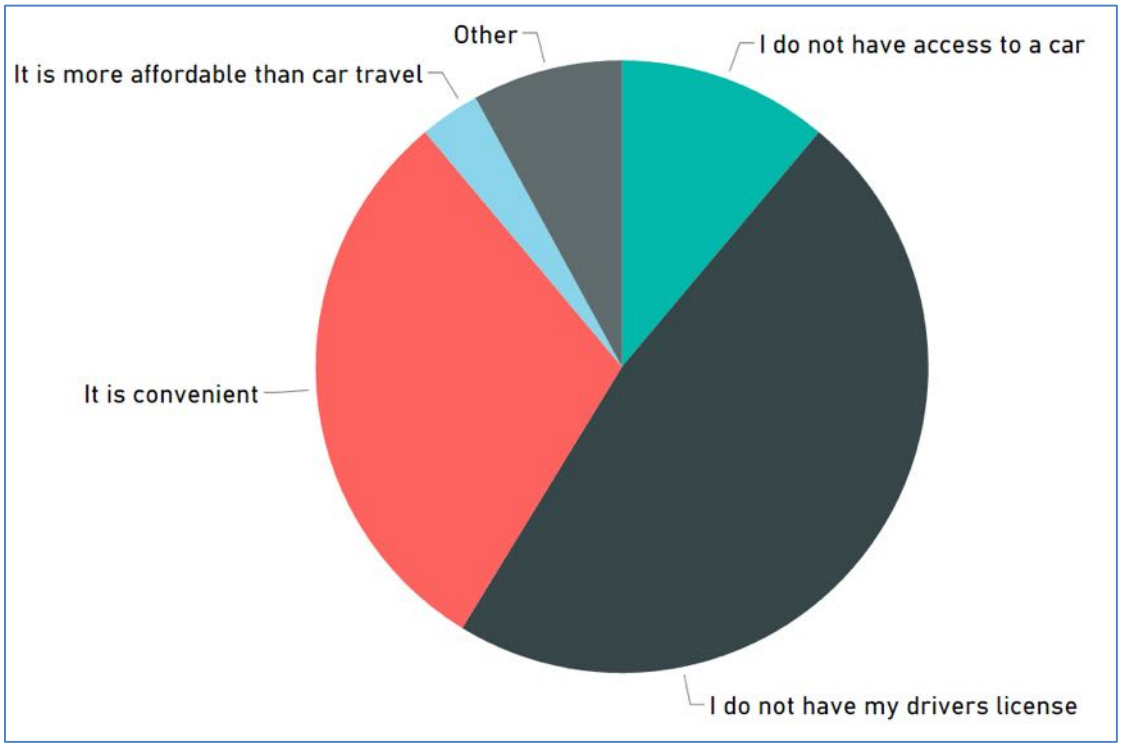
Source: ABS Census with PBA analysis

2.14. REASONS FOR TAKING THE BUS IN BURNIE

The on-board interviews also asked why customers were taking the bus. The survey findings are highlighted in Figure 25 below. The survey established:

- Almost 60% of adults were using the bus because they did not have access to a car or a driver's licence
- Only 3% said that affordability compared to car travel was factor
- 30% said that convenience of the bus was a reason for using the bus

FIGURE 25 – WHY BURNIE PASSENGERS ARE USING THE BUS



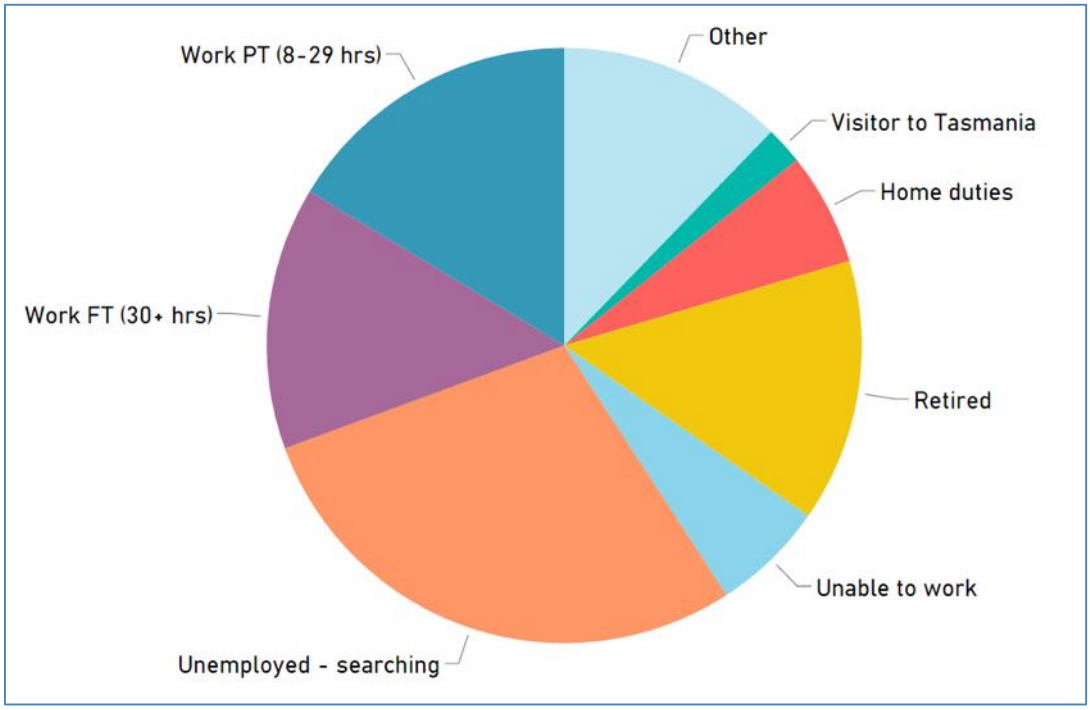
Source: PBA surveys and analysis; sample size = 64

2.15. ECONOMIC FACTORS

Economic activity information was also collected through the on-board interviews. The survey established that:

- Unemployed/unable to work was the largest single category amongst those surveyed
- Part time work and retired were both larger groups than full time workers

FIGURE 26 – ECONOMIC ACTIVITY OF BURNIE PASSENGERS



Source: *PBA surveys and analysis; sample size = 64*

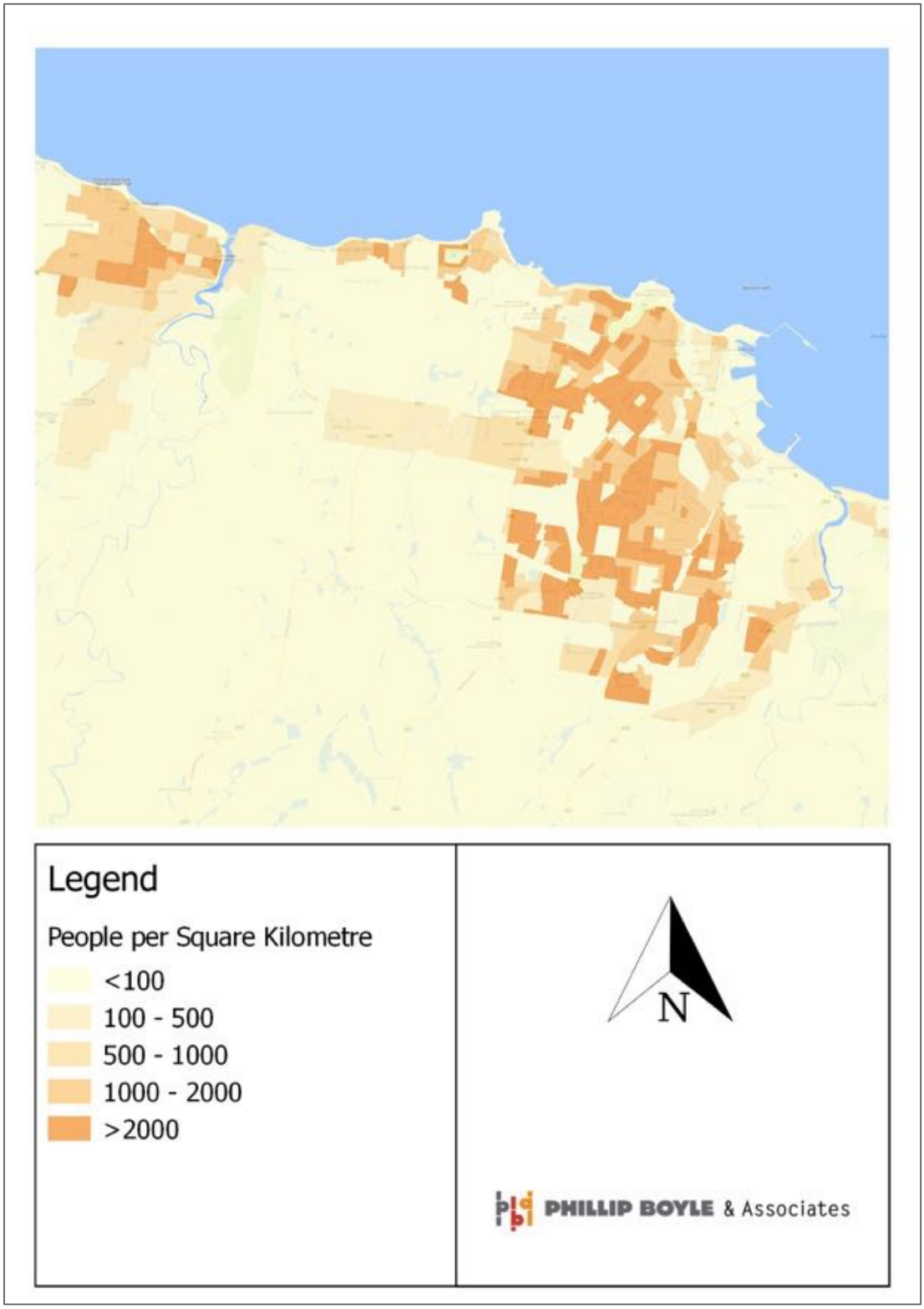
2.16. FACTORS WHICH INFLUENCE BUS USAGE IN BURNIE

As discussed in section 2.6, there are four factors which influence the level of patronage that a bus service can expect to experience; these are each examined in turn in the following sections.

Population - density

Bus patronage will typically be higher where population is most densely located. Figure 27 below shows that population density is relatively consistent across the urban area of Burnie.

FIGURE 27 – POPULATION DENSITY IN BURNIE



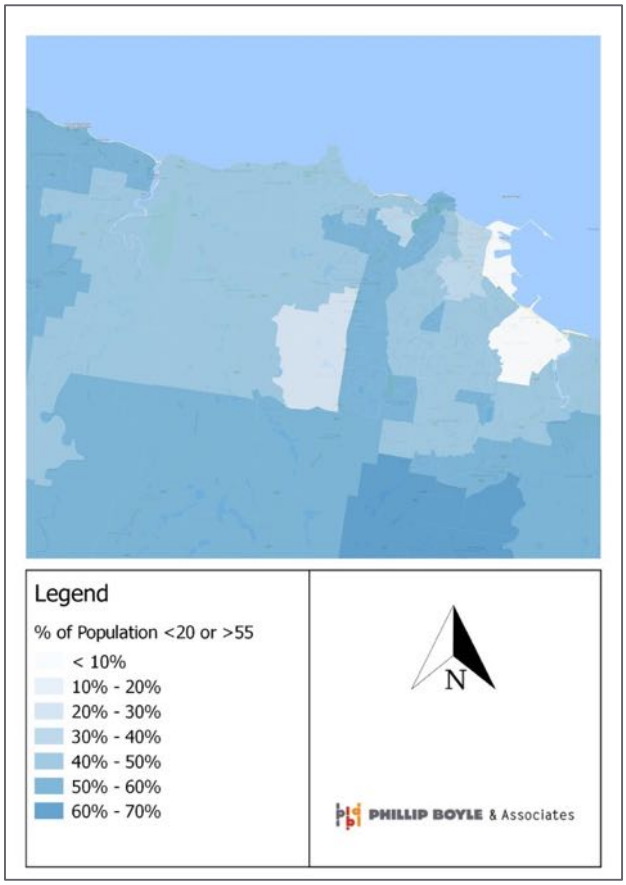
Source: ABS Census with PBA Analysis

Population - age

The young and the elderly are typically more intensive users of public transport than the rest of the population. As such, the number of young and elderly in the overall population will have an

influence on the level of bus patronage across the study area. Figure 28 below shows that there are a high proportion of both young and old people in many areas with in the study region, particularly including South Burnie and the CBD.

FIGURE 28 - AGE PROFILE OF BURNIE AREA

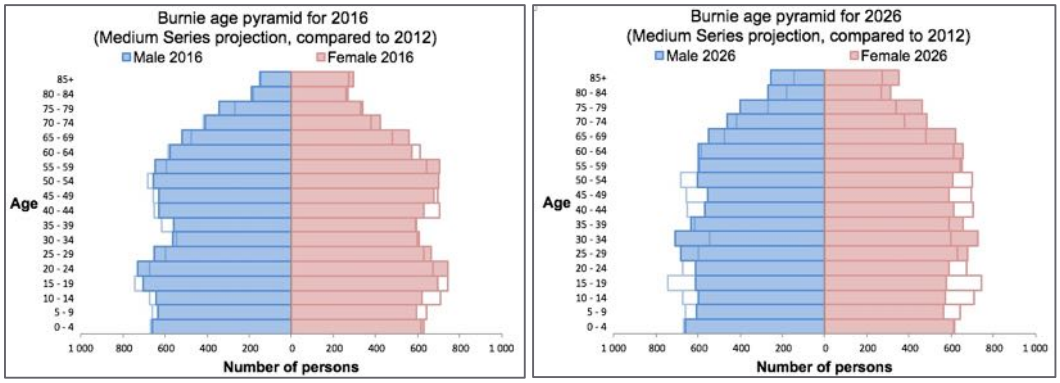


Source: ABS Census with PBA analysis

The extent to which the age profile of the population will change over time might also be expected to have a bearing on the potential for future bus patronage.

Figure 29 shows that, when comparing 2016 data with projections for 2026, the older age groups (that is, those more likely to use buses) are growing in size.

FIGURE 29 - PROJECTIONS OF CHANGE IN AGE PROFILE FOR BURNIE



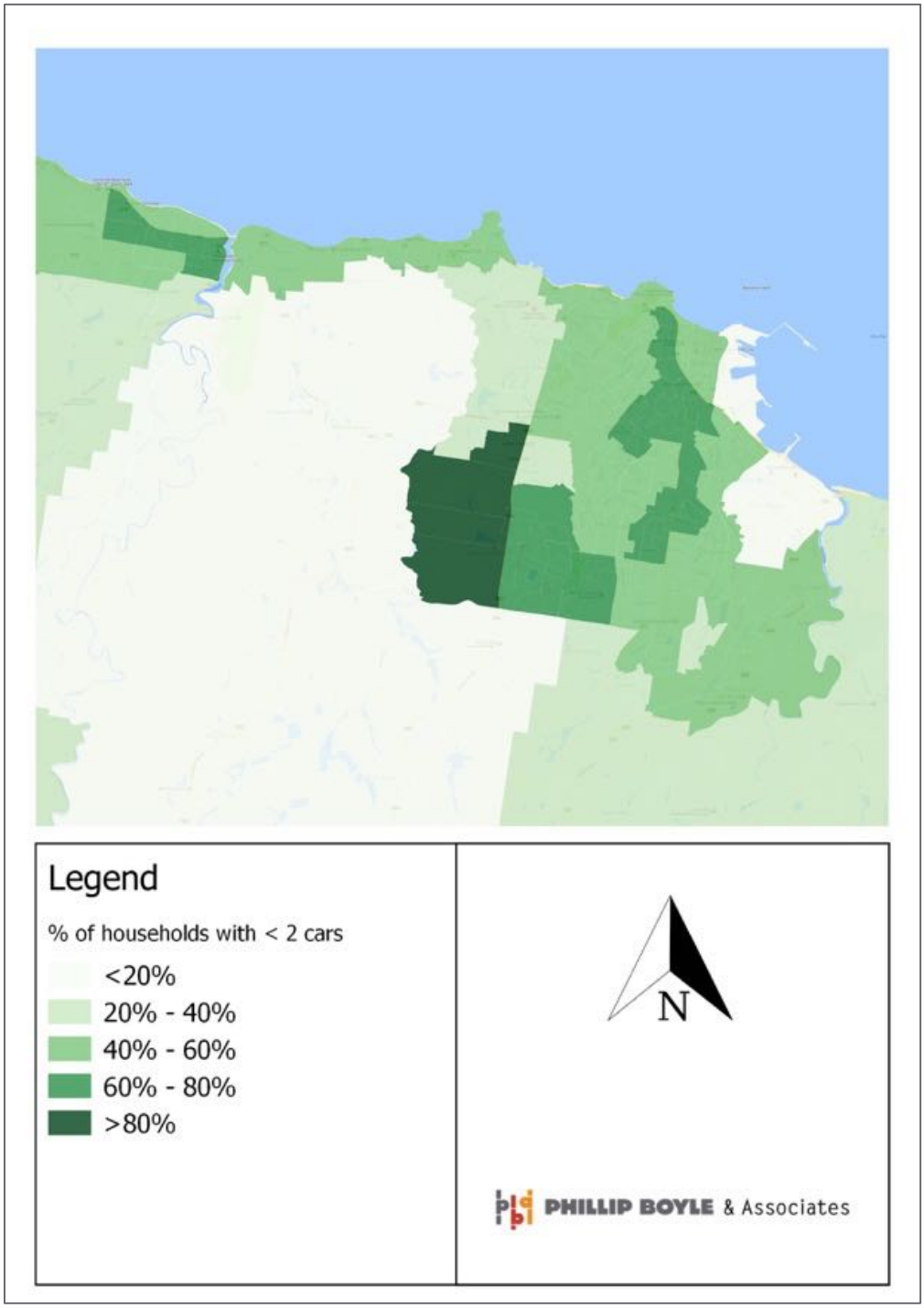
Source: Tasmanian Treasury (2014)

Levels of car ownership

As levels of access to a car grow, the likelihood of using public transport decreases.

Figure 12 shows that Burnie has a higher proportion of car ownership in rural areas, with the CBD having lower proportions of ownership. The lowest share of ownership is in the rural parts of the Shorewell Park area on the western side of Mooreville Road.

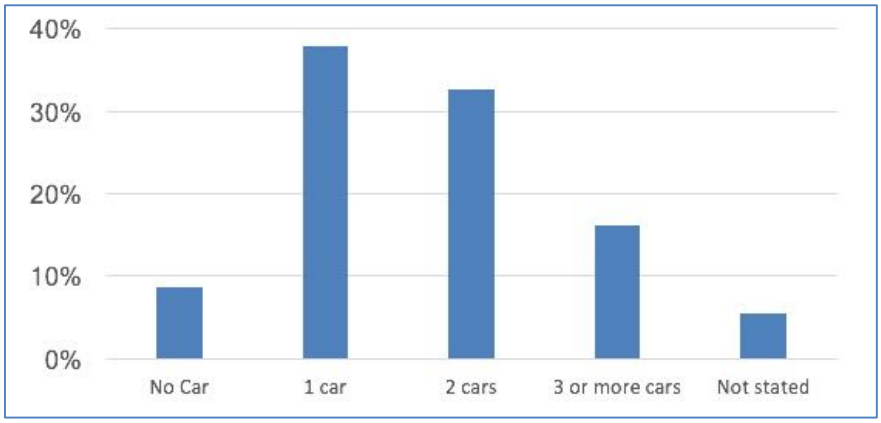
FIGURE 30 - PROPORTION OF BURNIE HOUSEHOLDS WITH LESS THAN 2 CARS



Source: *ABS Census with PBA analysis*

In addition, when examining the proportion of households with 0 to 1 car, it can be seen that Burnie has a higher number of low-car access households (46%) than across Tasmania as a whole (43%); see Figure 31 below.

FIGURE 31 - LEVELS OF CAR OWNERSHIP IN BURNIE

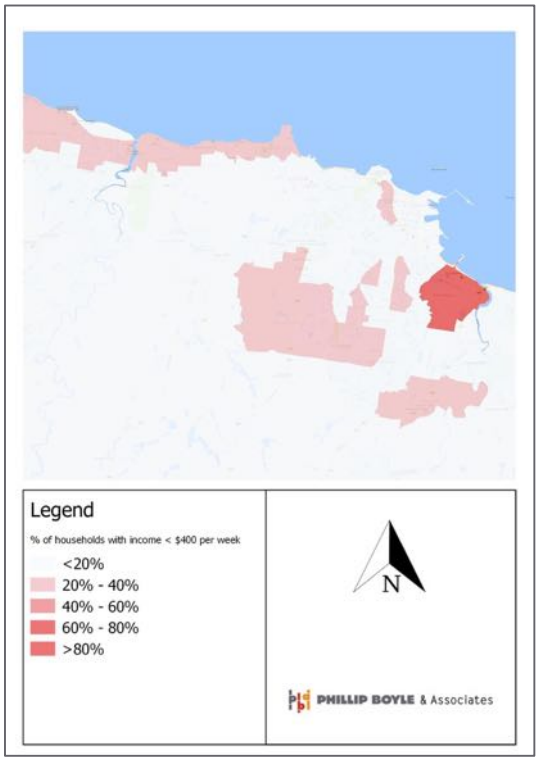


Source: ID (2011 census data) and PBA Analysis

Household income

Higher household income is usually associated with increased access to a car, and is therefore inversely correlated with propensity to use public transport. Figure 32 below shows that the proportion of households with income of less than $400 per week is highest in South Burnie.

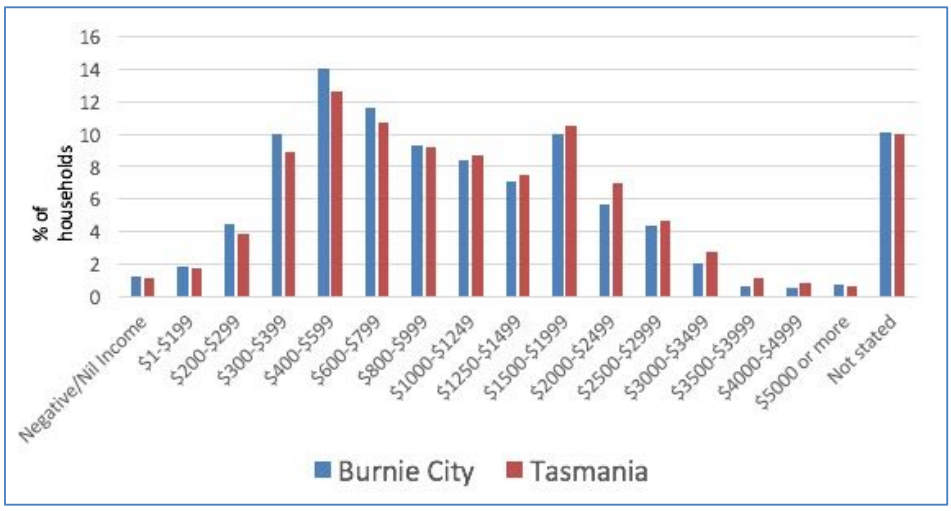
FIGURE 32 - DISTRIBUTION OF HOUSEHOLD INCOME IN BURNIE



Source: ABS Census with PBA analysis

In addition, when comparing to the whole of Tasmania, it can be seen there are a higher proportion of households with income of less than $1,000 per week in Burnie (52%) than the state average (47%).

FIGURE 33 - INCOME DISTRIBUTION IN BURNIE COMPARED TO TASMANIA

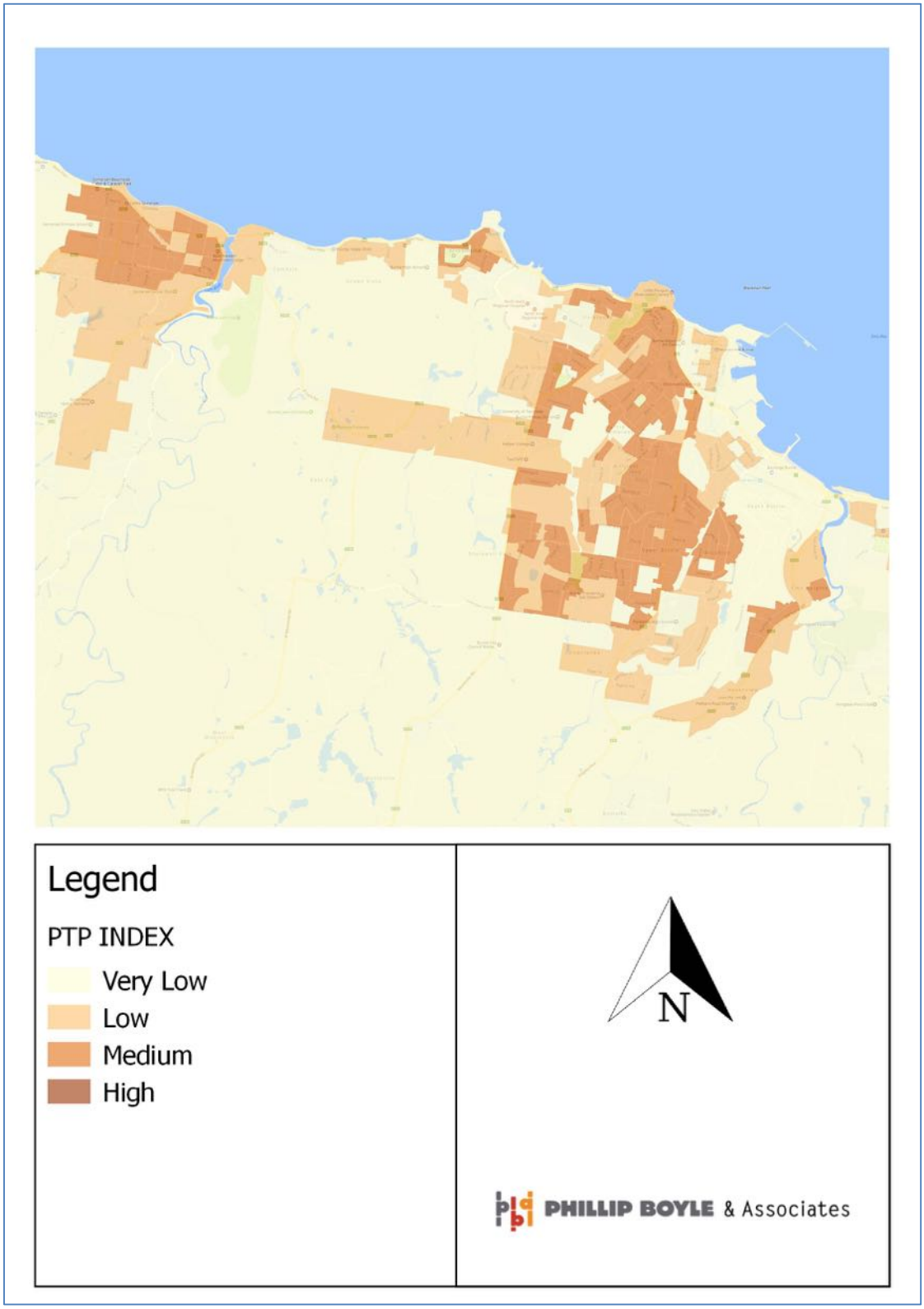


Source: ID (2011 census data) and PBA analysis

Overall propensity to use public transport

By pulling together the four categories listed above, it is possible to create a Public Transport Propensity Index (PTPI). This is designed to summarise the areas where people are most likely to use public transport. The PTPI for Burnie (Figure 34) shows that the locations most likely to generate high public transport usage are distributed all around the study area.

FIGURE 34 - PUBLIC TRANSPORT PROPENSITY INDEX FOR BURNIE



Source: *ABS Census with PBA analysis*

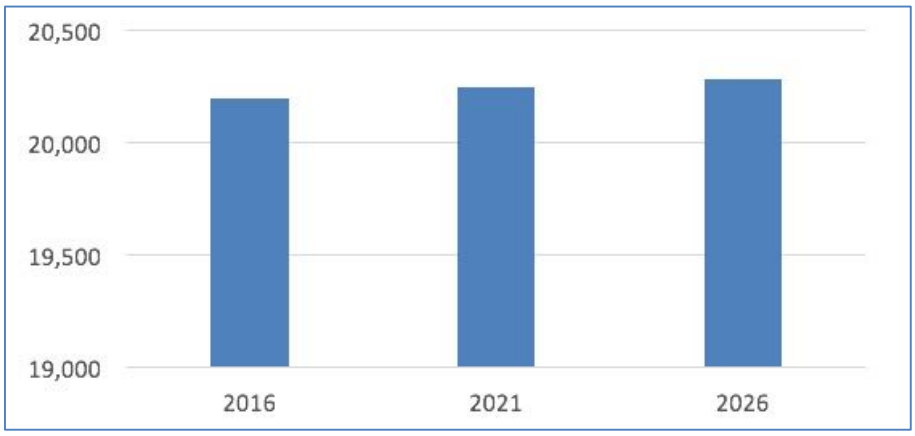
2.17. OTHER FACTORS WHICH MAY INFLUENCE FUTURE BUS PROVISION IN BURNIE

The extent to which the population in Burnie grows over time, and the extent to which land use changes, may influence the future bus provision. As such, these factors should be examined and noted.

Population - size

Burnie's overall population is projected to grow by only 0.4% between 2016 and 2026 (as per Figure 35 below). This marginal growth suggests relative stability in the overall market of potential bus users, and, for example, that the current bus fleet will likely be able to meet the need of future provision.

FIGURE 35 – PROJECTIONS OF CHANGE IN BURNIE POPULATION

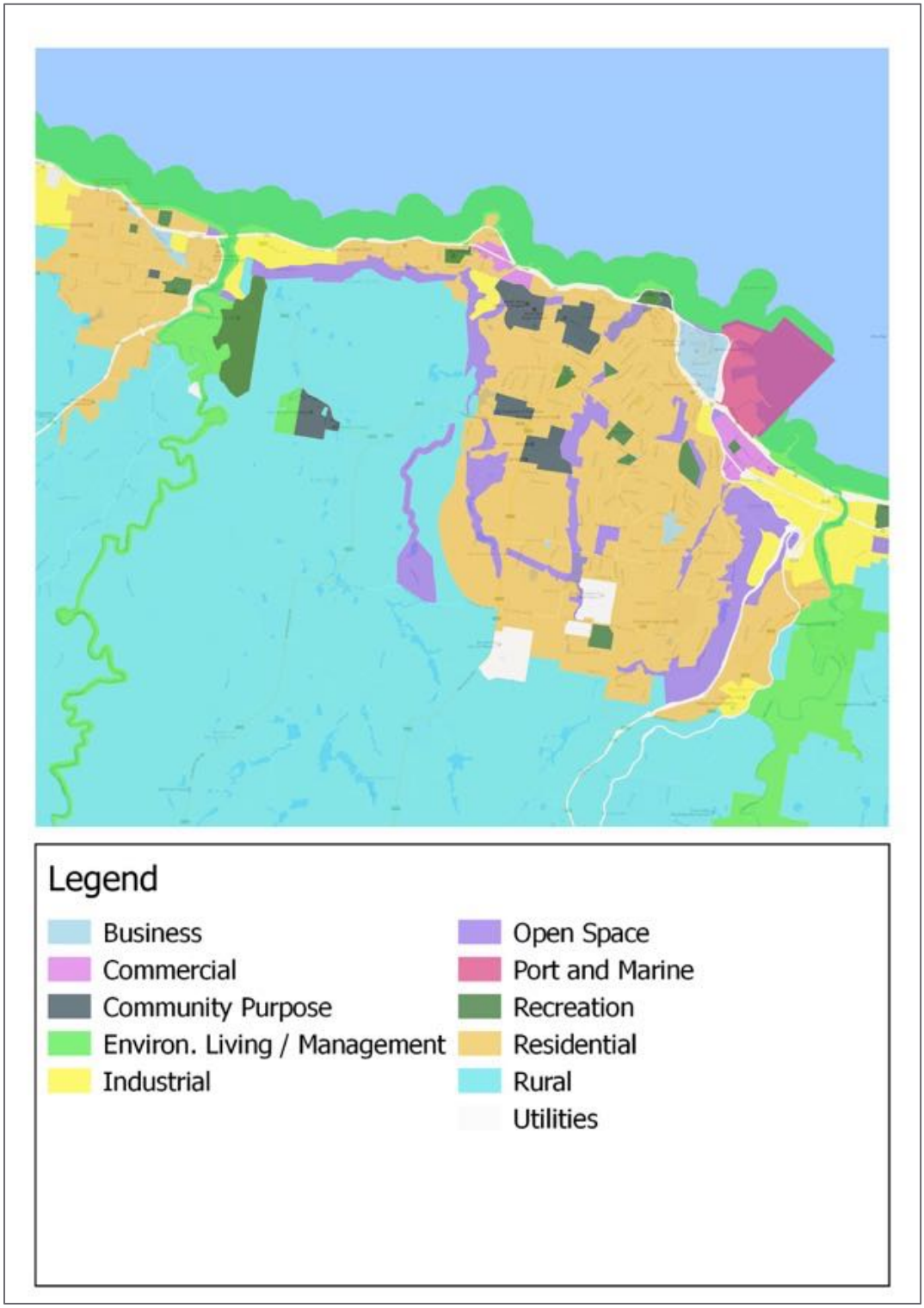


Source: *Tasmanian Treasury (2014)*
Note: *Includes total Burnie population (not just urban area population)*

Land use

The proportion of available land set aside for residential property will have an impact on the expected level of public transport usage. As Figure 36 below shows, Rural and Environmental Living / Management are the dominant categories across the review area. If these are excluded, then Residential accounts for around 40% of the remaining land use in the study area.

FIGURE 36 - LAND USE ZONING IN BURNIE



Source: City of Burnie & PBA analysis

Analysis of strategic documents including the Planning Scheme land use maps highlights that Burnie CBD is the dominant destination in terms of intensity of activity (in a relatively small area). There are also significant areas of undeveloped residential land on the urban fringes of Burnie and several competing development fronts (each with new residential lots available for relatively low density residential development).

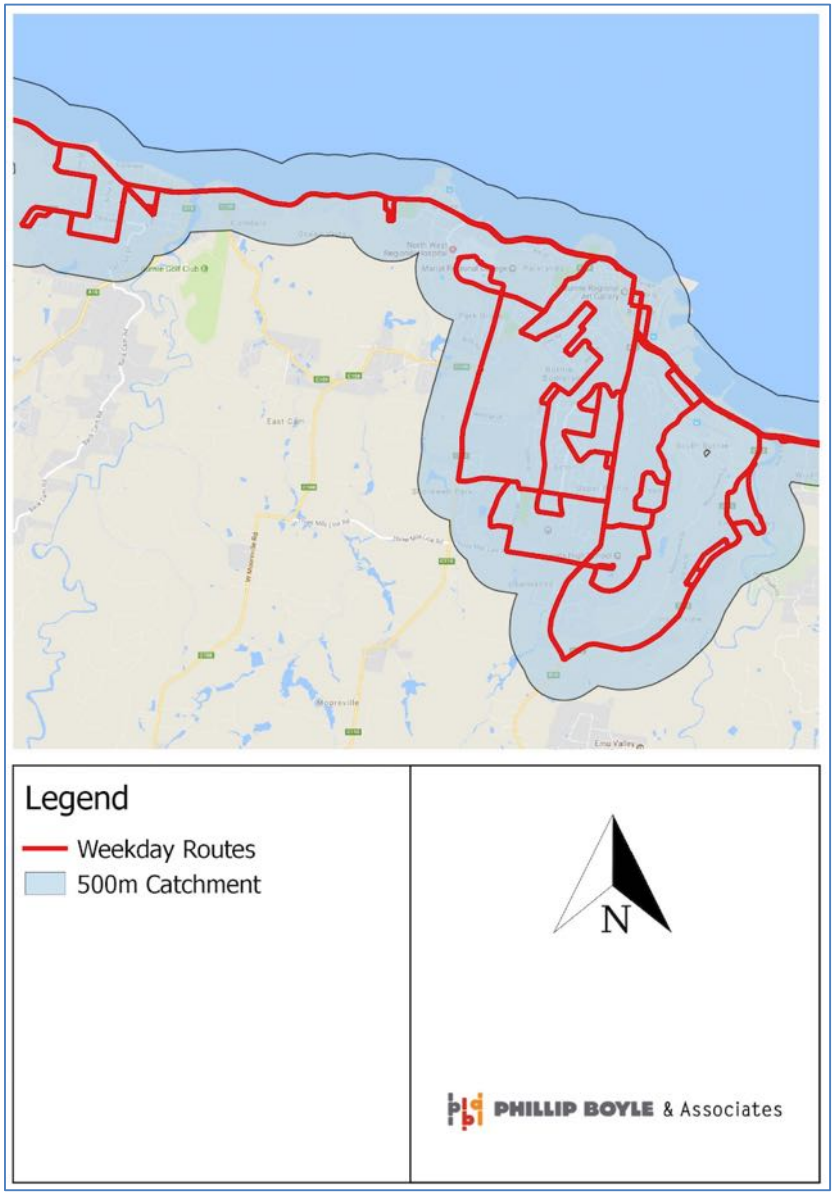
2.18. EXISTING NETWORK - SPATIAL COVERAGE

The Department of State Growth aims to provide public transport within 500 metres of at least 90% of dwellings in urban areas of Burnie. This distance represents a walk of approximately five minutes.

Spatial coverage by the public transport network is very high (over 99% on weekdays) as shown in Figure 19 below. Coverage is also over 99% on Saturdays, despite only six of the 21 routes operating on Saturdays. No urban bus services operate on Sundays. It is noted that the regional Route 85 (HospitalLink) does operate on Sundays but as a regional service, is excluded from the scope of this review.

The bus network and the 500m catchment around each weekday bus route are shown in Figure 37 below. Gaps in the public transport coverage are typically areas of low density land use.

FIGURE 37 - PUBLIC TRANSPORT NETWORK COVERAGE - WEEKDAY



Source: *Merseylink GTFS data with PBA analysis*
Note: *An area is defined as urban when there are 15 or more properties per hectare*

An examination of the current coverage suggests a number of potential issues which it may be possible to address in the network review:

- Many areas appear saturated (coverage is duplicated between routes)
- Customers must determine which street to wait in to minimise journey time (for example, passengers in Joyce Street need to choose between two bus stops that are less than 300 metres apart, but on different routes)
- There may be some inefficient and confusing bus movements (such as ten specific routes that only operate once per day).

2.19. EXISTING NETWORK - SERVICE LEVELS

Of the 21 urban and non-urban routes in the study area for Burnie, two routes operate before 7am and one route operates a service after 6.30pm. Six of the routes operate on Saturdays and no routes operate on Sundays. Ten routes operate only once daily and some others operate only during the school term, or only on school holidays. There is a total of 592 services per week across the network (excluding dedicated school services), composed of 111 services on each of five weekdays, and 37 services on a Saturday. This is detailed in Table 4 below.

TABLE 4 - BURNIE BUS SERVICES PER WEEK

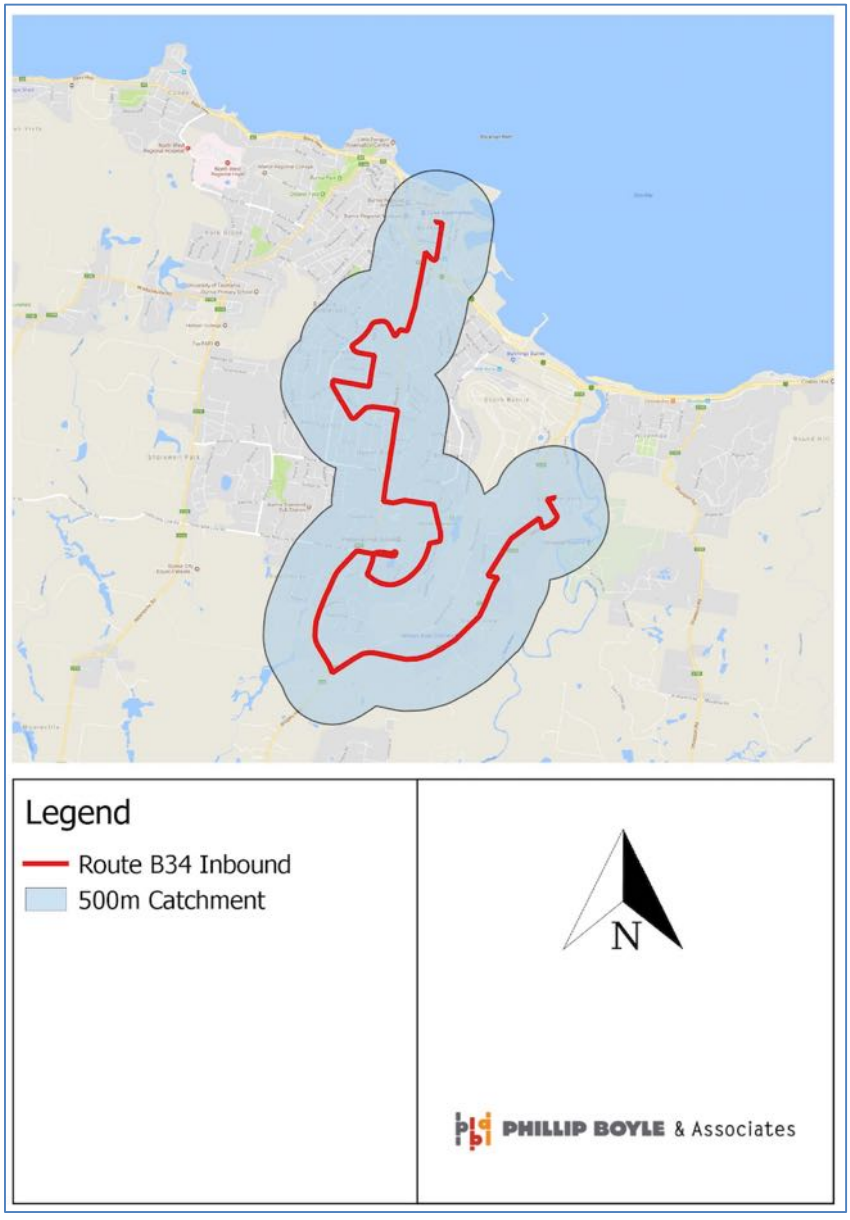
ROUTE	SERVICES PER WEEKDAY	SERVICES PER SATURDAY
12	22	9
70	16	6
60	15	5
41	11	4
32	10	8
34	10	
51	9	5
65	3	
75	3	
66	2	
36	1	
37	1	
40	1	
50	1	
54	1	
61	1	
68	1	
74	1	
78	1	
79	1	
Total	**111**	**37**

Source: *Merseylink; data as at February 2017*
Note: *Route 67 (which only operates in school holidays) was not in operation during the study period*

2.20. EXISTING NETWORK - DIRECTNESS

Some existing routes in the Burnie network are very indirect and result in long travel time from one end to the other (compared to the shortest trip by road). Figure 38 below shows an example using Route 34 which highlights the circuitous nature of the route alignment.

FIGURE 38 - ROUTE DIRECTNESS - ROUTE 34 (INBOUND)



Source: PBA analysis of Metro GTFS feed

Customer journey times can be reduced if bus routes run as directly as possible between the key attractors on the route. However, this is not always possible as several operational factors must be considered:

- There are constraints which the existing road network may impose
- Road layout and topography of the area may make certain paths between locations impractical
- Roads may not be suitable for buses.

3. What does the community want?

Stakeholder and community consultation is a vital component of the review process and is necessary to gain a greater understanding of the complex issues relating to the existing bus service, such as network coverage, overlapping routes and infrastructure. Options for an alternative network cannot be successfully developed without first drawing on the views of those who use and understand the network best.

Both the Devonport and Burnie network reviews had three main strands of consultation:

- Discussions with local stakeholder groups (such as Devonport City Council and Burnie City Council respectively)
- Discussions with the local operator (Merseylink and MetroTas respectively) were ongoing through the whole process, and are not specifically discussed in detail within this document
- Two rounds of community consultation which the general public were invited to attend (as were the operators and stakeholder groups above)

3.1. DEVONPORT CONSULTATION

An initial meeting was held with representatives of City of Devonport council officers on 1st March 2017. Staff representatives from Kentish, Latrobe and Central Coast councils also attended. The meeting covered the background to the network review, aspirations for the future network, and any particular issues which each Council felt needed to be addressed.

3.2. FIRST COMMUNITY WORKSHOP

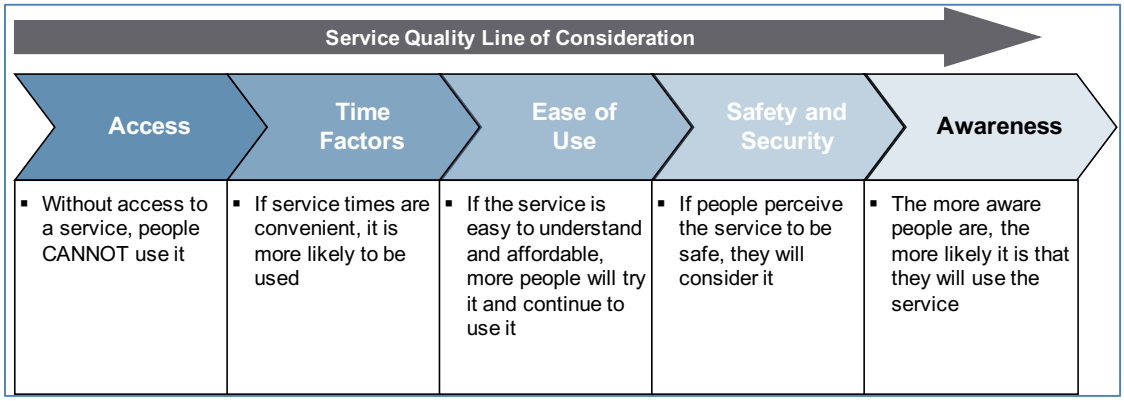
A community consultation workshop was held in Devonport on 4th April 2017, from 1:30pm till 4:30pm. A broad section of the community attended the workshop including residents, community service providers, secondary schools and tertiary institutions, bus operators and local government. In total, there were 27 attendees.

The workshop focussed on five key areas:

- Explain the context for the network review
- Describe the features of the current network (as summarised in section 2.2 above)
- Gather feedback on what works well in the current network
- Gather feedback on what does not work well in the current network
- Gather ideas or suggested solutions for addressing the issues previously identified in the workshops preceding session

At the workshop, the hierarchy of service quality indicators that make up the decision to use public transport was outlined (as per Figure 39 below).

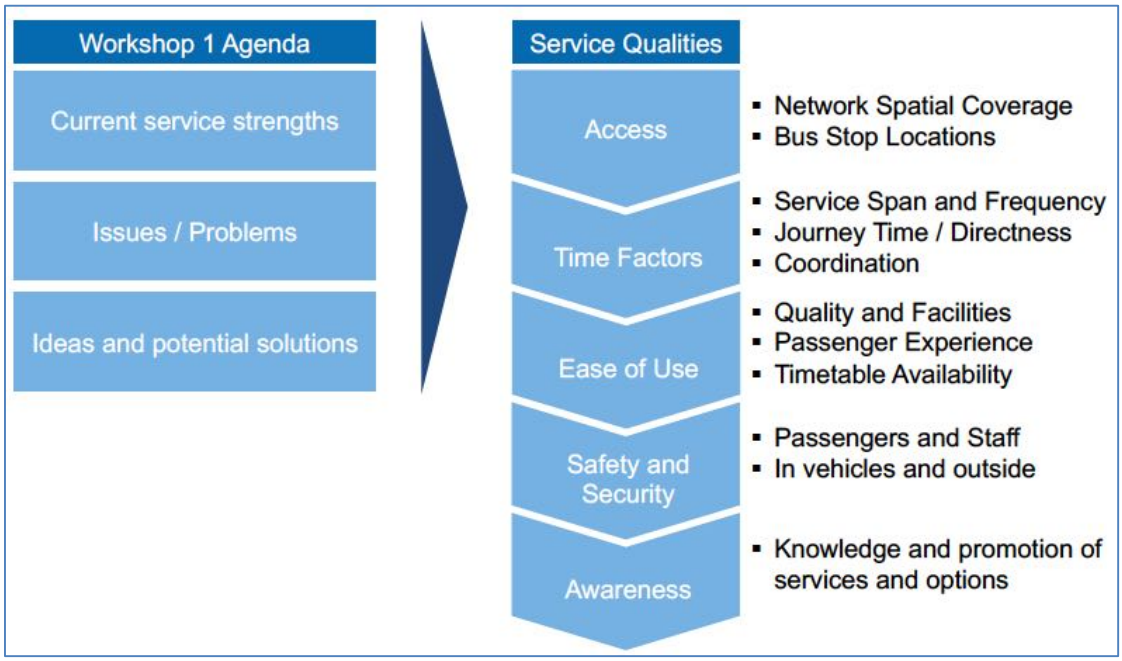
FIGURE 39 - HIERARCHY OF SERVICE QUALITY INDICATORS



Source: PBA Framework

Members of the public provided around 220 comments at the first Devonport workshop. For reporting purposes, the feedback was aggregated into the five service quality themes, as illustrated in Figure 40 below.

FIGURE 40 - ALLOCATION OF FEEDBACK TO SERVICE QUALITY THEME

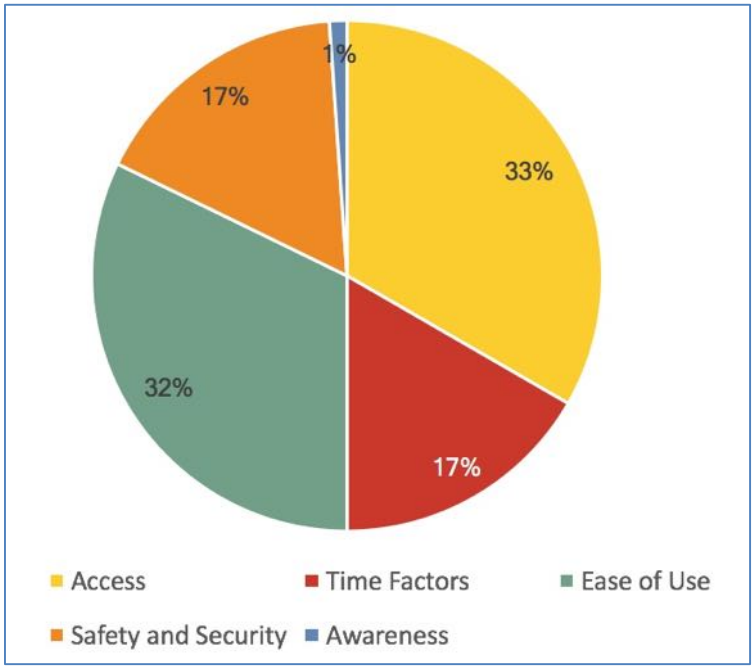


Source: PBA Framework

Feedback on strengths of current network

The majority of positive comments about the current network were focused on access to the network (satisfaction with route coverage, including access between local areas and key centres) and ease of using bus services (including bus drivers being friendly and helpful, and the reliability of services). Figure 41 below summarises the strengths by service quality theme.

FIGURE 41 - COMMUNITY FEEDBACK ON STRENGTHS OF CURRENT NETWORK

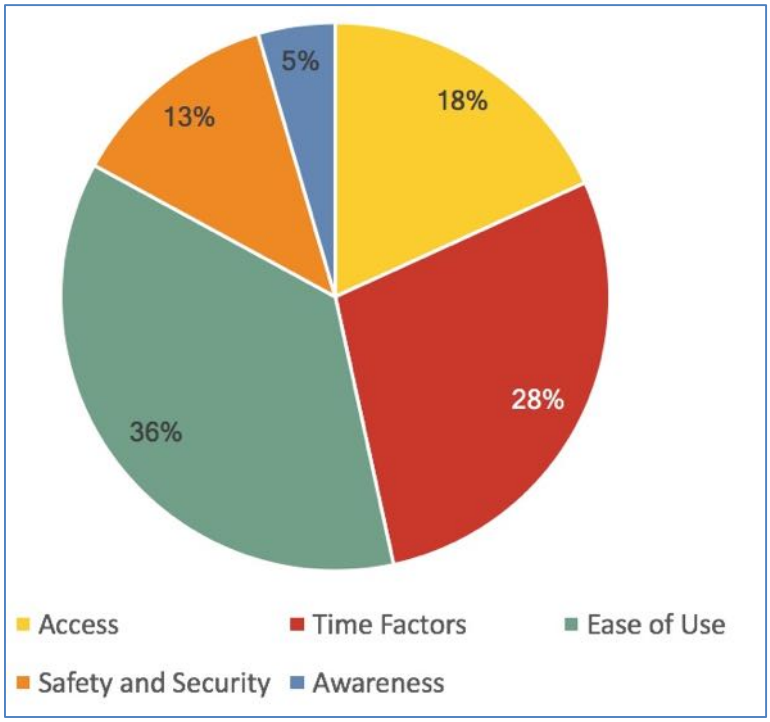


Source: PBA analysis

Feedback on weaknesses of current network

Negative comments were focussed on ease of use (perception of poor accessibility for some customers, inflexibility around fares and fare levels) and time factors (limited operating hours, long journey times and indirect routes). Figure 42 below summarises the weaknesses by service quality theme.

FIGURE 42 - COMMUNITY FEEDBACK ON WEAKNESSES OF CURRENT NETWORK

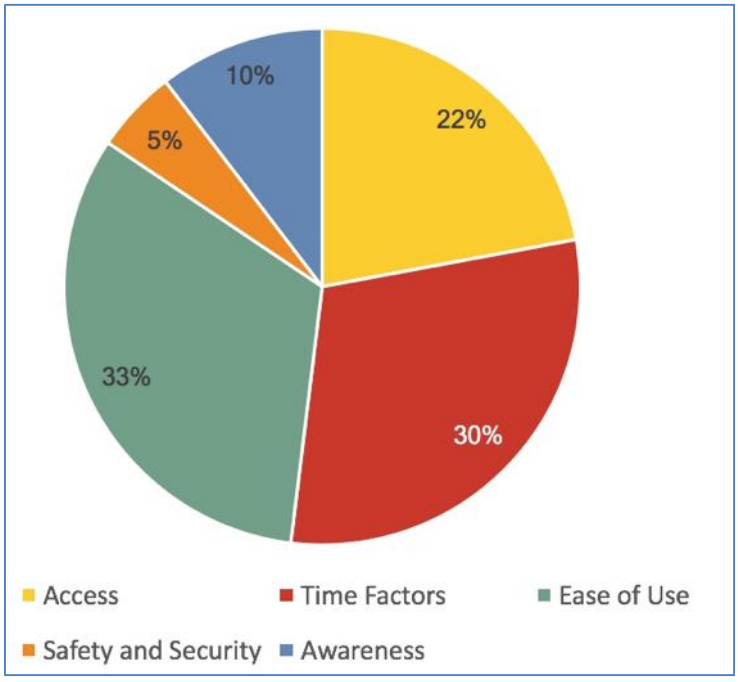


Source: PBA analysis

Potential solutions in the future network

Suggested solutions for the future network included increasing the service span (evening and weekend services), lower fares targeted at those most in need and introducing ticketing innovation, improving bus stop infrastructure, marketing to raise awareness and rerouting bus services to make new connections. Figure 43 below summarises the suggestions by service quality theme.

FIGURE 43 - COMMUNITY FEEDBACK ON POTENTIAL SOLUTIONS FOR THE FUTURE NETWORK



Source: PBA analysis

A copy of the presentation made to the first community consultation workshop is available on the State Growth website[1].

3.3. BURNIE CONSULTATION

An initial meeting was held with staff representatives of City of Burnie on 1st March 2017. Representatives from Waratah-Wynyard council and Cradle Coast Authority also attended. The meeting covered the background to the network review, aspirations for the future network, and any particular issues that council officers felt needed to be addressed. These included the relative lack of connectivity around the Burnie Child and Family Centre in Acton, the importance of bus services to the *Night on the Terrace* (New Year's Eve event), and importance of improving the amenity of the public realm around the CBD interchange in Cattley Street.

[1] *http://www.transport.tas.gov.au/__data/assets/pdf_file/0011/148367/Final_Presentation_workshop_1_Devonport.PDF*

3.4. FIRST COMMUNITY WORKSHOP

A community consultation workshop was held in Burnie on 5th April 2017, from 1:30pm till 4:30pm. A broad section of the community attended the workshop including residents, community service providers, tertiary institutions, bus operators and BCC. In total, there were 23 attendees. The workshop focussed on five key areas:

- Explain the context for the network review
- Describe the features of the current network (as summarised in section 2.12 above)
- Gather feedback on what works well in the current network
- Gather feedback on what does not work well in the current network
- Gather ideas or suggested solutions for addressing the issues previously identified in the workshops preceding session

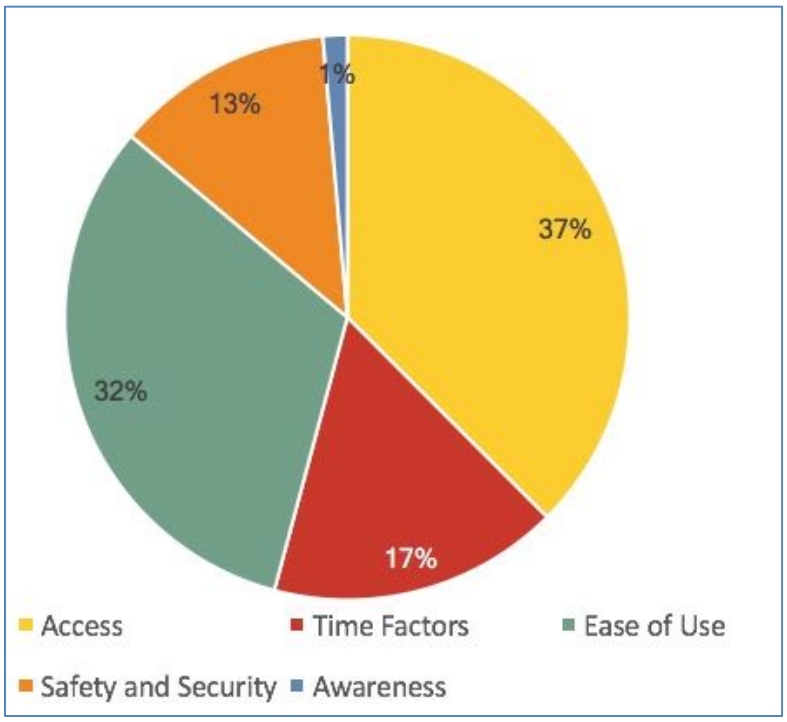
At the workshop, the hierarchy of service quality indicators that make up the decision to use public transport was outlined (as previously shown in Figure 39).

Members of the public provided around 240 comments at the first Burnie workshop. For reporting purposes, the feedback was aggregated into the five service quality themes, as previously illustrated in Figure 40.

Feedback on strengths of current network

The majority of positive comments about the current network were focused on access to the network (satisfaction with route coverage, including access between local areas and key centres) and ease of using bus services (including bus drivers being friendly and helpful, the frequency of services, and the good condition of buses). Figure 44 below summarises the strengths by service quality theme.

FIGURE 44 - COMMUNITY FEEDBACK ON STRENGTHS OF CURRENT NETWORK

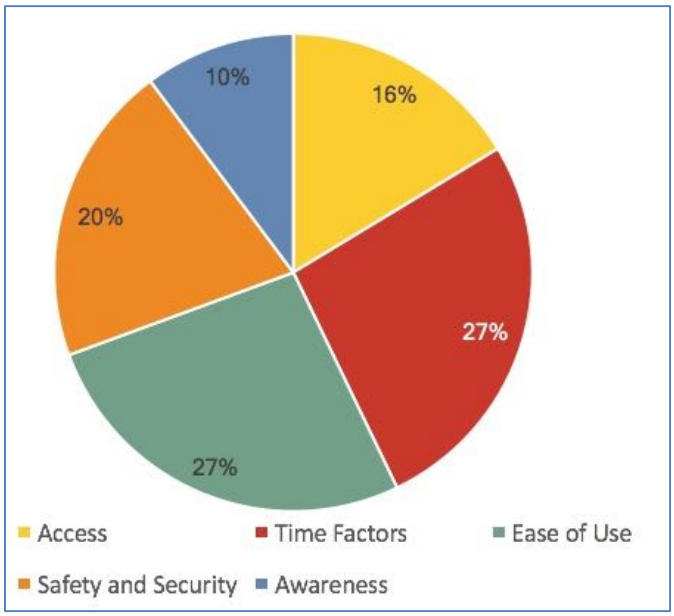


Source: PBA analysis

Feedback on weaknesses of current network

Negative comments were focussed on ease of use (fare levels, the number of deviations on some routes, perception of poor accessibility for some customers) and time factors (long journey times, limited operating hours and indirect routes). Figure 45 below summarises the weaknesses by service quality theme.

FIGURE 45 - COMMUNITY FEEDBACK ON WEAKNESSES OF CURRENT NETWORK

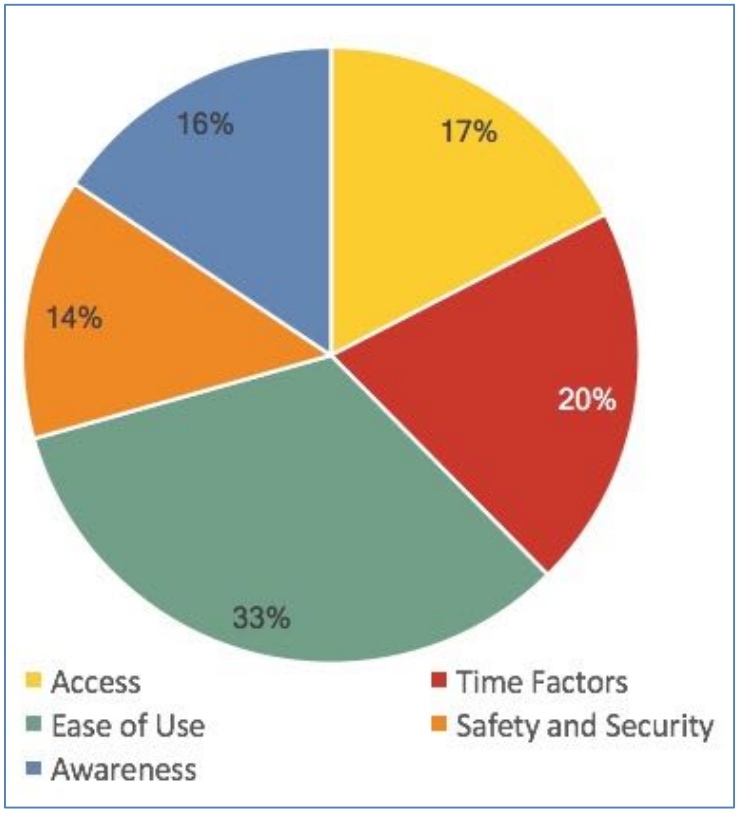


Source: PBA analysis

Potential solutions in the future network

Suggested solutions for the future network included increasing the service span (evening and weekend services), lower fares targeted at those most in need and introducing ticketing innovation, improving bus stop infrastructure, marketing to raise awareness and rerouting bus services (including improved links to the Burnie Child and Family Centre in Acton). Figure 46 below summarises the suggestions by service quality theme.

FIGURE 46 - COMMUNITY FEEDBACK ON POTENTIAL SOLUTIONS FOR THE FUTURE NETWORK



Source: PBA analysis

A copy of the presentation made to the first community consultation workshop is available on the State Growth website[2].

[2] *http://www.transport.tas.gov.au/__data/assets/pdf_file/0010/148366/Final_presentation_workshop_1_Burnie.PDF*

4. Network and service planning principles

Design of the Devonport and Burnie bus networks was guided by five overarching principles agreed with State Growth, and were designed to meet the study objectives, as described in section 1.1 (that is, increasing patronage, improve the span and frequency of services, improve the directness of routes, and improve efficiency and productivity:

- **Accessible**: 90% of residents should be within an easy walk (500m) of a bus route
- **Simple**: a simple network is easier to understand; complexity (such as route deviations) should be avoided. Similarly, services should operate in both directions (rather than one-way) where this is appropriate
- **Direct**: customers like direct services which provide swift transport, with journey times as close as reasonably possible to competing modes (such as car)
- **Predictable**: a clock-face timetable (where services run at the same times each hour) is easiest to understand
- **Frequent**: an hourly service in core urban area wherever possible

There is an obvious need for consideration of competing principles and for a reasoned trade-off to be made. As an example, a deeply penetrating route would connect many potential customers and offer accessibility, but may become unattractively slow due to its indirect nature.

4.1. INPUTS TO THE DRAFT NETWORK DESIGN

Alongside the principles outlined above, there were three key inputs to the draft network design:

- The current situation, including a detailed understanding of patronage (as described in section 2)
- The views of the community, as provided in the first round of community consultation (as described in section 3)
- Relevant strategy documents from local government and key stakeholders; any draft network must be designed to be consistent with these documents, particularly:

Devonport

- PBA reviewed the Cradle Coast Regional Land Strategy 2010-2030, the Kentish Council Strategic Plan, the Latrobe Council Strategic Direction 2010-2017, and the Devonport Living City Master Plan and supporting documents
- The key insights related to the need for the review to align with the Living City design and the renewed focus on the CBD, and where possible, to consider the role that regional services (e.g. from Sheffield) can play within the general access network

Burnie

- PBA reviewed the Cradle Coast Regional Land Strategy 2010-2030, the Burnie City Council Settlement and Investment Strategy, the Cradle Coast Integrated Transport Strategy, the University of Tasmania West Park Master Plan, and the Burnie City Centre Draft Master Plan
- The key insights related to the need for the review to utilise the new bus interchange by retaining the focus on CBD connectivity, retain links to Wynyard and Ulverstone for non-resident Burnie workers, and support new development when it occurs (including the UTAS site at West Park)

4.2. DRAFT NETWORK DESIGN

With the above three inputs in place, it was then possible to move onto the design of draft networks for each of Devonport and Burnie respectively. The draft networks were designed to present indicative options for the future network, rather than prescribe a final solution.

The draft networks were presented to local stakeholders and customers as described in section 5 below, for review and comment. It was important that the community had an opportunity to identify potential gaps in the drafts, re-emphasise the priorities for route coverage, and understand the trade-offs associated with the development of the draft.

Given the indicative nature of the draft networks presented, they are not discussed in detail in this document. The draft networks were revised based on the feedback described in section 5, and the proposed Devonport and Burnie networks are discussed in detail in sections 6 and 7 respectively.

5. Community feedback on the draft network

5.1. DEVONPORT CONSULTATION

A second community consultation workshop was held in Devonport on 23rd May 2017. There were 21 attendees. The workshop focussed on three key areas:

- Summarise the findings from the last workshop
- Describing the draft network improvement options and their rationale
- Gathering feedback on the draft network improvement options (positives and suggested changes)

Positive feedback on the draft network focussed on three main themes:

- The retention of services across the draft network compared to the current network
- The coverage that the draft network offered
- Improved simplicity of the draft network compared to the current network

Suggested changes to the draft network covered a number of themes including:

- The desire to have services that served a number of specific destinations, including the Splash Aquatic and Leisure Centre, residential aged care facilities at Baptcare Karingal and Meercroft, and The Bluff
- The desire for services to take specific routes due to concerns on coverage (including Morris Avenue, Lovett Street, Triton Road)
- The desire to have good services to Mersey hospital
- The desire for services to take specific routes due to potential operational issues (including the route suggested in Latrobe)[3]

Comments were also made on a number of issues which did not relate to the draft network, including bus stop infrastructure such as shelters and timetables, and the cost of fares. These are addressed later in this report.

A copy of the presentation made to the second community consultation workshop is available on the State Growth website[4].

5.2. BURNIE CONSULTATION

A second community consultation workshop was held in Burnie on 24th May 2017. There were 20 attendees. The workshop focussed on three key areas:

- Summarise the findings from the last workshop
- Describing the draft network improvement options and their rationale
- Gathering feedback on the draft network improvement options (positives and suggested changes)

Positive feedback on the draft network was spread across a number of themes:

- The coverage that the draft network offered, including improved services to the Acton

[3] *See also section 9*

[4] *http://www.transport.tas.gov.au/__data/assets/pdf_file/0016/153430/Devonport_Workshop_Round_2.PDF*

Hub

- Support for the suggestion of strengthening the link from Upper Burnie to the CBD
- Improved simplicity and efficiency of the draft network compared to the current network, with improved linkage between routes

Suggested changes to the draft network covered a number of themes including:

- Concerns with the proposed solution for Brooklyn, which led to a walk over hilly terrain for residents of Collins, Flinders and Wembley Streets
- A suggestion that looped services might be more efficient
- Concern that having a dedicated service through Aileen Crescent, The Boulevard, Belton Street and Linton Street would be inefficient use of coverage given the relative closeness of the route through Montello
- Concern that coverage was being reduced in Emu Heights

Comments were also made on a number of issues which did not relate to the draft network, including bus stop infrastructure such as shelters and timetables, and the cost of fares. These are addressed in section 8.

A copy of the presentation made to the second community consultation workshop is available on the State Growth website[5].

[5] *http://www.transport.tas.gov.au/__data/assets/pdf_file/0006/153429/Burnie_Workshop_Round_2.PDF*

6. Devonport network recommendations

The network recommendations in this section relate to the urban network only and will need to be complemented with specific school bus services (and deviations where appropriate) to meet existing and future school student needs.

6.1. ROUTES D1 AND D2 - CENTRAL DEVONPORT AND DON COLLEGE

The existing Routes 15 and 25 provide connections from Devonport CBD with Don College, via Central and West Devonport. Route 20 also operates once per day as a deviation to Route 25.

Each of Routes 15 and 25 operate in one direction only, as identical loops (apart from a slight difference close to Don College). Route 25 operates in a clockwise direction, five days per week (Monday – Friday), whilst Route 15 operates in an anti-clockwise direction, six days per week (Monday – Saturday).

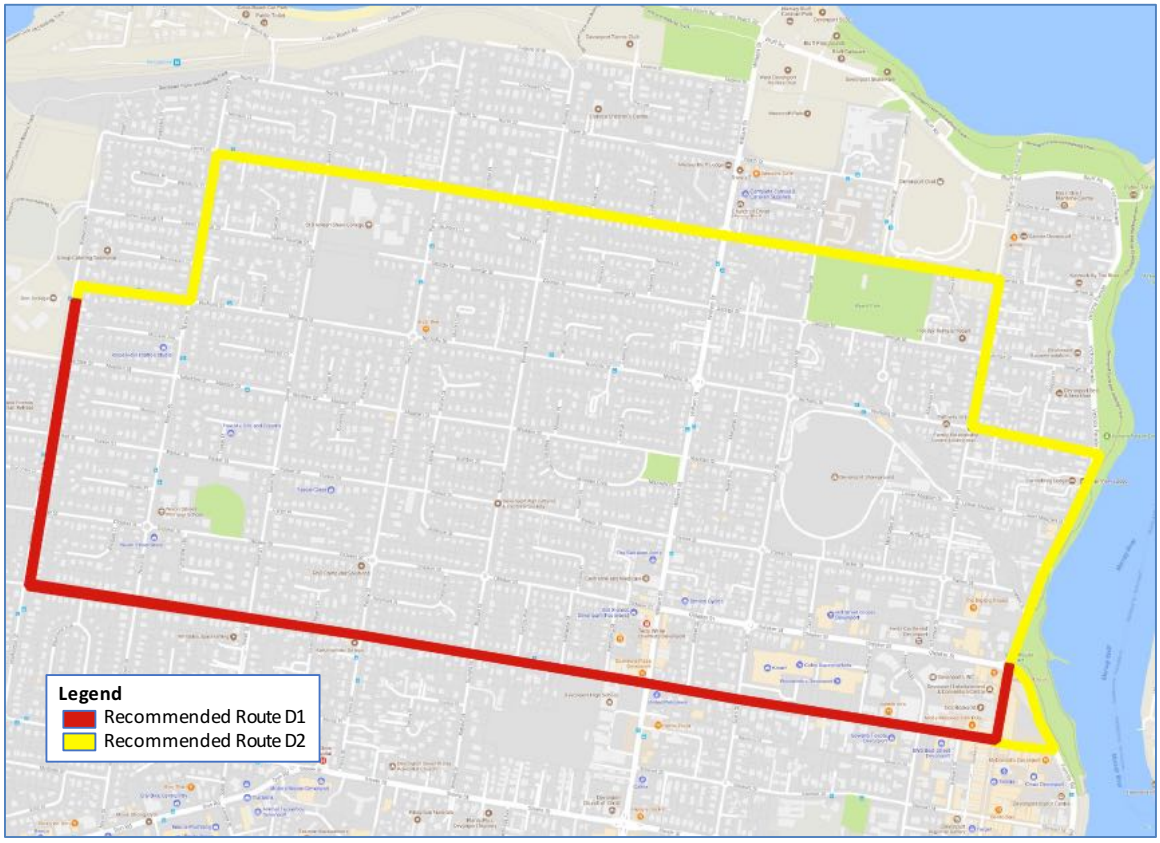
Route 15 attracts 87 boardings per weekday and 7 boardings per service. On Saturdays, there are 14 boardings in total, representing 8 boardings per service. Route 25 attracts 87 boardings per weekday and an average of 8 boardings per service. Both of Route 15 and 25 perform slightly worse than the average Devonport bus service (10 boardings per service; see Table 1 for more details).

The route operated is highly penetrating but does not make efficient use of coverage, with many changes in direction and in particular, has a complete sub-loop within the route in the north-east corner of Central Devonport. The large majority of boardings are not in the north-east corner; in particular, on Route 25 boardings are principally at Don College and alightings are principally at the Rooke Street interchange. This means that a large number of customers experience longer journey times than necessary on the route as they complete a loop in the north-east corner. On Route 15, whilst the largest attractors are still Don College and the Rooke Street interchange, patronage is more widely spread across the route.

The guiding principle for Routes D1 and D2 is to provide an efficient connection between the two major attractors in Central Devonport (Don College and the Rooke Street interchange) which maximises coverage (under the 500m buffer that the Department of State Growth has defined, as described in section 4).

It is recommended that Route D1 operates principally along Best Street, and that Route D2 operates principally along James Street. As shown in Figure 47 below, using Best Street and James Street maximises the coverage of the urban area with only a minimal gap in the Madden Street area, and with minimal coverage of the non-urban area (such as the Bass Strait and locations where there are less than 15 properties per hectare).

FIGURE 47 - RECOMMENDED ROUTE D1 AND ROUTE D2



The use of Best Street for Route D1 maximises access to the 4-Ways area as well as to CBD attractors. Oldaker Street presents a potential alternative alignment; after considering all the facts, this alignment was rejected as 4-Ways and CBD is currently more highly activated on Best Street (with more shop entrances along Best Street than Oldaker Street).

In the north, the use of James Street allows a full east-west traversal to be made without the need for deviation (both North Street and George Street, as alternatives, do not allow for continuous through movement across northern Devonport).

It is proposed that each of Routes D1 and D2 would start / terminate at Don College and Rooke Street. At Don College, Route D1 would switch to D2 and vice-versa, such that the services effectively ran as a loop past Don College. There are a number of operational issues which would need to be addressed for the recommended Routes D1 and D2 to be successfully delivered. The most important is the installation of an additional bus stop on the eastern side of Watkinson Street at Don College.

Similarly, there are a number of potential solutions for how Routes D1 and D2 approach the Rooke Street interchange. The optimal solution will depend on factors such how the Rooke Street interchange integrates with the Living City Project. One potential option is to relocate the bus interchange to the western side of Rooke Street, or use both sides of Rooke Street. The recommended route (based on the current road alignment) assumes that the interchange remains on the eastern side of Rooke Street. Route D1 would terminate by turning left from Best Street into Rooke Street, performing a U-turn at the roundabout with Formby Road, and then dropping customers on the east side of Rooke Street. Route D2 inbound to Devonport CBD would travel along Victoria Parade, and through the roundabout into Rooke Street interchange.

The outbound Route D2 service to Don College is more difficult to achieve operationally, and needs significant road improvements to enable each bus to depart the Rooke Street interchange and then travel northbound along Victoria Parade. At worst the route alignment would require each bus to turn right out of Rooke Street into Best Street and then turn right into Griffiths Street and right into Oldaker Street before turning left into either North Fenton Street or Victoria Parade. The exact alignment of the outbound Route D2 needs to be discussed and confirmed with the City of Devonport.

Whilst the guiding principle of Routes D1 and D2 is the connection of two large attractors, it is possible that Don College may not be as strong an attractor in the college holidays. This would also impact patronage on the current Routes 15 and 25, and would not change the need for a service offering coverage in Central and Northern Devonport.

The current Route 15 / 25 includes a bus stop at the rear of the Meercorft Aged Care facility in North Street. It is recommended that Route D2 includes a bus stop one block to the south on James Street. Operating along North Street would lead to excessive coverage of non-urban area, and customers on North Street are within the 500m coverage buffer from James Street (that is, James Street is an easy flat walk from North Street). It is noted that if passengers are unable to walk the distance from North Street to James Street, they are unlikely to walk any equivalent distance in the Devonport CBD (for example, from the Rooke Street interchange to the Rooke Street mall).

At the second community workshop, there were some suggestions that Route D2 should also operate further to the north of Devonport so that the Bluff area was closer to the route. On balance, it is believed that the lack of coverage for the Bluff is an acceptable trade-off for making the entirety of Route D2 direct and efficient – something that will improve travel times and reliability for all customers across the network. Current boardings on Routes 15 and 25 (which currently operate close to the Bluff) were also examined; patronage at stops close to North Street / Clements Street all had boardings /alightings of less than 10 per day, and most of these would be within the coverage buffer of the recommended Route D1 alignment.

There were also comments in the second community workshop about the potential for servicing the Splash / Space facilities. Whilst this was considered with Route D1, section 6.3 describes how Route D4 was chosen as the means of servicing these facilities.

Alternative alignments of Route D1 are possible that allow the service to stop at the door of Nixon Street Primary School (for example, using Watkinson Street, Nicholls Street and Nixon Street in addition to Best Street). These alignments were rejected as they would add additional travel time for the benefits of only a small number of services close to school bell times. School deviations can be added where State Growth believes this is necessary; it is also noted that the school is well within the coverage buffer of the recommended Route D1 alignment.

6.2. ROUTE D3 - AMBLESIDE

The existing Routes 50 and 55 connect Devonport CBD with Ambleside. Route 50 is the base route that constitutes most of the services. Route 55 principally operates as a series of school deviations to the base route. Both routes operate in both directions, although there are some one-way sections associated with joining / exiting the Bass Highway, and the end of the route in Ambleside. There is no weekend service; both routes operate Monday - Friday.

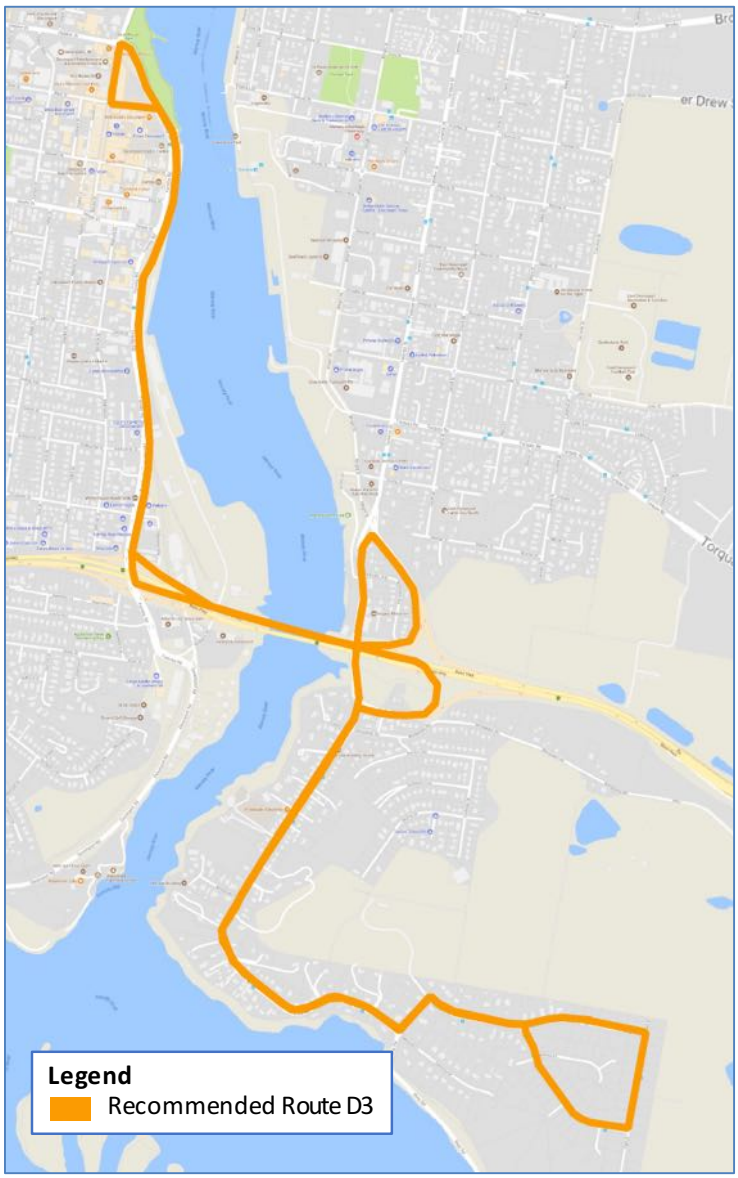
Route 50 attracts 7 boardings per weekday and an average of only 1 boarding per service; Route 55 attracts 31 boardings per weekday and an average of 8 boardings per service. Based on boardings per service, Route 50 is the worst performing route in Devonport (see Table 1 for more details).

In terms of providing a service between Ambleside and the Devonport CBD, the basic route (50) is relatively efficient; there do not appear to be obvious points in the route where an alternative path would provide a better operational solution. The use of a one-way loop at the end of the service (via Autumn Drive, Park Drive and Highfield Road) is a rapid and logical means by which the bus can be turned for a return trip to the Devonport CBD. Whilst the route performs poorly, it is the quickest on the network to operate, completing an outward and return trip in only 20 minutes.

The current low patronage represents a concern, though Figure 16 highlights a very low propensity to use public transport in the area based on the local density and demographics. The service to Ambleside is needed to ensure coverage of the local population. The area has a density of 15 dwellings per hectare, and meets the State Growth guidelines for providing a service.

It is recommended that the Ambleside route be retained, as shown in Figure 48 below. Route D3 is recommended to operate on the same alignment as the current Route 50.

FIGURE 48 - RECOMMENDED ROUTE D3



Given the current levels of patronage, it is recommended that the service be provided no more frequently than two hourly. This reflects comments from the community at the workshops specifically from those who use the Ambleside route on a regular basis.

At the second community workshop, there were some suggestions that Route D3 should also operate into East Devonport, as a means of boosting patronage on the Ambleside route and to increase service levels in East Devonport (where patronage demand is much higher). On balance this option was considered unfeasible as whilst it might boost patronage on one level, it would likely lead to passengers from East Devonport experiencing longer journey times as they would be routed through Ambleside on either the outward or return part of a journey. The relative simple operational nature of Route D3 also means that it can easily form a different service once it has terminated at the Rooke Street interchange.

6.3. ROUTES D4 AND D5 - SOUTH DEVONPORT AND STONY RISE

The existing Route 30 provides a connection from Devonport CBD to Miandetta and South Devonport (and onwards to Don College). The service is bi-directional, although there is a one-way section as the route turns at Don College. Route 30 operates Monday - Friday only; Route 35 operates on Saturdays only and whilst it traverses much the same path as Route 30 through Miandetta and South Devonport, it operates as a long, one-way loop by returning to the CBD via Steele Street and Best Street.

Route 30 attracts 203 boardings per weekday and an average of 15 boardings per service; as such it is one of the best performing routes in Devonport (see Table 1 for more details). Route 35 attracts 24 boardings per Saturday and an average of 4 boardings per service.

Route 80 links Quoiba, Stony Rise and South Devonport to the CBD, and to western suburb schools via route variations. It operates in a clockwise direction (with a small bi-directional section on Stony Rise Road). This one-way operation is likely to reduce the attractiveness of the route to potential passengers. Services operate roughly every 90 minutes on weekdays, and approximately every 3.5 hours on Saturdays (when there are two return services over the course of the day).

Route 80 attracts only 10 boardings per weekday and an average of 2 boardings per service; as such it is one of the lowest ranked routes in Devonport. Route 80 attracts 2 boardings per Saturday and an average of only 1 boarding per service.

Both Routes 30 and 80 operate in a circuitous manner with an indirect alignment. Route 30 is highly penetrating in South Devonport, but does not make efficient use of coverage. There are many changes in direction and in particular, there is almost a complete loop of Chichester Drive, Wylie Street and Morris Avenue within the route.

Route 80 operates in an outward direction down Formby Road (where there are no stops in the southbound direction) and through the largely industrial area of Devonport Road through Quoiba. As well as having a very small urban population along this portion of the route, the coverage is inefficient as the road hugs the river bank (significantly constraining the catchment). After leaving Rooke Street, the first bus stop serviced is at 61 Devonport Road (a distance of roughly 4kms).

The current low patronage on Route 80 represents a concern, and based on Figure 16 there appears limited propensity to use public transport. However, it is noted that the Stony Rise area has a population density of 15 properties per hectare close to Stony Rise Road declining in density further to the south. This means that under the Department's catchment guidelines, a service is warranted, at least along Stony Rise Road.

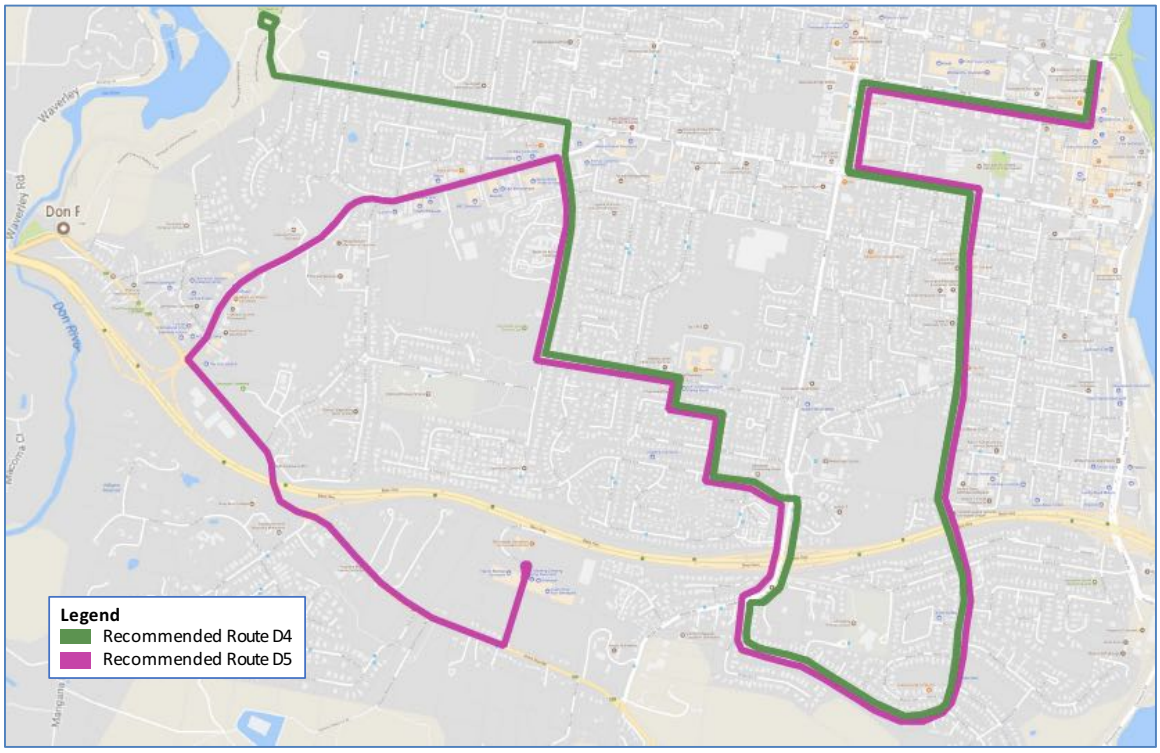
It is also noted that the Tugrah Road area is subject to ongoing low-density development. Some residents from this area did attend the community workshops to request services extend further along Tugrah Road, however the large lot sizes and low density meaning that the State Growth guidelines for an urban route will not be met (in terms of potential users).

It is recommended that services to Stony Rise are retained, with a service in both directions, every two hours. In addition, the route should be redrawn such that whilst servicing Stony Rise, it is designed to have a better chance of being more productive (that is, attracting passengers along the entire length of the route (in both directions), across all days and hours of operation).

The recommended network solution is to operate two new low-frequency routes D4 and D5, which share a common alignment from Rooke Street to Don Road via Miandetta. By operating at regular alternating frequencies, this offers a higher frequency over the core section which is more likely to generate patronage.

It is recommended that Route D4 continue onward to Splash (Devonport Aquatic & Leisure Centre), whilst Route D5 continues towards Stony Rise. Rather than penetrating deeply into Stony Rise, Route D5 should continue directly to the Homemaker Centre serving Stony Rise within its coverage buffer from Stony Rise Road.

FIGURE 49 - RECOMMENDED ROUTES D4 AND D5



The overarching rationale for Routes D4 and D5 is to simultaneously meet multiple different objectives to:

- Efficiently serve two destinations which are unlikely to generate large volumes of passengers in their own right - Splash and Stony Rise
- Offer a higher frequency service for the South Devonport area which is known to have reasonable levels of patronage at present
- Expand service coverage along Don Road to better serve places of employment, schools and residential areas currently distant from the urban network.

In the draft network (see section 4.2), no service was proposed to Splash. Requests for a service represented the largest single number of comments from the community workshop when the draft Devonport network was discussed. Designing an efficient solution to this problem is complicated by the presence of Route D1 which - when traversing Best Street - passes relatively close to Splash / Space. Whilst it is theoretically possible to re-design Route D1 to accommodate Splash, this would likely need to be achieved either through pulling Route D1 further south (to traverse Steele Street rather than Best Street) or through an extension of Route D1 at its south-west corner. Neither of these solutions was ultimately judged acceptable;

- The former because of the increased coverage gap which would be opened in Central Devonport (losing coverage on parts of Oldaker Street and Parker Street, assuming that Route D2 could not be brought further south from the recommended alignment on James Street)
- The latter because of the relative inefficiency that would be introduced to a route which is designed to offer rapid movement between the two key attractors on the network (Don College and Rooke Street).

The recommended solution for Stony Rise is for Route D5 to complete the navigation of South Devonport / Miandetta (as described below) and to then turn left onto Don Road, and then left onto Stony Rise Road, before terminating at the Homemaker Centre. Servicing the Homemaker Centre is important as it grows, so that employees (particularly local youth) have a low-cost option for reaching it.

Whilst Route D5 extends journey times for trips between Rooke Street and Stony Rise (compared to the current Route 80), as discussed above, there are only a small number of current passengers who could be affected.

Replacement of Route 80 with Route D5 does lead to a loss of coverage for Quoiba, currently served by the stop at 61 Devonport Road. Analysis of this area showed no boardings were made during the period of observation and much of the urban area is within the catchment of higher frequency services (Route 40) on Stony Rise Road in Quoiba. It is recommended that State Growth consider whether any non-urban routes (for example serving locations such as Sheffield) might approach Rooke Street Interchange via Devonport Road, to continue to offer coverage to the Quoiba area.

The proposed solution for Splash is for Route D4 to complete the navigation of South Devonport / Miandetta (as described below) and to then cross Don Road, and follow Steele Street to terminate at Splash. The car park at Splash and existing bus bays mean that a service can easily be started and ended here.

The proposed solution for the South Devonport area (core of Routes D4 and D5) is designed to offer improve journey times to / from Devonport CBD, whilst still offering good coverage. The use of Forbes Street illustrates both these points, by avoiding the current use of Elizabeth Street, Hiller Street and Harold Street, whilst still offering coverage of these locations.

Approaching the CBD, Routes D4 and D5 are recommended to travel via 4-ways using Steele Street, William Street and Best Street. This helps to ensure that there are services direct from South Devonport to 4-Ways, to strengthen the core of the network along Best Street (by running more services through it), and potentially for customers from South Devonport to change to Route D1 (for Don College) on Best Street if they do not wish to wait until Rooke Street interchange to change for a service to Don College.

It is noted that the current Route 30 offers a direct service from South Devonport to Don College and that as a result, some customers on the recommended network will experience longer journey times through the need to travel to and transfer in the CBD. Through appropriate timetabling of services, it is recommended that Route D4 and D5 services into Rooke Street continue onto Don

College as Route D2 services at peak times; appropriately communicated to passengers, this would enable a connection on to Don College without the need to change onto another bus.

The draft network discussed at the second community workshop focussed on the use of Middle Road, William Street and Valley Road, before terminating on Lawrence Drive. Comments from the community included a desire for a more penetrating service into the Morris Avenue area (where patronage is strong) and to service the Baptcare Karingal Community facility on Lovett Street.

The recommended solution addresses the desire for deeper penetration by utilising Morris Avenue, Maple Avenue, Willow Avenue, Elm Avenue and Valley Road. This results in marginally longer journey times than the draft network solution but is believed to be an acceptable compromise.

Whilst a direct service to the Baptcare facility is not considered essential in its own right (for similar reasons discussed relating to the Meercroft facility), the path of the recommended Routes D4 and D5 now pass the Baptcare facility (due to the design of the recommended routes using Lovett Street to head on to either Splash (Route D4) or Stony Rise (Route D5) and the need to operate in Lovett Street to safely turn onto or cross Don Road.

As highlighted in section 9, there are several operational issues which would need to be addressed for the recommended Routes D4 and D5 to be successfully delivered.

6.4. ROUTE D6 - EAST DEVONPORT

The existing Routes 60 and 65 provide connections from Devonport CBD with East Devonport. Route 60 operates as an anti-clockwise 'Figure 8', whilst Route 65 is a clockwise 'Figure 8'. Both routes operate Monday - Saturday.

Route 60 attracts 143 boardings per weekday and an average of 16 boardings per service; Route 65 attracts 84 boardings per weekday and an average of 17 boardings per service. Based on boardings per service, Route 65 is the best performing route in Devonport, with Route 60 close behind (see Table 1 for more details).

Analysis of boardings and alightings shows that there is patronage generated across the path of both routes; however, there are particularly strong generators of patronage in the current loop at Canning Drive and Torquay Road, the North Caroline Street and Triton Road loop, and in the Thomas Street area (shops and East Devonport Primary School). As might be expected, it can be seen from Figure 16 that these areas align with the propensity to use public transport.

Serving the three areas of patronage described above in an efficient manner presents some challenges, given that they cannot be connected in a straight line. Retention of the existing links is important given passengers in both the Canning Drive and Triton Road areas need connections to the Thomas Street area, as well as to Devonport CBD. However, there are two important ways in which services can be improved:

- The operation of two routes at present, operating in different directions, adds unnecessary complexity to the network (for example, customers on Tarleton Street or Mary Street cannot be sure of which side of the street they need to stand on to catch the next service going to Devonport. Moving to one unified route would simplify the customer proposition
- Efficiencies can be made through operating on one north-south corridor rather than two (both Tarleton Street and Mary Street at present); there are some overlaps in the coverage buffer on Route 60 and 65 at present

The proposed East Devonport network (Route D6) is shown in Figure 50 below.

FIGURE 50 - RECOMMENDED ROUTE D6

Route D6 would operate in both directions, although the loops in Canning Drive and Triton Road would continue to operate in anti-clockwise direction within the loop (to more closely match the current customer experience and avoid the need to move bus stops to the opposite side of the road). It is recommended that the single common core of the route would traverse (from north to south) along Wright Street, Thomas Street, Tarleton Street, Stephen Street and Mary Street.

From Devonport CBD, the route would cross the Mersey River before taking Tarleton Street north to Torquay Road. It would then head down Torquay Road to perform a loop of Canning Drive before returning on Torquay Road to Mary Street, and then perform the core section (described above) in a northerly direction. From Wright Street, it would turn into Brooke Street and perform a loop of Triton Road. It would then return on Brooke Street to Wright Street, to perform the core section in a southerly direction. From Mary Street, it would then head down Torquay Road to perform a second loop of Canning Drive before returning on Torquay Road, then left on Tarleton Street and back to Devonport CBD.

Customers in both the Canning Drive and Triton Road areas who wish to travel to the Thomas Street area (East Devonport Primary School and the Child and Family Centre) cannot do so on the existing Route 65 and must instead wait for a Route 60 service. Route D6 avoids the need for

such a wait given it serves all these connections. However, it is recognised that Route D6 does make two loops of Canning Drive to achieve this. On balance, this is believed to be an acceptable trade-off, given the benefits associated with one bus service meeting the needs of East Devonport in terms of simplicity for customers and efficiency of operation.

A potential extra benefit to East Devonport residents would involve the re-routing of non-urban services from Devonport to Port Sorell which currently operate via the Bass Highway. If these services (Route 70) were operated via Torquay Road, this would increase the frequency of services offered to some East Devonport residents[6]. However, such a change would slightly increase journey times for trips from Port Sorell to Devonport CBD, so a consideration of the trade-offs for East Devonport and Port Sorell residents is required. Indicative modelling suggests bringing Route 70 through East Devonport via Brooke Street would dramatically increase the journey time to Devonport CBD for passengers from Port Sorell, and as such this option is not recommended.

Assuming the benefits for East Devonport residents of additional services via Torquay Road are larger than the dis-benefits for Port Sorell residents of increased journey times, a bus stop close to Canning Drive would appear to be the most beneficial for East Devonport residents.

6.5. ROUTE D7 - LATROBE

The existing Routes 40 and 45 provide connections between Devonport CBD and Latrobe via Spreyton. The core path of both routes from Devonport to Latrobe is identical (via Middle Road, Stony Rise Road and Mersey Main Road). However, the routes are different in Latrobe; Route 40 turns left from Gilbert Street to Bradshaw Street to perform a clockwise loop of Latrobe, whilst Route 45 turns right from Gilbert Street to Bradshaw Street to perform an anti-clockwise loop of Latrobe. Route 40 operates Monday - Saturday whilst Route 45 operates Monday - Friday.

Route 40 attracts 160 boardings per weekday and an average of 16 boardings per service; Route 45 attracts 38 boardings per weekday and an average of 10 boardings per service. In terms of boardings per service, Route 40 is the one of the best performing routes in Devonport, with Route 45 at the average of all routes (see Table 1 for more details).

A small number of services on each route run express along the Bass Highway. Whilst this offers quicker point to point journeys for customers who wish to travel direct between Rooke Street and Mersey Hospital, there was limited evidence from the patronage data that it was a particularly attractive option compared to the regular (stopping) route. Importantly the express alignment does not serve any areas of significant activity along the way, whereas the Mersey Main Road alignment serves residents, employment locations and schools in Spreyton.

Based on current boardings and the propensity to use public transport (see Figure 16), a service to the Latrobe area is clearly warranted. It is also noted that the Latrobe area has a population density of 15 properties per hectare or higher, and under the Department's catchment guidelines, a service is warranted.

The current typical route alignment around Latrobe (utilising Bradshaw Street, Reiby Street, Percival Street and Moriarty) is inefficient. This is because Bradshaw Street and Percival Street are just over 400m apart, as such, each lies within the 500m coverage buffer of the other street, duplicating coverage. A deviation via Lyell Street, Cotton Street and Cherry Hill Road operates three times per day. By contrast, whilst this extends coverage deeper into Latrobe, it penetrates too deeply such that the coverage buffer extends well into vacant farmland.

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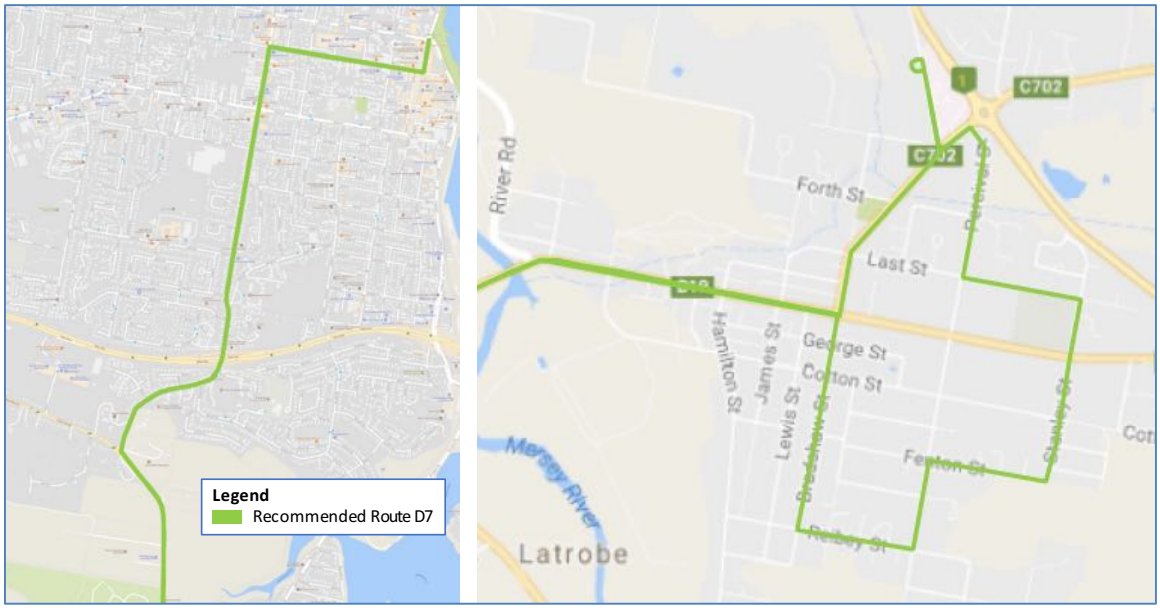
6 *This assumes State Growth resolve ticketing issues between urban and non-urban routes*

The current route via Mersey Main Road means that coverage is offered to residents of Spreyton. There are alternative routes from Latrobe, namely River Road and the Bass Highway. River Road would offer a very similar journey time to Mersey Main Road (that is, no improvement in journey time compared to the current alignment) whilst reducing access to (and coverage of) Spreyton. However, River Road would not offer the quickest travel time (which would be provided by a Bass Highway alignment). Therefore, this option was discounted from further analysis.

The Bass Highway would offer a quicker trip between Latrobe and Devonport, but at the trade-off of reduced coverage to Spreyton. It is therefore recommended that Route D7 operates with a similar alignment to the existing route on Mersey Main Road. Due to the current coverage duplication in Latrobe it is recommended that the route alignment in the urban area is modified as shown in Figure 51 below.

FIGURE 51 - RECOMMENDED ROUTE D7



The recommended alignment through Latrobe would only operate in an anti-clockwise direction, with all services effectively starting and ending from the Town Hall (Bradshaw Street). This is intended to simplify the overall customer proposition and make the timetable easier to understand.

The recommended alignment of Route D7 in Latrobe is via Bradshaw Street, Reiby Street, Percival Street, Fenton Street, Stanley Street, Last Street, Percival Street, Torquay Road (for Mersey Hospital), Moriarty Road and then Bradshaw Street before returning into Gilbert Street. This alignment recognises the development which is currently occurring in the east of Latrobe, whilst ensuring that as far as possible, coverage does not extend into areas where population density does not meet the 15 properties per hectare guideline.

Approaching Devonport CBD, Route D7 is recommended to operate via 4-ways using Steele Street, William Street and Best Street. This helps to ensure that there are services direct from Latrobe to 4-Ways, and to strengthen the core of the network along Best Street (by running more services through it.

As highlighted in section 9, there are several operational issues which would need to be addressed for the recommended Route D7 to be successfully delivered.

6.6. OTHER REGIONAL ROUTES

In addition to the urban bus network there are urban fringe routes that serve medium-distance journeys into Devonport. Three of note are Route 70 (Port Sorell), Route 72 (Ulverstone) and Route 85 (Latrobe-Burnie).

Currently these routes operate with a different fare structure and there are boarding restrictions that prevent the bus operator from carrying urban passengers (trips originating and finishing within Devonport). These two factors create an inefficiency in the network and make it difficult for passengers to use the bus service. They also result in lower levels of service in specific corridors and lower productivity on these bus routes (as they cannot currently carry urban passengers for the several kilometres that the buses travel through urban Devonport).

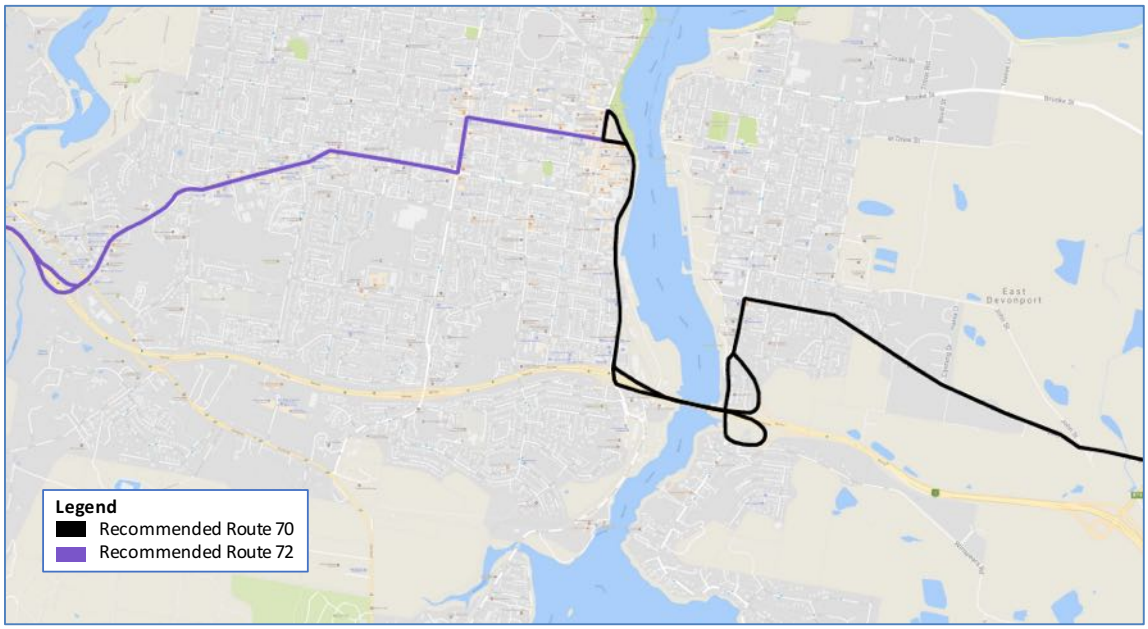
It is recommended that the boarding restrictions be removed so that the buses on these routes can carry local urban passengers. It is also recommended that the fare structures are simplified and synthesised so that an urban fare (or transfer) can be paid to board the urban-fringe services.

The urban fringe services can then provide for local travel and fill some geographic or temporal gaps in the network. Specifically, it is recommended that:

- Route 70 approach Devonport along Torquay Road and supplement services on Route D6 in East Devonport
- Route 72 approach Devonport along Don Road, Steele Street, William Street and Best Street to supplement services on Route D5 along Don Road.

The recommended alignment of these routes through the Devonport urban area is shown in Figure 52 below.

FIGURE 52 - OTHER REGIONAL ROUTES



In addition, the new Route from Sheffield to Devonport is recommended to be aligned via South Spreyton and Quoiba using Devonport Road to supplement Route D7 and provide an equivalent service to that currently provided in Quoiba by the existing Route 80.

It is recommended that Route 85 continue using the fastest possible route alignment through Devonport. It is anticipated that this would involve the use of Formby Road.

6.7. SUMMARY OF KEY FEATURES OF THE RECOMMENDED DEVONPORT NETWORK

The recommended Devonport network meets the project objectives by:

- Ensuring that over 95% of residents in urban areas are within an easy walk of a bus route
- Simplifies the network by reducing the number of variations to routes, and by channelling routes along core stretches (such as Best Street up to 4-Ways)
- Improves the efficiency of the network, and customer journey times, by introducing more direct services on a number of routes

The recommended network is shown in Figure 53 and Figure 54 below, with the change in coverage shown in Figure 55 and Figure 56.

FIGURE 53 - RECOMMENDED DEVONPORT NETWORK

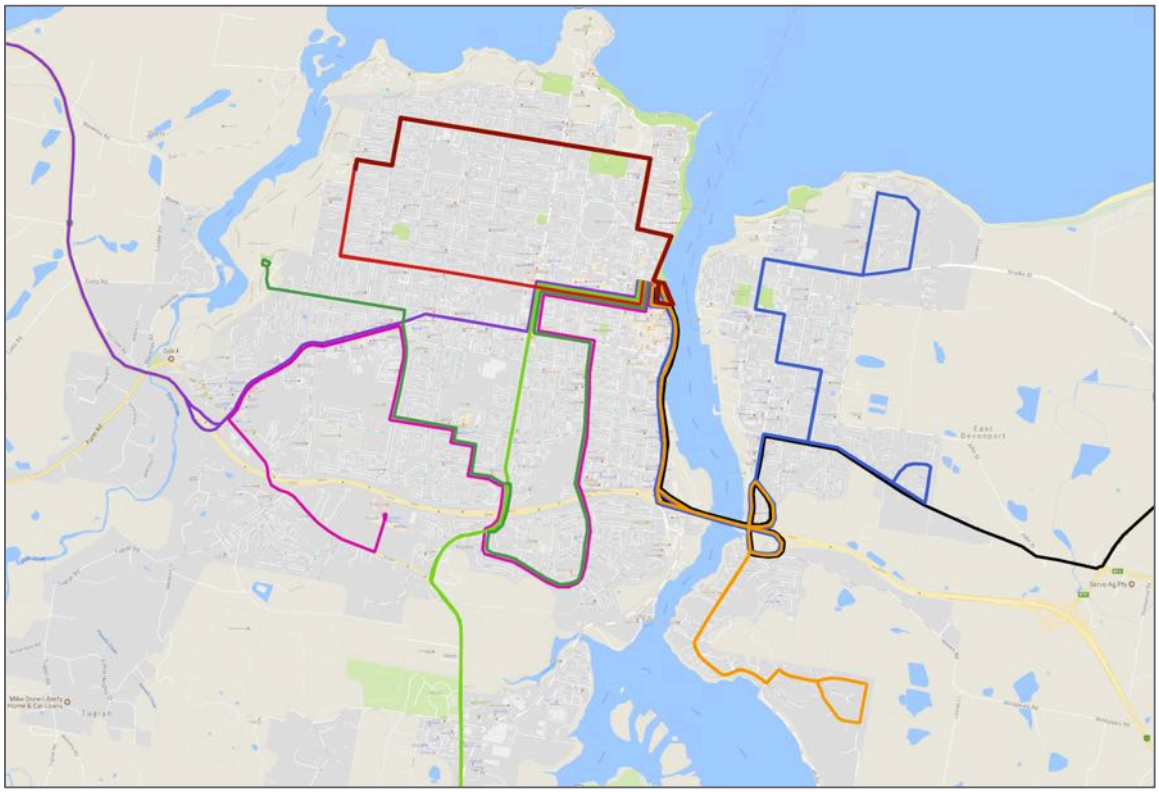


FIGURE 54 - RECOMMENDED LATROBE NETWORK

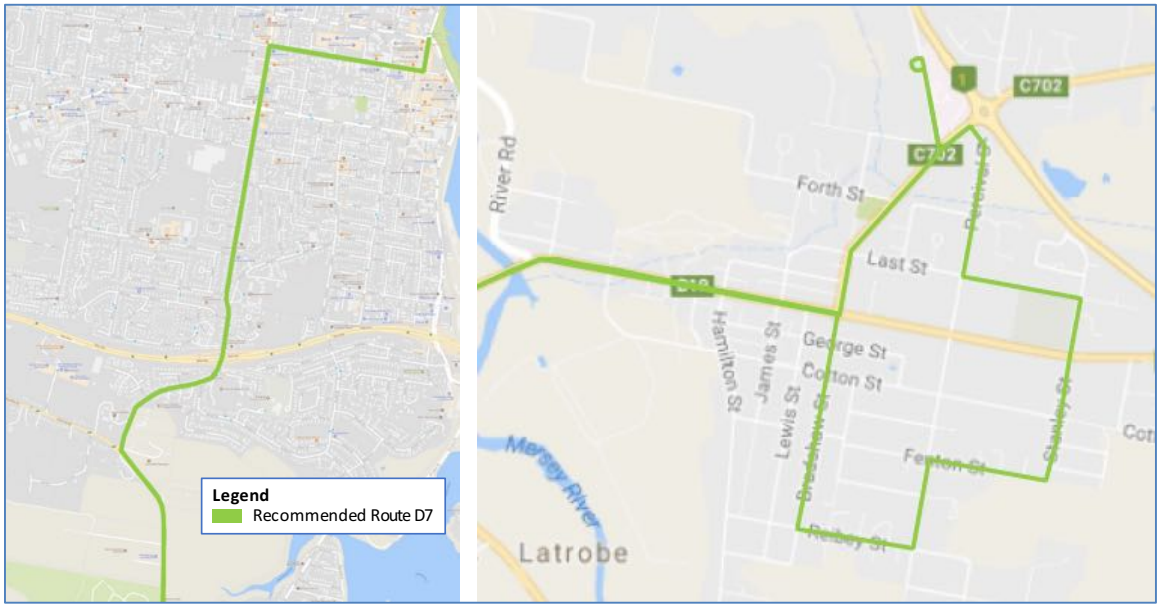


FIGURE 55 - CHANGE IN COVERAGE FROM RECOMMENDED NETWORK (DEVONPORT)

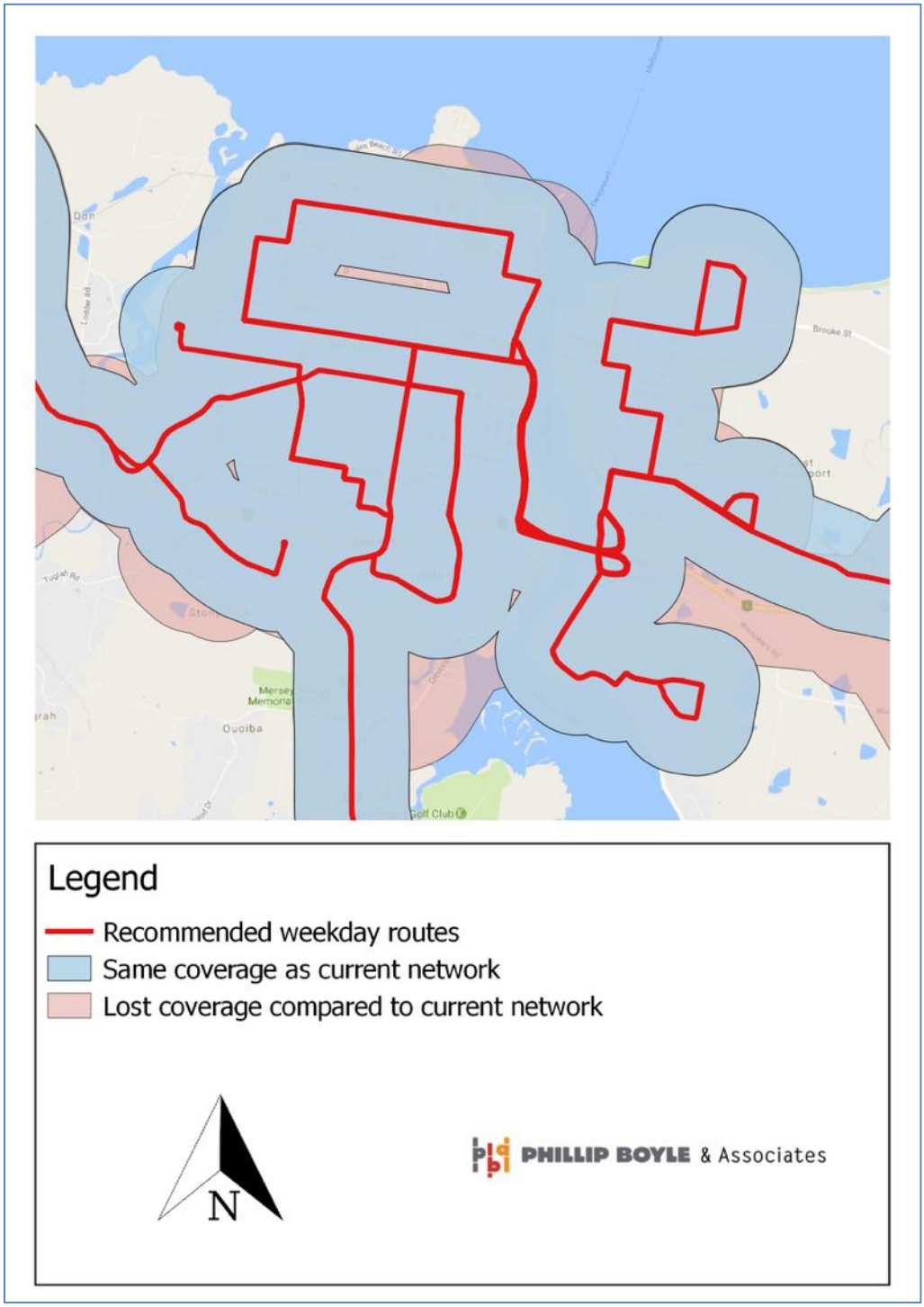
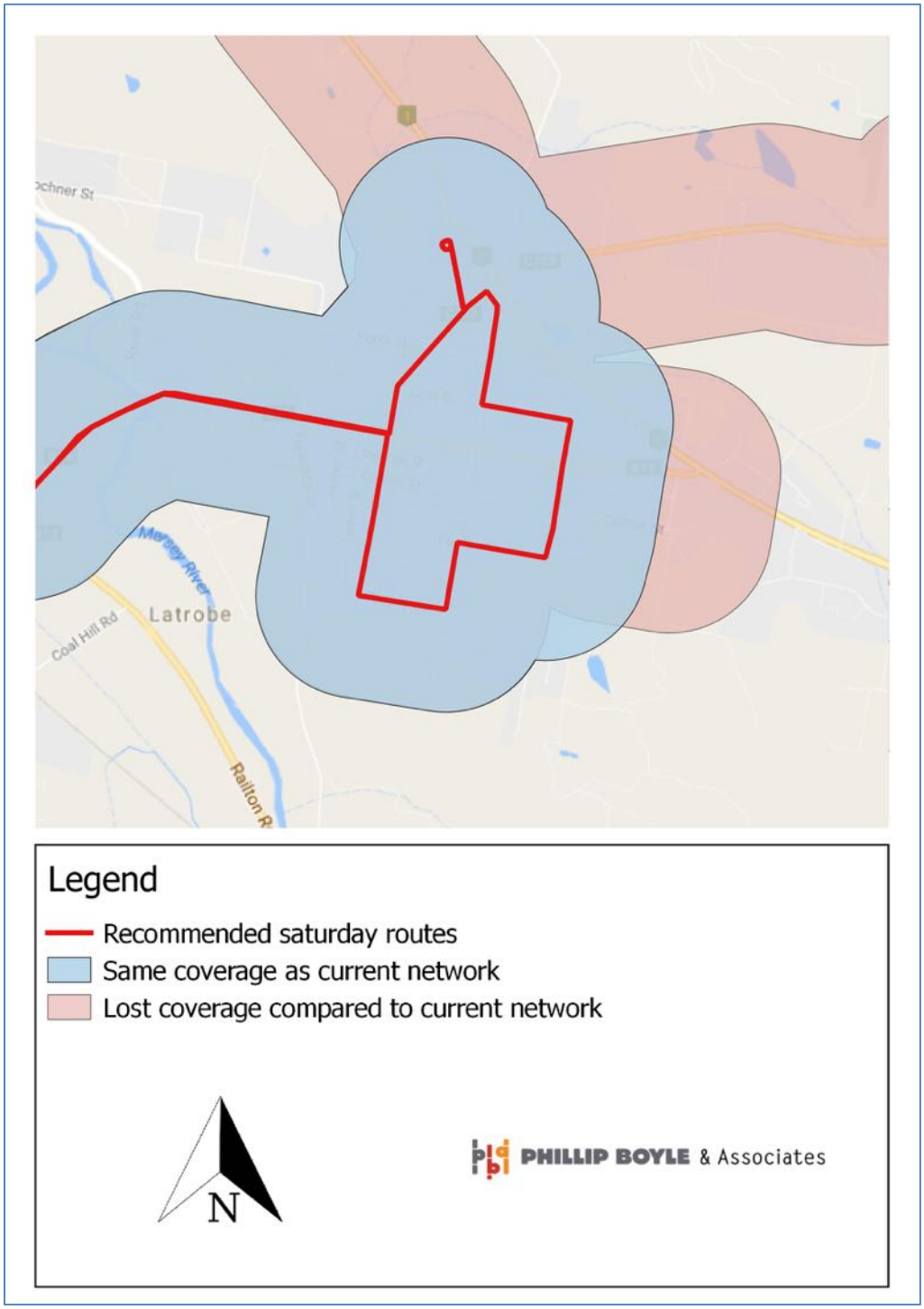


FIGURE 56 - CHANGE IN COVERAGE FROM RECOMMENDED NETWORK (LATROBE)



7. Burnie network recommendations

7.1. ROUTE B1 - BURNIE LOOP

Routes 41 and 51 currently provide a circular loop service from Burnie CBD linking Upper Burnie, Shorewell Park, UTAS and North West Regional Hospital. Route 41 operates as an anti-clockwise loop, whilst Route 51 operates in a clockwise direction. Both routes operate Monday - Saturday.

Route 41 attracts 159 boardings per weekday and an average of 14 boardings per service; Route 51 attracts a very similar 155 boardings per weekday and an average of 17 boardings per service. Based on boardings per service, both routes perform slightly better than the average in Burnie (see Table 3 for more details).

Whilst Routes 41 and 51 represent the core service, there are a number of deviations which are given their own route number within the timetable. These are:

- Route 40 which operates once per day serving the anti-clockwise loop (only skipping the North West Regional Hospital) on school day mornings (55 boardings per service)
- Route 50 which operates once per day on school day mornings, from Shorewell Park to Burnie CBD in a clockwise direction (7 boardings per service)
- Route 54 which operates once per day on school day mornings, from Brooklyn to Burnie CBD in a clockwise direction via Upper Burnie and Shorewell Park (31 boardings per service)

Note that both Routes 50 and 54 do not complete a full loop like Route 51, and while Route 40 completes a full loop, it does not serve the Hospital.

Current patronage, and an examination of boardings, demonstrates that the two routes have strong demand and generates patronage from a number of different areas of Burnie. However, there are some weaknesses in the current route alignment:

- The current loop typically takes around 30 minutes to complete. Heading out as far south as Three Mile Line Road increases journey times for the majority of customers on the route, and there may be better ways to service customers in that area
- Connectivity is currently limited between Shorewell Park and Acton. Community consultation highlighted the need to connect Thorne Street and Wiseman Street and serve the growing Acton Family Services Hub that includes the Burnie Child and Family Centre.

The Acton Family Services Hub is located at 36 Thorne Street, has a growing concentration of important services:

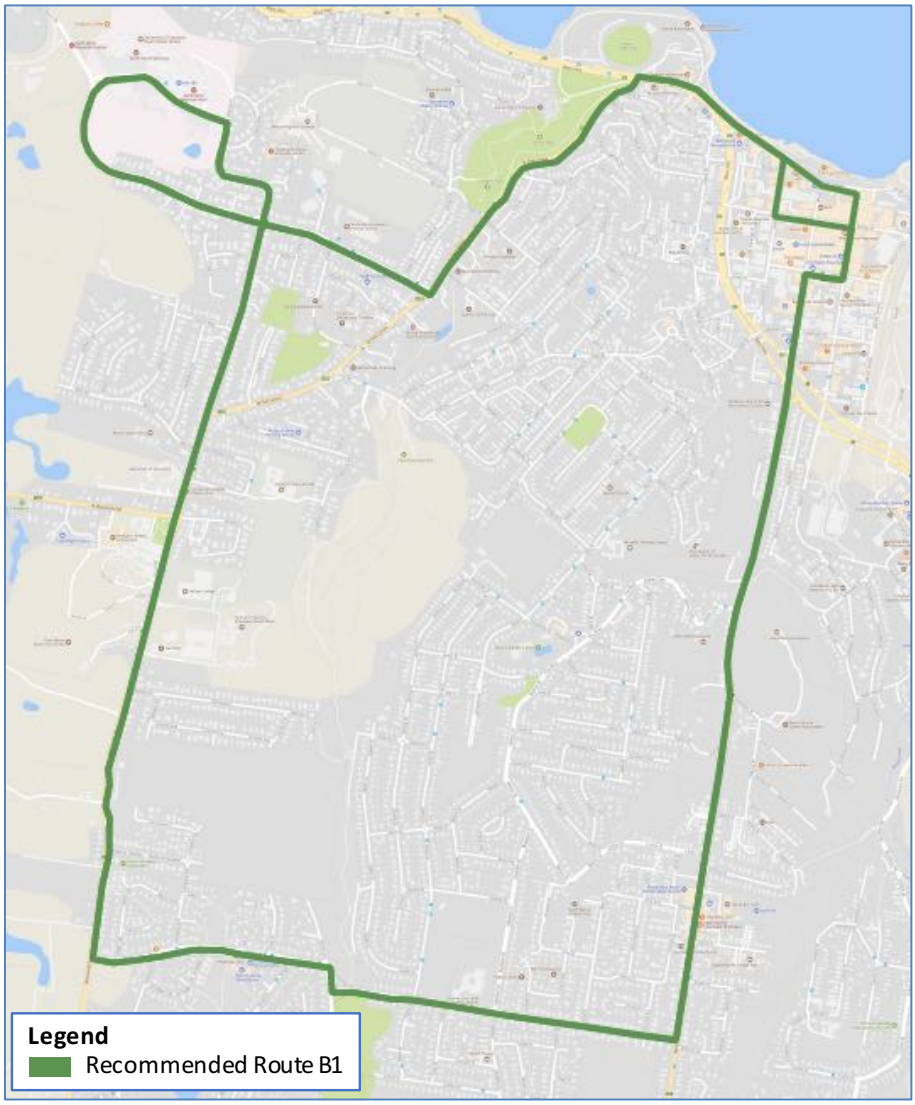
1. School of Special Education for children aged 5-18
2. Burnie Child and Family Centre
3. Early Childhood Intervention Services
4. HIPPY (Home Interaction Program for Parents and Youngsters)
5. Acton Dental Clinic (children and teens only)

The Acton Family Services Hub is the only location in the Burnie region for many of these services, and some of them are mandatory for all parents to get their children to (such as maternal child health and infant welfare services). This means that the catchment for these services is geographically large (the whole of the Burnie area) and access to the site can impact significantly on the welfare of infants and children in the region.

Better linkage to the site was raised as an issue by attendees at the first and second community workshops, in written submissions, and was further endorsed at meetings held with the City of Burnie (see sections 3.3 and 5.2).

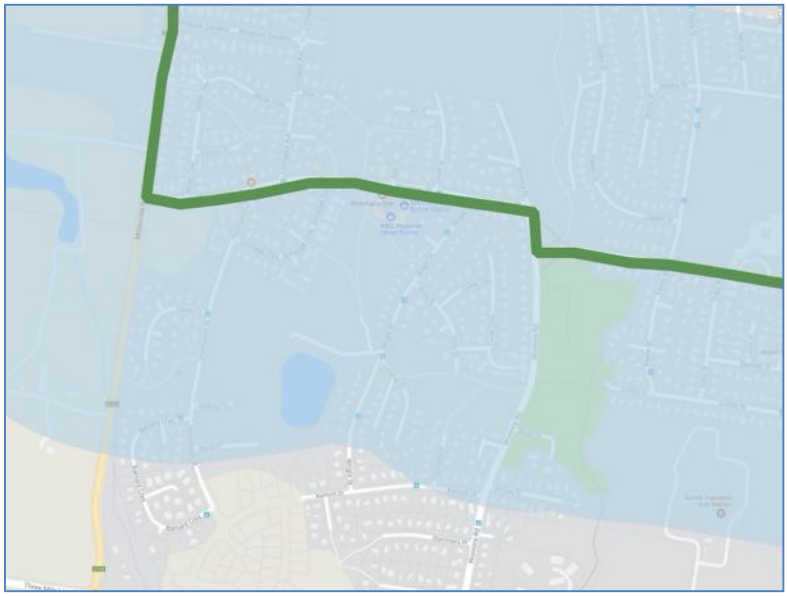
The guiding principles for Route B1 is to service the majority of the existing Routes 41 / 51 in the same manner as at present, whilst improving connections in Acton and reducing journey times for the majority of customers on the route. The proposed loop route is shown in Figure 57 below.

FIGURE 57 - RECOMMENDED ROUTE B1



There is a potential impact for customers living in the southern parts of Shorewell Park. It is however noted that the vast majority of Wright Street, as well as the majority of Woniora Road and parts of Kentish Drive, are within walking distance of Route B1 as shown in Figure 58 below.

FIGURE 58 - COVERAGE OF ROUTE B1 IN SHOREWELL PARK AREA



Source: PBA analysis

Under the network principle of a walk of up to 500m being acceptable, these customers are offered the same loop service as they currently have.

Route B2 offers an additional Shorewell Park service, as detailed in section 7.2 below.

7.2. ROUTE B2 - EMU HEIGHTS AND HAVENVIEW TO BURNIE (VIA UPPER BURNIE)

The existing Routes 32 and 34 provide a service linking Emu Heights and Havenview to Burnie CBD. Both routes have the same alignment in Emu Heights, Havenview and Romaine. Route 32 then operates direct to the CBD and Route 34 operates to the CBD via Upper Burnie and Hillcrest.

- Route 32 travels via South Burnie and Brooklyn (it does not connect to Upper Burnie). It operates Monday to Saturday
- Route 34 travels via Upper Burnie and Hillcrest. It operates Monday to Friday only.

On the basis of boardings per service, both routes perform worse than the average route in Burnie (see Table 3 for more details).

- Route 32 attracts 32 boardings per weekday (average of 3 boardings per service)
- Route 34 attracts 78 boardings per weekday (average of 8 boardings per service).

Route 34 attracts more than double the number of passengers per service even though it provides a slower trip from Emu Heights, Havenview and Romaine to the CBD. This would suggest that linkage to Upper Burnie is important (given that Route 32 does not connect to Upper Burnie). Detailed analysis of boardings shows that this is not simply caused by customers travelling between Upper Burnie and the CBD; the largest number of boardings on Route 34 (towards the CBD) are made in Emu Heights and Havenview.

Whilst Routes 32 and 34 represent the core services to Emu Heights and Havenview, there are two deviations which are given their own route number within the timetable. These are:

- Route 36 which operates once per day Monday to Friday from Burnie to Emu Heights

via Upper Burnie (7 boardings per service)

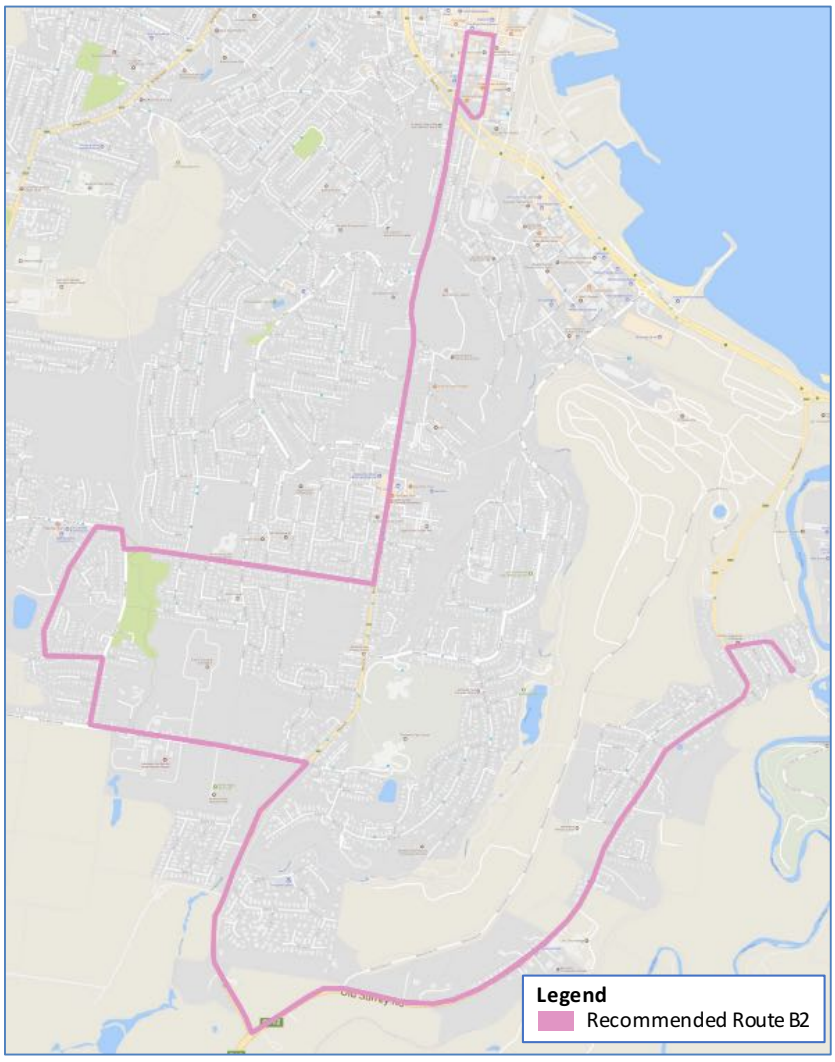
- Route 37 which operates once per day school day mornings as an anti-clockwise loop from Burnie via Upper Burnie, Romaine, Emu Heights and direct through South Burnie to the CBD (37 boardings per service)

Whilst current patronage is relatively weak, it is noted that the evidence supports the retention of a service to the Emu Heights and Havenview areas, in particular, the public transport propensity index (Figure 34). These areas also meet the definition of urban areas with over 15 dwellings per hectare.

Opportunities exist to simplify the current four routes into one. This should be a bi-directional service that improves connections to the places that people in Emu Heights and Havenview need to reach. As described above, current patronage data suggest a preference for travel via Upper Burnie on Route 34 despite it providing a slower connection to Burnie CBD than Route 32. As such, the data seems to show there is some value in bolstering the connection to Upper Burnie and the activities in the Acton Family Services Hub.

PBA recommends an alignment of Route B2 that meets these needs as shown in Figure 59 below.

FIGURE 59 - RECOMMENDED ROUTE B2



The current Routes 32, 34 & 36 all perform a long circuit of Old Surrey Road, Fernglade Road and Wattle Avenue in order to turn the bus at the end of the route. This adds 1.5km to every service and does not benefit customers, as there are no dwellings or activities served by the turnaround loop. It is therefore desirable to find an alternative solution if one exists, however, it is understood that options are limited.

At the second community workshop, a solution was presented which involved the use of Reservoir Street, McPhee Street and Grant Street North for turning the bus at the end of the route. Some stakeholders responded that the proposed alignment would not sufficiently meet the needs of passengers from Emu Heights. Part of the rationale for the way the route had been constructed was the limited options for turning a bus in Emu Heights.

After further investigation and discussions with Metro, a number of options were identified which could potentially be made fit for purpose:

1. Create a turning circle at the corner of Fern Glade Road and Wattle Ave
2. Create a turning circle on Wattle Place Lane close to Wattle Place
3. A loop via Wattle Ave and Myrtle Crescent

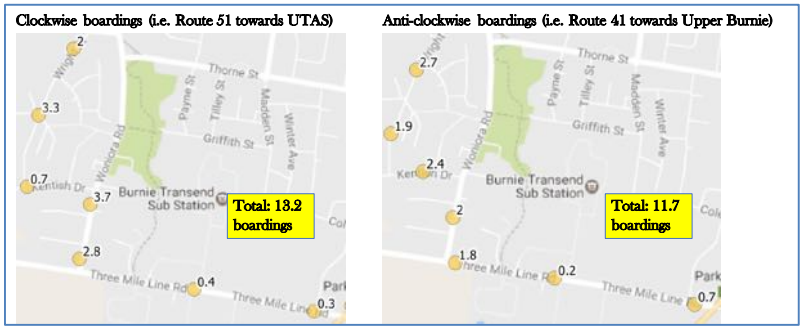
Metro commented that the third of the options above was preferable from an operational perspective. It is noted that PBA were provided with anecdotal evidence that this was previously used, but discontinued due to safety concerns (related to the width of road at a corner on Myrtle Crescent).

All the options above are likely to require some capital works in order to be suitable for operation. The recommended route assumes that one of the three options above can be implemented, and that otherwise the Reservoir Street, McPhee Street and Grant Street North solution would be adopted.

Route B2 also follows Wiseman Street, Woniora Road and Three Mile Line Road. This will provide service to the areas who are no longer directly served by the Burnie loop (recommended Route B1). Route B2 improves connectivity from Emu Heights and Havenview to Acton by also traversing Thorne Street. It is however noted that there is a potential impact on customers living in the southern parts of Shorewell Park (those that are beyond the coverage buffer shown in Figure 58), and specifically the loss of a direct link to the Hospital and UTAS.

This is only an issue for those customers wishing to head in a clockwise direction once they reach Wiseman Street and Thorne Street, as Route B1 will continue in an anti-clockwise direction to Upper Burnie and Burnie CBD. Analysis of clockwise and anti-clockwise boardings was carried out to quantify the size of any potential issue. Figure 60 below shows that there are 13.2 boardings per weekday heading towards Burnie via UTAS; the stops at 8 Wright Street (2 boardings) and 17 Wright Street (3.3 boardings) are inside the buffer of Route B1 shown in Figure 58. This leaves 7.9 boardings per weekday heading towards Burnie CBD via UTAS who are beyond the reasonable catchment of Route B1.

FIGURE 60 - ANALYSIS OF BOARDINGS IN SHOREWELL PARK AREA



Source: Boarding data supplied by Metro for the period 19/02/17 - 11/03/17

It is not possible to say how many of these 7.9 boardings are headed to UTAS, Hellyer College the Hospital or Burnie CBD. However, the Burnie CBD is the most significant attractor in the network and as such it is assumed reasonable to estimate that at least half these passengers (i.e. 3.9 people per day) are likely to be travelling to/from Burnie CBD from this location.

For the remaining four passengers per day, there would be a negative impact from the recommended network. Those customers would need to catch Route B2 and then either change at Wiseman Street or Burnie CBD (Cattley Street Interchange). If these 4 people were considered a priority movement, then routes can be co-ordinated so that wait times are minimised.

The inconvenience caused (waiting time and transfer penalty) to four people per day is significantly outweighed by the benefits for all remaining passengers of the improved directness (on Route B1), travel times and efficiency (that leads to higher frequency of service) of the recommended network. For example, for every passenger inconvenienced by the recommended route alignment there are 28 passengers currently inconvenienced by the current route alignment (being taken out of their way and increasing their travel time unnecessarily).

It is also recommended that Route B2 operate via Upper Burnie rather than via Brooklyn. This is based on the analysis of boardings for each of Routes 32 (via Brooklyn) and Route 34 (via Upper Burnie) summarised at the beginning of this section, which showed that average boardings per service were far higher on Route 34 than Route 32. This indicated the relative preference that customers currently have for travelling via Upper Burnie (especially given that Route 34 is timetabled to take slightly longer to reach Burnie CBD than Route 32). Note that the Hillcrest and Brooklyn areas are serviced by Route B4 as discussed in section 7.4.

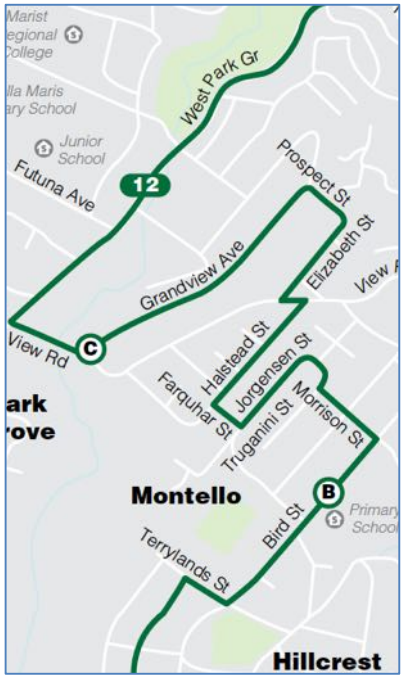
7.3. ROUTE B3 - MONTELLO TO BURNIE (VIA UPPER BURNIE)

The existing Route 12 provides a service linking Upper Burnie to Burnie CBD via Montello. It operates hourly from Monday - Saturday. Route 12 attracts 109 boardings per weekday (an average of 5 boardings per service). On that basis, the route performs much worse than the average route in Burnie (see Table 3 for more details).

Whilst current patronage is relatively weak, it is noted that the dwelling density is over 15 dwellings per hectare and the public transport propensity index (Figure 34) shows that some areas of greatest need are in and around Montello.

The reason for relatively low patronage on the current Route 12 could potentially be explained by the relatively circuitous route alignment. The current Route 12 makes many turns on its path through Montello, as shown in Figure 61 below.

FIGURE 61 - OVERVIEW OF CURRENT ROUTE 12 - MONTELLO



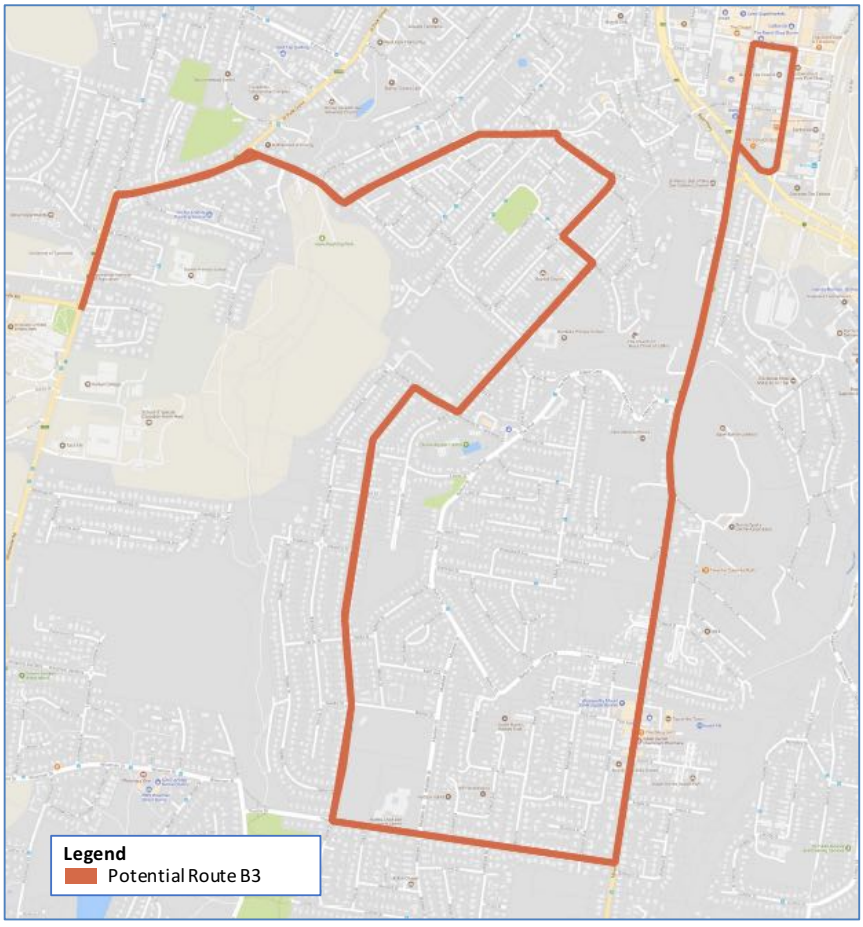
This current route alignment significantly slows down the bus service, and people who miss the bus at one location (such as time point B on Figure 61) could potentially walk across the area and beat the bus to another stop further along the route (such as time point C on Figure 61).

Given this, there is an opportunity to improve and simplify the service, by making the route more direct through Montello and Hillcrest, maintaining the link to Upper Burnie and the Acton Family Services Hub and providing a new direct connection to UTAS and Hellyer College.

A potential Route B3 is shown in Figure 62 below.

Source: *Metro*

FIGURE 62 - POTENTIAL ROUTE B3



Route B3 would improve journey times through the Montello area to Upper Burnie, and then on to Burnie CBD. However, it is noted that much of the route would operate within the coverage buffer of other more direct routes (such as Route B1 and B2 on Mount Street and West Park Grove). Only 165 dwellings are outside the 500m buffer from Routes B1 and B2, and none are beyond 600m from these recommended routes.

Given this significant overlap with coverage buffers of other routes, for Route B3 to be viable it must serve alternate destinations more directly (otherwise it would be a wasteful duplication of other routes). For this reason, the proposed path to Burnie CBD on Route B3 is not direct, as direct services to Burnie CBD are provided on Routes B1 and B2.

Route B3 would provide direct services from Montello and Hillcrest to Acton Family Services Centre and the tertiary education precinct (UTAS, TAFE and Hellyer College). As stated above, without this point of difference for the route, it is unlikely to be supported by the analysis and State Growth network planning guidelines.

The proposed routing through Montello would offer similar coverage to that provided by the existing Route 12, but in a more efficient and direct manner. The road network presents some significant constraints for network design in Montello and Acton, however much of the area on top of the plateau is relatively flat. PBA therefore believe that as proposed, the route alignment provides the best possible balance between directness and closing the small service coverage gap that would otherwise exist if Route B3 were not implemented.

Route B3 would use the roundabout at Mooreville Road and West Mooreville Road to complete a U-turn and to then terminate the route outside the existing UTAS campus. By servicing this area of western Burnie, connections to education facilities would be improved for customers in the Montello area; UTAS, TasTAFE and Hellyer College would all be within the coverage buffer of the potential Route B3 terminus.

Links between Montello and the Acton Hub would also be strengthened by the use of Thorne Street rather than heading south to Griffith Street (as the current Route 12 alignment does). Given that Griffith Street is only 200m from Thorne Street, there would be no loss of coverage and journey times for all passengers could be reduced.

Route B3 would utilise Mount Street to reach Burnie CBD, helping to strengthen the core of services which use this corridor (see also Routes B1, B2 and B4).

For some customers in the Montello area who currently head to Burnie CBD on Route 12 via West Park Grove, Route B3 would have a longer journey time. A detailed examination of boardings on the current Route 12 shows that:

- Only three (3) passengers per day would have a slower journey to Burnie CBD
- These are far outnumbered by over twenty (20) passengers (from Morrison Street and stops south of that point) who currently have a much slower journey to Burnie CBD.

Specifically, Payne Street, Terrylands Street and Bird Street are all better patronised than Jorgensen Street, Halstead Street and Grandview Avenue. It is also noted that some customers (for example, on Grandview Avenue) will be within the coverage buffer of Route B1 bus stops on West Park Grove, and that a direct service to Burnie CBD via West Park Grove is therefore available on Route B1.

On balance, after detailed discussions with MetroTas and considering the relatively small coverage gap that Route B3 is designed to address, PBA does not recommend that Route B3 form a part of the core Burnie network. However, two factors should be considered before a final decision regarding the route is made:

- The number of school services required for Hellyer College, and the areas through which

they operate, may boost the case for Route B3 (at school times as an alternative to student only services)

- A detailed consideration of the operational requirements for the remainder of the Burnie core network (i.e., Routes B1, B2, B4 and B5) may potentially mean that it is possible to operate Route B3 for a relatively small resource cost (if there are no additional driver hours or peak vehicles required to operate the route).

7.4. ROUTE B4 - BROOKLYN TO BURNIE (VIA UPPER BURNIE AND HILLCREST)

Brooklyn is principally connected to Burnie CBD by the current Route 32, which originates in Emu Heights and is discussed in some detail in section 7.2 above. Route 32 attracts 32 boardings per weekday (an average of 3 boardings per service). On that basis, the route performs worse than the Burnie average (see Table 3 for more details).

Connections from Brooklyn to Upper Burnie currently consist of only one service per weekday on Route 54 (principally designed as a service for school children). There are 31 passengers on this service. Comparison of Routes 32 and 34 highlight some attraction that Upper Burnie has for nearby residents. Currently the residents of Brooklyn cannot get to and from Upper Burnie by bus.

An examination of boardings shows that whilst patronage is generated in the core Brooklyn area (broadly Collins Street, Flinders Street and Wembley Street), there were no boardings at 1 Brooklyn Road and very few boardings in the South Burnie area. Coupled with the knowledge that passengers from Havenview and Romaine prefer the route alignment of Route 34 to access Burnie CBD, this lack of boardings in South Burnie suggests that the current direct connection between Brooklyn and Burnie CBD is highly unproductive and not attractive to passengers.

The Hillcrest area is currently served by Route 34, which also originates in Emu Heights and is discussed in section 7.2 above. It is also contained within the coverage buffer of the recommended Routes B1 and B3.

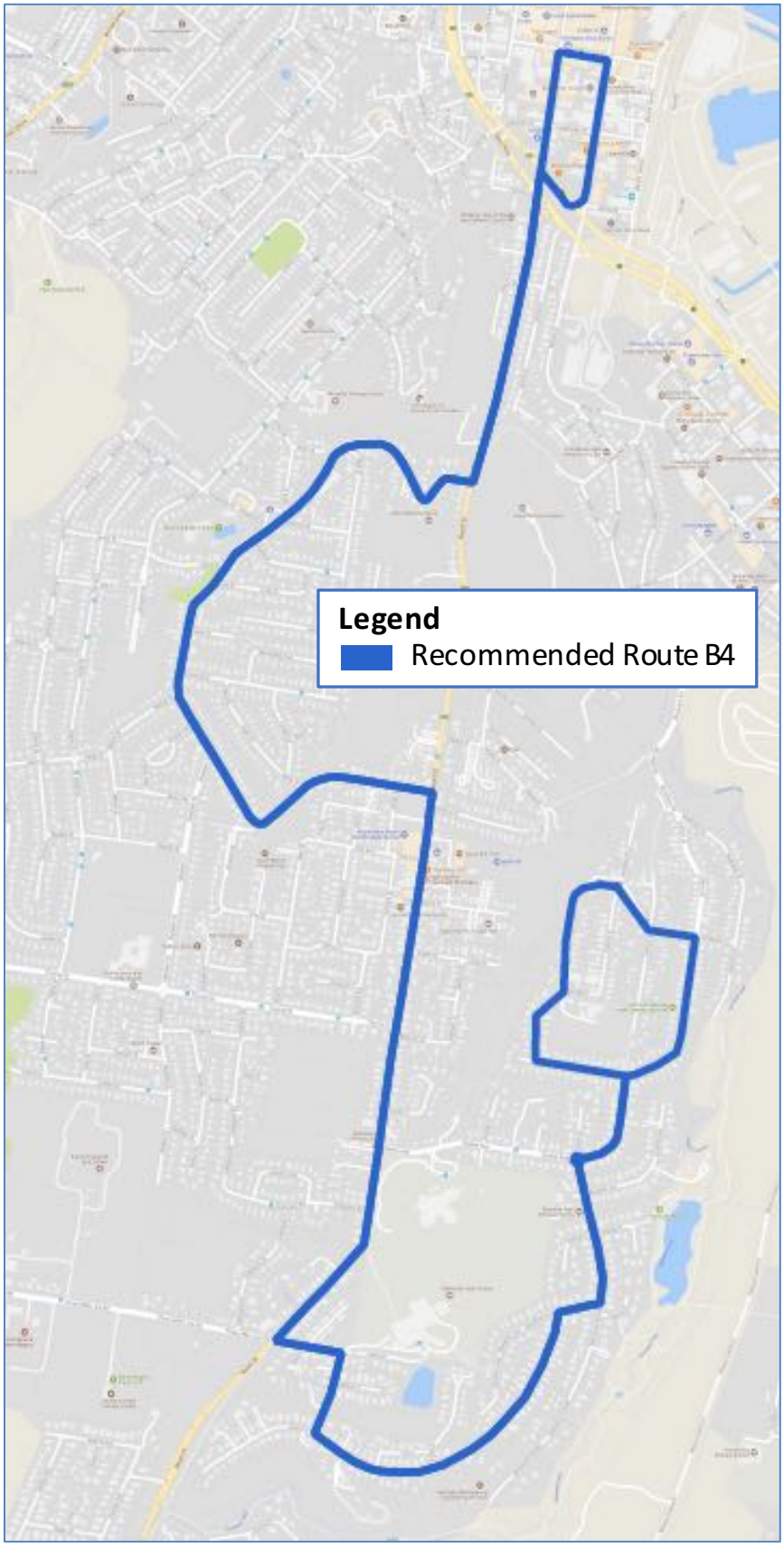
It is noted that the dwelling density (over 15 dwelling per hectare) meets the requirement for providing urban bus services and the propensity index supports the retention of a service in Brooklyn and South Burnie.

However, it is not necessary that the service in Brooklyn and the service in South Burnie are the same route. Patronage and travel time analysis coupled with analysis of recent and upcoming changes to land use show that connecting Brooklyn to Burnie CBD via Upper Burnie is likely to be of greater use to local residents. It would therefore be likely that such a route would generate greater patronage that the current alignment of Route 32.

The route alignment from Brooklyn to Burnie would remain relatively short compared to other routes in the network, and this provides the opportunity to ensure the steep terrain of Hillcrest is served appropriately. Route B4 could remain direct along Mount Street between Upper Burnie and Burnie CBD. This would duplicate and supplement services on Mount Street, and maintain a consistency of route alignments (with Routes B1 and B2). However, there is a significant number of people currently using Route 34 in Hillcrest due to the very steep terrain around Aileen Crescent, Mount Street and The Boulevard.

Therefore, despite the close proximity of Route B3, it is recommended that Route B4 operates through Hillcrest (on a more efficient alignment than the current Route 34). It is recommended that Route B4 connect Brooklyn to Burnie CBD via Upper Burnie and Hillcrest, as shown in Figure 63 below.

FIGURE 63 - RECOMMENDED ROUTE B4



The addition of Hillcrest to Route B4 was based on the following considerations:

- Patronage in the Hillcrest area is currently relatively strong, with average of 16.6 passengers boarding per weekday (1.7 boardings per service) compared to 0.1 boardings per service in South Burnie.
- Topography of the Hillcrest area (the escarpment in particular) means that walking from some points out to either Mount Street (for Routes B1, B2 or B3) or Bird Street (for Route B3) often involves a steep climb
- The 16.2 boardings per day originating in Brooklyn (1.5 boardings per service) is barely enough to sustain a basic level of service. Linking the route to Upper Burnie via Romaine will add around 30 boardings per day (3 boardings per service). This is still barely enough to warrant a full-size bus on the route. Adding another 17 passengers per day from Hillcrest will make the route more productive and viable in the long term.

Given the current lack of patronage on points north of Brooklyn on Route 32, the efficiency and productivity of the route is improved by instead travelling via Upper Burnie. Coverage to the South Burnie area will be provided by Route B6 (see section 7.6).

At the second community workshop, a solution was presented which involved the use of Collins Street, Swanston Street and Exhibition Street for turning the bus at the end of the route. Some stakeholders responded that the proposed alignment would not sufficiently meet the needs of passengers in Brooklyn, particularly given the gradients to the west of Collins Street (such as in Wembley Street).

After further investigation, PBA agrees with the community feedback and now recommends that Route B4 utilises the existing terminating route alignment used by Route 54 (as requested by the community).

There are some customers in the Brooklyn area travelling directly to Burnie CBD will experience slightly longer journey times on Route B4 than on the current Route 32. Analysis of the current boarding patterns show that a majority of passengers are currently choosing to use the longer services (via Upper Burnie). This highlights that the consistency of service pattern and connection to Upper Burnie is more important than the journey time to Burnie CBD for passengers in Brooklyn.

7.5. ROUTE B5 - WYNYARD AND SOMERSET TO BURNIE

Wynyard and Somerset are offered a connection to Burnie CBD by a number of current routes. The principal of these is Route 60, which attracts 324 boardings per weekday (an average of 22 boardings per service). This is the best performing regular route for total patronage and for average boardings per service in the region.

There are five variations on the core Route 60 which are given their own route number within the timetable. These are:

- Route 61 which operates once per day Monday to Friday inbound to Burnie, does not serve Somerset, and does not penetrate deeply in Wynyard (8 boardings per service)
- Route 65 which operates three services per day in the morning peak Monday to Friday on schooldays only, from Burnie to Somerset (10 boardings per weekday; 3 boardings per service). Two of the three services deviate to Burnie High School
- Route 66 which operates two services per day Monday to Friday inbound to Burnie from Somerset, not servicing Wynyard (22 boardings per weekday; 11 boardings per service). One of the services includes a deviation to Burnie High School
- Route 67 which operates one-way once every weekday during school holidays only, from

Wynyard to Burnie via Somerset (no boarding data available as it was not the school holidays during the study period)

- Route 68 which operates one-way once every weekday on school days only, from Somerset to Burnie stopping at Burnie High School (34 boardings per service)

The presence of this number of variations in the public timetable create significant confusion for potential and regular passengers.

There is a significant opportunity to simplify and rationalise the services into one route (with some minor deviations). This can be more easily communicated to customers and used to build on the current strong patronage. There also some opportunities to improve the efficiency of the service on its path through each of Wynyard and Somerset.

The recommended alignment of Route B5 is shown in Figure 64 below.

FIGURE 64 - RECOMMENDED ROUTE B5

In Wynyard, the following changes are recommended:

- Burnie Airport is within the coverage buffer of Route B5, and it is therefore not recommended that a specific deviation into the airport is needed
- The route should operate along the Bass Highway (and not serve the Martin Street and Bowick Street deviation), as the coverage buffer is sufficient to serve this area
- Through Wynyard CBD, the recommended alignment is along Dodgin Street, Hogg Street, Little Goldie Street, Jackson Street, Exhibition Link and Saunders Street. The route should then continue directly to Gibbons Street, along Hales Street and Inglis Street to York Street before completing a turnaround loop using Katelyn Drive and Maxwell Place. The current terminus York Street could be moved to the opposite side of the street in order to improve visibility of the service and safety of the operation.

The operator commented that a bus may not be able to traverse the roundabout at Saunders Street and Goldie Street. This should be discussed with Waratah-Wynyard Council to determine a solution that enables the most efficient bus operations through Wynyard.

A request was made by Vincent Industries on Jackson Street that all buses stop directly outside their site. Whilst Route B5 can achieve this on its route towards Burnie, this is not possible on the route from Burnie without significant deviation. An alternative strategy would be to work with Waratah-Wynyard Council to improve pedestrian safety while crossing Jackson Street. Section 9 discusses this in more detail.

On the approach to Burnie, Route B5 travels direct to the Cattley Street interchange. At the community workshops, many participants stated that a direct connection from Wynyard / Somerset to the North West Regional Hospital was desirable. Taking such a path would come with benefits for those who wished to get to the Hospital - but at a significant cost to other passengers (adding at least 10% to the overall journey time for other passengers travelling between coastal towns and Burnie CBD). There would also be a cost to the wider community in terms of bus resources that cannot be deployed elsewhere across the Burnie network (or returned to Wynyard to provide increased frequency).

Whilst it is noted that there will be some passengers who are wishing to make a through journey to the Hospital, there was no evidence available which pointed to this being a large proportion of the total passenger demand. It is therefore recommended that instead, there is a focus on timetable co-ordination at Cattley Street, such that services arriving from Wynyard / Somerset are well connected with anti-clockwise Route B1 services to the Hospital. This co-ordination does not occur in the current timetable as Route 60 services typically arrive at Cattley Street seven minutes before the hour or three minutes after the hour, whereas Route 41 typically leaves Cattley Street at half past the hour.

This lack of coordination in the current timetable could have been the main reason the community was seeking a route based solution (rather than rely on a timetable based network solution). As the cities grow and bus network evolves, more journeys will need to involve transfers, because every route cannot serve every destination. Route B5 is a classic example of this, in that there should be an expectation that getting to the hospital involves a transfer (as it will for passengers on all other routes in the Burnie network other than B1).

In Somerset, some minor modifications are suggested which will improve the efficiency of the route. It is recommended that the core route follows Falmouth Street, Wragg Street, George Street and Cardigan Street in both directions. This is the current alignment of Route 60, but is not used by Routes 61 and 65.

It is also recommended that the core route is aligned to Cardigan Street, Lyons Street and Raglan Street (not using Malakoff Street, Pelissier Street and Flinders Drive). The very western end of Malakoff Street falls beyond the coverage buffer, but other than that, the rest of this area is within the 500m coverage buffer of Route B5. School deviations can of course run through these areas if needed (the current service in these streets is a twice per school-day, inbound-only service).

7.6. ROUTE B6 - PENGUIN / ULVERSTONE TO BURNIE

Whilst it was beyond the scope of this exercise to make detailed recommendations relating to the non-urban services to Penguin / Ulverstone, there are some broad recommendations which can be made. This is particularly important given the recommendation in Routes B2 and B4 that South Burnie is not serviced by those routes.

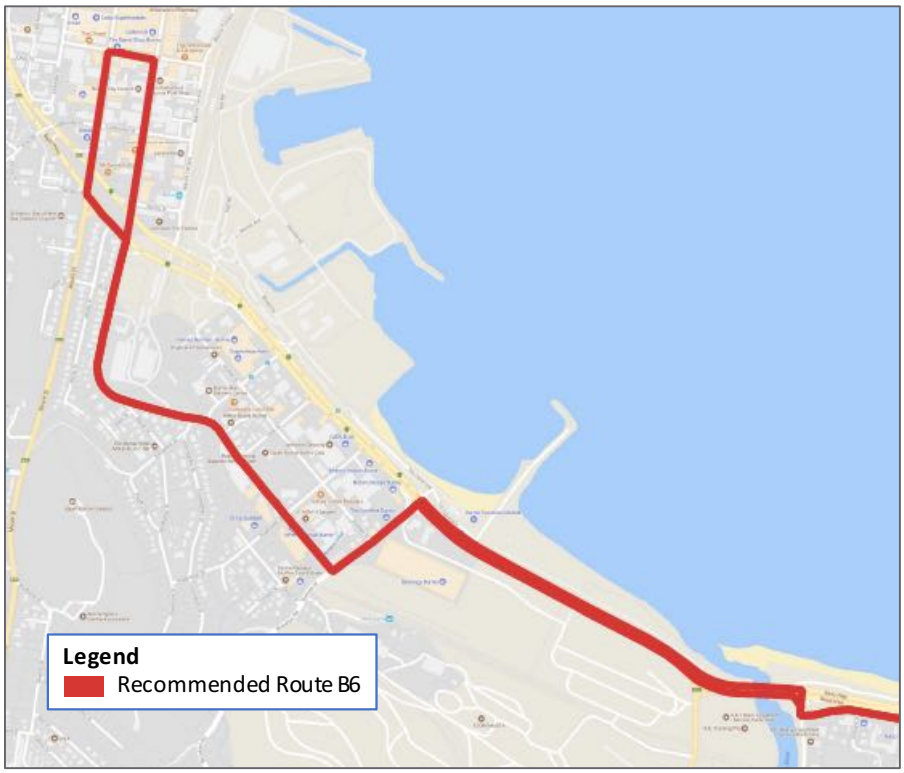
State Growth are proposing that all Penguin services run to Burnie, while Ulverstone services travel to Devonport. Passengers at Penguin and Ulverstone will also be able to catch the

HospitalLink. Currently Routes 70, 74, 75, 78 and 79 service Penguin, with all bar Routes 78 and 79 also serving Ulverstone. As with all other routes, specific deviations for school services can be developed as a separate exercise.

It is recommended that this new route (referred to in this report as Route B6) to Burnie be aligned through South Burnie as shown in Figure 65 below.

The route would exit the Bass Highway onto Reeves Street, before approaching the Burnie CBD via Wellington Street, Wilson Street and Cattley Street. This would provide the same level of coverage and service in the South Burnie urban area as currently provided by Routes 32 and 37 combined.

FIGURE 65 - RECOMMENDED ROUTE B6



7.7. SUMMARY OF KEY FEATURES OF THE RECOMMENDED BURNIE NETWORK

The recommended Burnie network meets the project objectives by:

- Ensuring that over 95% of households in urban areas are within an easy walk of a bus route
- Simplifies the network by reducing the number of variations to routes, and by channelling routes along core stretches (such as Mount Street in Upper Burnie). The number of routes has been reduced from 21 to 5
- Improves the efficiency of the network, and customer journey times, by introducing more direct services on a number of routes

The recommended network is shown in Figure 66 below, with the change in coverage shown in Figure 67.

FIGURE 66 - RECOMMENDED BURNIE NETWORK

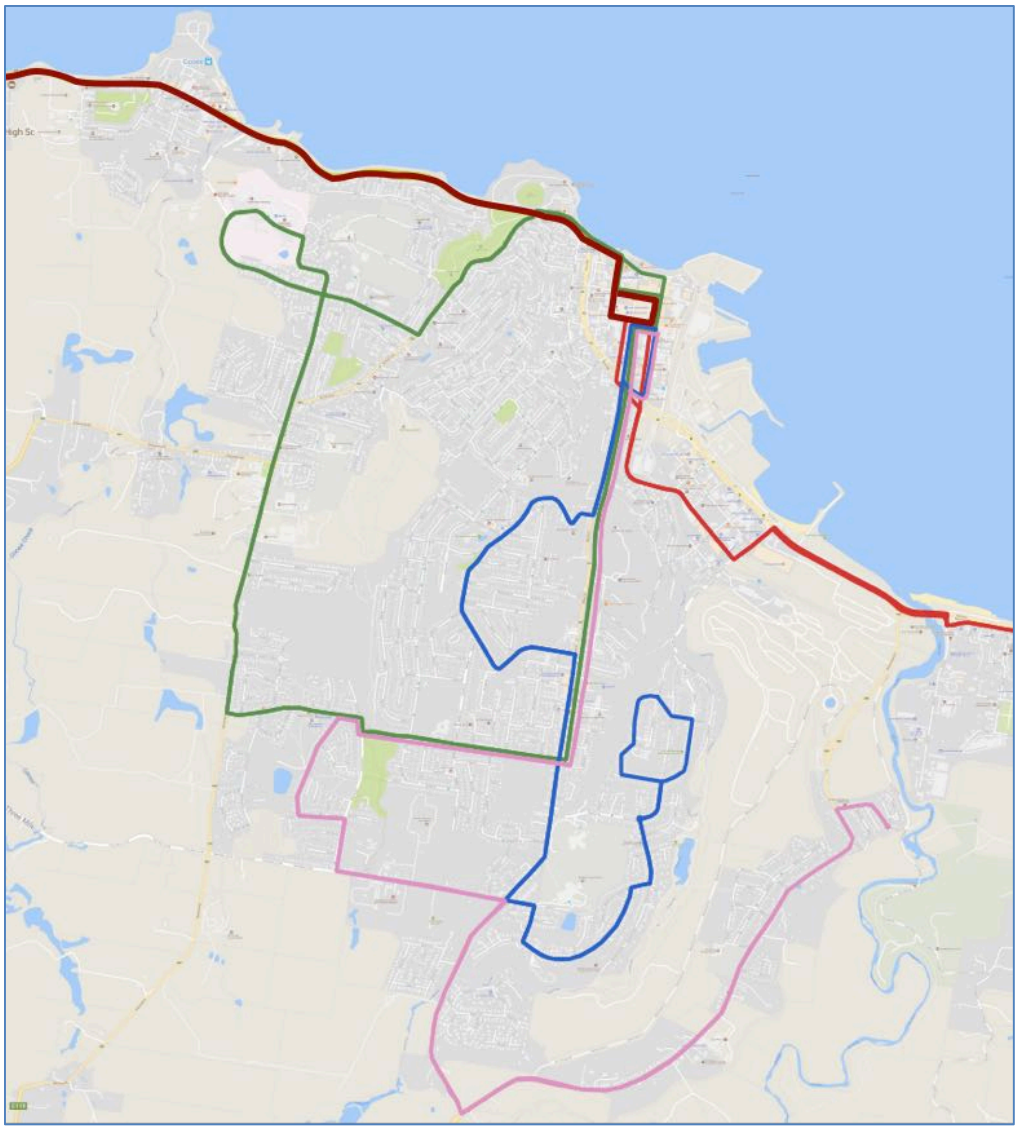


FIGURE 67 - CHANGE IN COVERAGE IN BURNIE FROM RECOMMENDED NETWORK

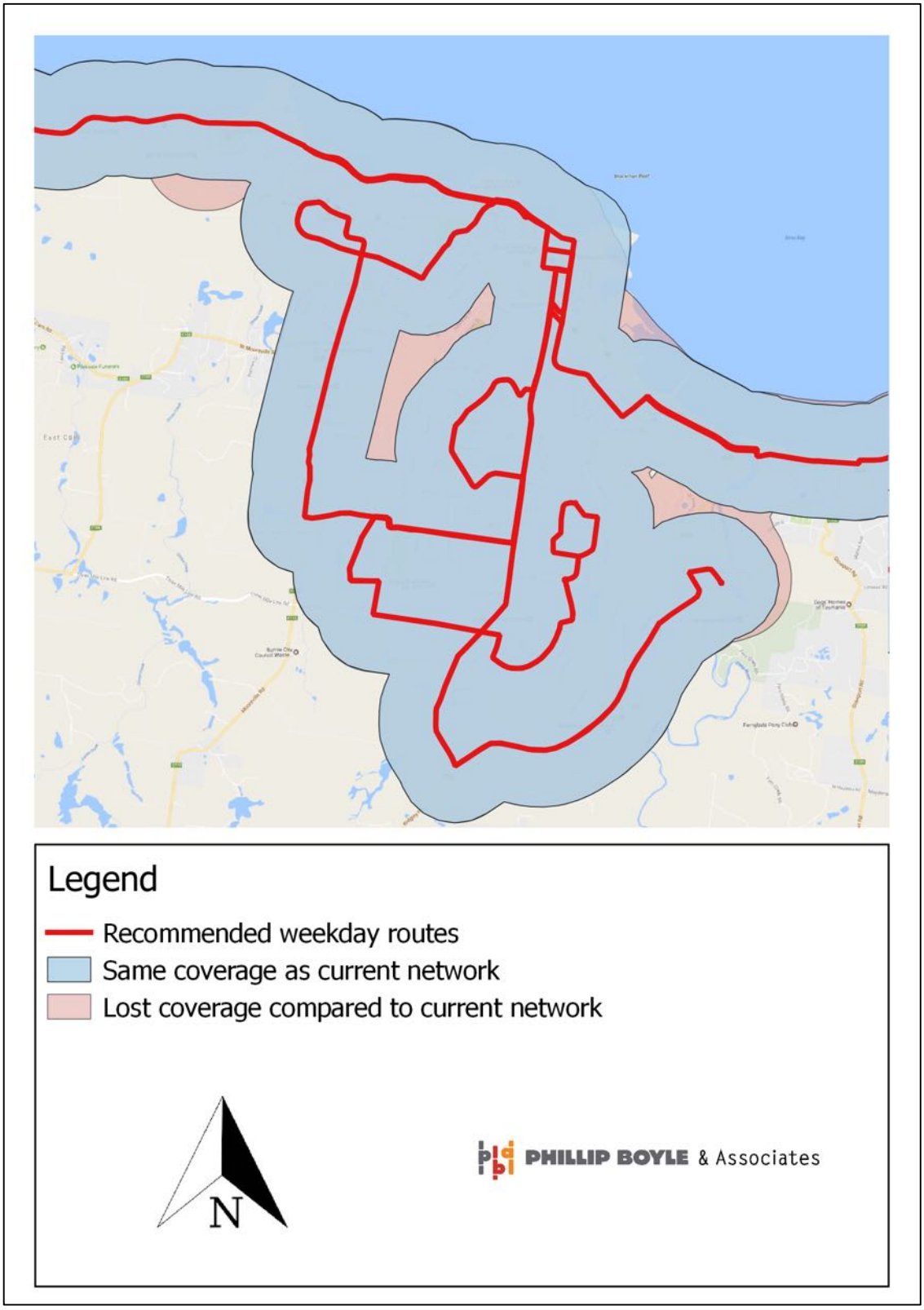
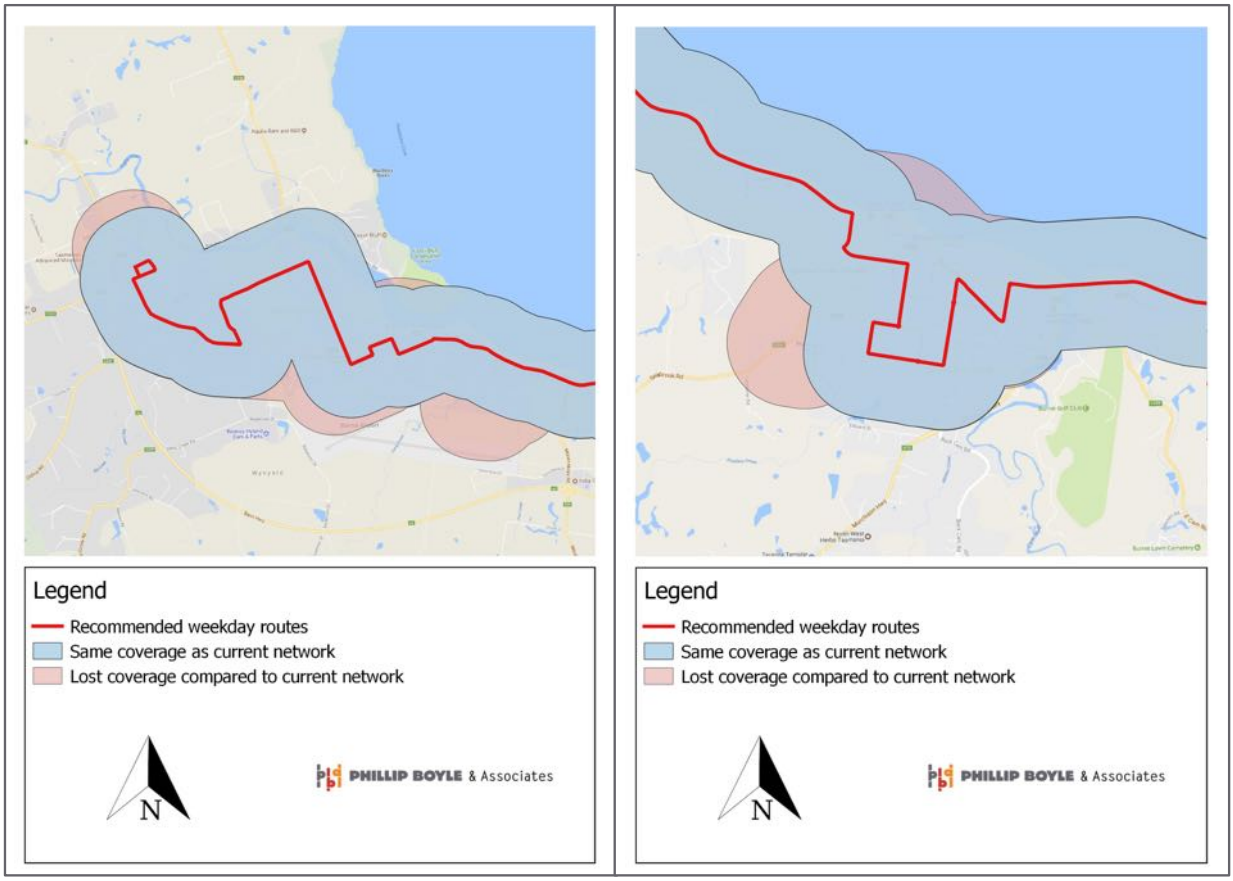


FIGURE 68 - CHANGE IN COVERAGE IN SOMERSET & WYNYARD FROM RECOMMENDED NETWORK



8. Service Quality Recommendations

From the community workshops and public submissions, one of the main issues for passengers is service operating hours and frequency. While linkages and network design also featured as an area for improvement, enhancements to the service levels can help to offset the impact of network changes recommended in this review (particularly where routes are made more direct).

For example, where a direct bus link has been removed, if the bus routes for purpose of transfer are operating at high frequency, this would help to mitigate any actual or perceived inconvenience.

8.1. SERVICE SPANS

Whilst detailed service spans have not been developed, some high-level commentary is provided here. This commentary is given in the context of existing patronage and expected future demand; sections 2.6 and 2.16 provide the context for an assumption that whilst some patronage growth is expected, future demand is unlikely to be at significantly higher levels than current.

At the community consultation workshops, there were several comments from participants about service spans. These could broadly be categorised as:

- Requests that services operated earlier in the day
- Requests that services operate later in the day
- Requests that services operated on Sundays / public holidays or that there were more services on Saturdays, or that Saturday services started earlier

Earlier services

Broadly, there were relatively few comments about additional early morning services compared to requests for additional later services, suggesting that later services may be regarded as a higher priority. It is however noted that there more comments about earlier services in Burnie compared to Devonport. Excluding Routes 80 and 50 (serving the low patronage areas of Stony Rise and Ambleside respectively), the first service of the day in Devonport is no later than 0735.

In Burnie, many services to relatively well patronised routes start later than this (for example, Routes 12 and 40 /41). Consideration could be given to starting all services no later than 0730 unless patronage is particularly low at present.

Later services

As stated above, this appeared to be a higher priority to the community. In particular, a number of comments referred to the mis-match between current times of last services, and the demands of the longer working hours, variable working hours and recreation activity (including restaurants, cinemas, leisure centres and shops on some evenings). Interestingly, comments did not appear to request substantial increases in the span of hours offered, rather that there were few or no services offered after 6pm at night.

Services in Burnie typically finish at or around 1800, whilst in Devonport the last service is typically between 1730 and 1800. Comments were also received about the possibility of a trial of later services, demonstrating that the community recognised that later services would need to be supported if they were to be sustainable. As such, consideration could be given to trialling the last service on all services to be at / around 1900 (unless patronage is particularly low on the route at present).

Weekend services

Comments were broadly split into two categories; requests for services on Sundays, and a small number of requests that Saturday services started earlier in the day. It is noted from Table 1 and Table 3 that boardings per service are lower on Saturdays compared to weekdays (with Devonport Saturday utilisation being half that of weekdays). It is also noted that services levels are lower than weekdays; it is possible that potential customers are put off by the increased headway between services at present.

8.2. PROPOSED SERVICE FREQUENCIES

The recommended service frequencies are based around the principles of improving span of service and providing memory headways (departure times that are evenly spaced and repeat each hour, e.g. 15 or 20 minutes apart but not 40 minutes) wherever possible.

In drawing up timetables it is recommended that the hierarchy of requirements outlined below is followed:

- Memory based (clock-face) headways are a priority for the communities
- Routes that share a corridor should be co-ordinated to equalise the headway between different routes
- Key connections between routes (such as to hospitals or tertiary education facilities) should be defined as hard or soft rules to be applied in the timetabling process
- As timetables are developed and cycle times are determined, their impact on resources will result in fine tuning to ensure all routes are efficient at serving peak demands and remaining reliable.

Based on the Department of State Growth's service standards[7], it is recommended that the following standards apply to routes in Burnie and Devonport:

- Standard link (every hour including weekends): B1, D1/D2, D6, D7
- Urban link (every hour, without weekends): D4/D5
- Urban/access link (at least every two hours without weekends): B2, B3 (if implemented), B4
- Regional link (at least every two hours with some weekends): B5
- Access link (at least three return weekday services): B6, D3

8.3. EASE OF USE

A number of factors affect passengers' perceptions of whether the bus system is easy to use. These include:

- Availability and quality of route and timetable information
- Quality and comfort of bus stop and interchange facilities
- Passengers' experience taking buses
- Fares and ticketing

[7] *http://www.transport.tas.gov.au/project2018/general_access*

Comments on each of the above factors are discussed in sections 8.4 to 8.7 below.

8.4. INFORMATION AVAILABILITY

As part of the assessment of the current network, data was gathered on information availability in each of Devonport and Burnie. This showed that:

- Whilst all Burnie bus stops had flags / signs, the figure in Devonport was lower at around 75%
- Relatively few bus stops had timetables available (40% in Burnie, 16% in Devonport)

It is recommended that State Growth ensures that all bus stops are clearly marked so that customers know where they can catch the bus. These will need to be completely reviewed in order to implement the recommended bus network.

It is also recommended that State Growth establish a design and colour palate that would standardise the design of all bus information (including timetables, bus stop flags and promotional material). This process can be relatively simple and should leverage research and work completed in other jurisdictions (such as Victoria and New South Wales).

Following on from the implementation of this review, it will be necessary to update all static information (that is, timetables posted at bus stops). Noting the relatively low proportion of bus stops which currently have timetable information, and the relatively high cost of introducing additional timetable information, it is recommended that State Growth investigates the potential to increase the use of digital channels for distributing timetable information.

As an exercise in increasing awareness of the new network, and of making customers aware of the new timetables, State Growth may also wish to investigate supporting the distribution of timetable information to households in the Devonport and Burnie areas – perhaps through the distribution of rates notices and regular Council communication to all households.

8.5. QUALITY AND COMFORT OF FACILITIES

In both Devonport and Burnie community consultations there was strong feedback about the lack of sheltered bus stops across the network. It is also noted that like all transport authorities, State Growth needs to ensure that the network is compliant with the requirements of the Commonwealth Disability Discrimination Act 1992 (DDA).

It is recommended that State Growth complete a full audit of all wayside infrastructure in the two urban networks to accurately map and quantify the facilities required to meet DDA requirements.

There were also some comments from the public relating to the perceived safety of interchange facilities, with specific reference made to poor behaviour (including smoking and lack of clear signage relating to smoking). It is recommended that State Growth liaise with operators and particularly the Northern command of the Tasmanian Police to explore the potential for a more visible presence at both Cattley Street and Rooke Street, to help improver perceptions of safety.

8.6. PASSENGER EXPERIENCES TAKING BUSES

Comments received at the community workshops with regards to drivers were overwhelmingly positive in their praise. Drivers were well regarded for their depth of knowledge, helpful approach to customers and cheerful demeanour.

A number of comments were received relating to difficulties in boarding buses, particularly for customers who were mobility impaired or had strollers. The requirements of the DDA are that 80% of vehicles and 90% of bus stops need to be fully DDA compliant by 31 December 2017. State Growth will need to work with local Councils and operators to ensure this can be delivered as part of the network upgrade.

8.7. FARES AND TICKETING

Comments were received at all four community workshops on the barriers that fares and ticketing presented to travel, within Devonport and Burnie as well as between the cities. Comments covered a wide number of themes, including:

- Fare levels, and how travel across the region was currently discouraged through a lack of integration (including the urban fringe)
- The lack of a single ticket media which was common across the North-West region
- The lack of products which were valid on multiple operators and modes (for example, Devonport ferry)
- The lack of different channels and media options

There is a clear need for State Growth to develop a holistic approach to ticketing in the region as part of Project 2018, which addresses all of the above concerns.

9. Operational limitations

This section details the infrastructure improvements required to enable some of the recommended bus route extensions and realignments, and to address traffic and other safety issues along existing bus route alignments. The input of Metro and Merseylink has been critical in shaping this.

9.1. INFRASTRUCTURE CHANGES REQUIRED

A range of infrastructure improvements are required to make the network as efficient as possible.

Road improvements that will need to be discussed with the City of Devonport are summarised in Table 5 below.

TABLE 5 – ROAD IMPROVEMENTS REQURIED IN DEVONPORT

ROUTE	LOCATION	REQUIREMENT	NOTES
D1	Watkinson St	Priority for bus movements at each intersection along Watkinson St	Give way signage should provide priority for Watkinson St through movement at the intersections of: ▪ Madden St ▪ Oldaker St
D1 D2	Watkinson St at Don College	Need a bus stop on the eastern side of Watkinson St to serve Don College southbound	May also consider installing a zebra crossing to assist with crossing the road at this location
D2	James St	Priority for bus movements at each intersection along James St	Give way signage should provide priority for James St through movement at the intersections of: ▪ Percy St ▪ Ronald St
D2	Best St at Formby Rd	May need to reform the kerbing and road to enable a bus to turn left from Best St into Formby Rd	Would be resolved if the bus interchange is moved to the western side of Rooke St
D3	Autumn Dr at Park Dr	Priority for bus movements from Autumn Dr into Park Dr at the intersection	Would have minimal impact on other road users and ensure the bus movement can be completed efficiently
D3	Bayview Ave at River Rd	Priority for bus movements from Bayview Ave into River Rd at the intersection	Would have minimal impact on other road users and ensure the bus movement can be completed efficiently and safely
D3	Formby Rd	Additional bus stops are required along Formby Rd to improve access to the route	May require bus stops in the left lane or in the traffic lane where there is only one lane. Will need to work with Council and the operator to determine the most appropriate locations
D4	Sorrell St at Steele St	Need to review and reform the road geometry to ensure buses do not bottom-out on the left turn from Sorrell St into Steele St	Without road geometry improvements, outbound services will need to turn left onto Don Rd, right at Nixon St and left at Steele St
D6	Stephen St at David St	Priority for bus movements along Stephen St across David St at the intersection	Would have minimal impact on other road users and ensure the bus movement can be completed efficiently and safely

ROUTE	LOCATION	REQUIREMENT	NOTES
D4 D5	Elm Ave	May need to install bus stops in Elm Ave to serve the TAFE & small shop group at the intersection of Valley Rd	The lost parking and loading zones would be replaced by the conversion of bus stops in Valley Rd to parking spaces and loading zones as appropriate If safe bus movements through Elm Ave cannot be achieved, the alignment from Elm Av to Morris Ave of the two routes will need to be replaced with an alignment on Valley Rd and William St to Middle Rd
Many	William St at Best St	Priority for northbound bus movements in William St turning right into Best St	A queue jump lane and B-light in the left will improve peak period reliability of bus services through 4-ways without any significant impact on other road users
All	Rooke St at Best St	Extend the eastern kerb of Rooke St and close the southbound left lane approach to the intersection	Buses can only turn left from the right lane in Rooke St (due to the tight radius of the kerb). Cars often arrive at the intersection after a bus waiting to turn left, and then get cut-off with near misses a regular occurrence

Road improvements that will need to be discussed with the Latrobe Council are summarised in Table 6 below.

TABLE 6 – ROAD IMPROVEMENTS REQURIED IN LATROBE

ROUTE	LOCATION	REQUIREMENT	NOTES
D7	Stanley St at Fenton St	Priority for bus movements eastbound on Fenton St turning left into Stanley St at the intersection	Would have minimal impact on other road users and ensure the bus movement can be completed efficiently and safely
D7	Stanley St at Last St	Need to ensure that buses can turn left at this intersection safely and efficiently	May need to move the centreline on Last St to provide more space for northbound bus movements turning left from Stanley St into Last St
D7	Last St	There is a need to ensure that buses can travel along Last St safely	Parking demand at school start and end times may impact on the ability to operate the bus service safely. If so, parking restrictions may need to be considered
D7	Last St at Percival St	Priority for bus movements westbound on Last St turning right into Percival St at the intersection	Would have minimal impact on other road users and ensure the bus movement can be completed efficiently and safely

Road improvements that will need to be discussed with the City of Burnie are summarised in Table 7 below.

TABLE 7 – ROAD IMPROVEMENTS REQURIED IN BURNIE

ROUTE	LOCATION	REQUIREMENT	NOTES

ROUTE	LOCATION	REQUIREMENT	NOTES
B1 B2	Wiseman St at Woniora Rd	Priority for eastbound bus movements turning right from Wiseman St into Woniora Rd at the intersection	Would have beneficial impact on most other road users and will ensure the bus movements can be completed efficiently and safely
B2	Emu Heights terminus	A decision needs to be made on the best solution for turning the bus on Route B2	There are three options for terminating Route B2. The current network uses a loop which is particularly inefficient. The recommended option is to utilise Myrtle Cres & Old Surrey Rd State Growth should liaise with Council and Metro to determine the optimal solution
B2	Three Mile Line Rd	When Kentish Dr is connected to Three Mile Line Rd as part of the next subdivision, it is recommended that Route B2 extend along Three Mile Line Rd and turn right up Kentish Dr	This will resolve the remaining small coverage gap in Shorewell Park
B3	UTAS / West side of Mooreville Road	If Route B3 is implemented, there may need to increase the size of the existing bus bay	At present, Route 85 (HospitalLink) uses this stop for a layover and it is a regular stop on Route 51 Recommended Route B3 would also layover at this location. The bus bay may need to be increased in size, such that Route B1 can also stop here if other routes (Route 85 & Route B3) are laying over at the same time
B3	View Rd at Morse St	If Route B3 is implemented, there may need to revise the line marking in this intersection to ensure the right turn from View Rd into Morse St can be achieved	The movement seems achievable but may need to be tested in a bus to determine if any line markings need to be changed
B4	Manuka Dr at Atkins Dr	Priority for bus movements northbound on Manuka Dr turning left into Atkins Dr at the intersection	Would have minimal impact on other road users except at school times This will ensure the bus movement can be completed efficiently and safely during school times
B4	Manuka Dr at Acacia Dr	Priority for bus movements in both directions on Manuka Dr continuing into Manuka Dr at the intersection	Would have minimal impact on other road users and will ensure the bus movements can be completed efficiently and safely
B4	Manuka Dr at Sassafras Cr	Priority for northbound bus movements turning right from Manuka Dr into Sassafras Cr at the intersection	Would have minimal impact on other road users and will ensure the bus movements can be completed efficiently and safely
B4	Sassafras Cr at Blackwood Pde	Priority for northbound bus movements turning right from Sassafras Cr into Blackwood Pde at the intersection	Would have minimal impact on other road users and will ensure the bus movements can be completed efficiently and safely
Many	Wilson St at Ladbroke St	Priority for northbound bus movements in Wilson St across the intersection	A queue jump lane and B-light will improve peak period reliability of bus services entering the CBD without any significant impact on other road users

ROUTE	LOCATION	REQUIREMENT	NOTES
Many	Mount St at Cattley St	Priority for northbound bus movements in Mount St into Cattley St	A dedicated right turn lane and protected turn will improve peak period reliability of bus services entering the CBD without any significant impact on other road users

Road improvements that will need to be discussed with the Waratah-Wynyard Council are summarised in Table 8 below.

TABLE 8 – ROAD IMPROVEMENTS REQURIED IN WARATAH-WYNYARD

ROUTE	LOCATION	REQUIREMENT	NOTES
B5	Vincent Industries at Jackson St	Improve the safety of boarding & alighting for workers at Vincent Industries The options include narrowing the road width and installing a zebra crossing. These need to be discussed with the Council and operator to identify the best improvement option	A request was made by Vincent Industries that all buses stop directly outside the factory. Whilst Route B5 can achieve this on its route towards Burnie, this is not possible on the route from Burnie without significant deviation. A different solution might be the installation of a pedestrian crossing on Jackson Street adjacent to Vincent Industries. It is recommended that State Growth pursue this with Waratah-Wynyard Council
B5	Saunders St at Goldie St	Ability to operate buses around the roundabout needs to be confirmed. If it is not possible then State Growth should work with the Council & operator to identify the remedial treatment that will be applied to enable the bus services to operate efficiently	The recommended alignment for Route B5 is to head across the roundabout. State Growth and Metro will need to work with Waratah-Wynyard Council to ensure that buses can safely head north and south over the roundabout
B5	York St at Katelyn Dr	Layover location for Route B5	It is recommended that the current stop 50 on the north of York St is swapped to the other side of the road. This would mean that it completed a circuit of the loop before waiting at the bus stop; this would give residents more opportunity to be aware that the bus had arrived and was now waiting
B5	Mount Hicks Rd between Old Bass Hwy and Tom Moores Rd	Footpath needs to be installed	Council noted that there is a growing number of businesses and employment activity in the new industrial estate near the Bass Hwy interchange with Mount Hicks Rd. The intensity of development is not yet large enough to justify a bus deviation. In the interim Council should construct a footpath along Mount Hicks Rd that provides access to the bus stops on the Old Bass Hwy