Pilot On-Demand Transport Service for Phillip Island and San Remo

Service design and implementation plan

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Contents

Executive Summary **5**

1. Introduction **7**

1.1 Project background 8

1.2 About this project 8

1.3 What is on-demand transport? 8

1.4 Ideal operating context for on-demand transport 9

2. User markets **10**

2.1 Commuters 11

2.2 Community use 12

2.3 Tourism 13

2.4 Potential daily ridership 15

3. Service design parameters **16**

3.1 Coverage 17

3.2 Operating schedule 17

3.3 Service operation 19

3.4 Stop infrastructure and wayfinding 22

3.5 Vehicles 22

3.6 Digital interfaces 23

4. Operating models **24**

4.1 Financial operating model 25

4.2 Four operating models 29

4.3 Recommended Model 36

5. Micromobility **38**

5.1 Introduction 39

5.2 E-scooter or e-bike share? 39

5.3 Where would a micro mobility service operate? 39

5.4 Seasonality 39

5.5 Costs 40

5.6 Next steps 40

6. Implementation Plan **41**

6.1 Secure funding 43

6.2 Determine service characteristics 43

6.3 Service commissioning 43

6.4 Service promotion 44

6.5 Monitoring and evaluation 44

6.6 Review of trial 45

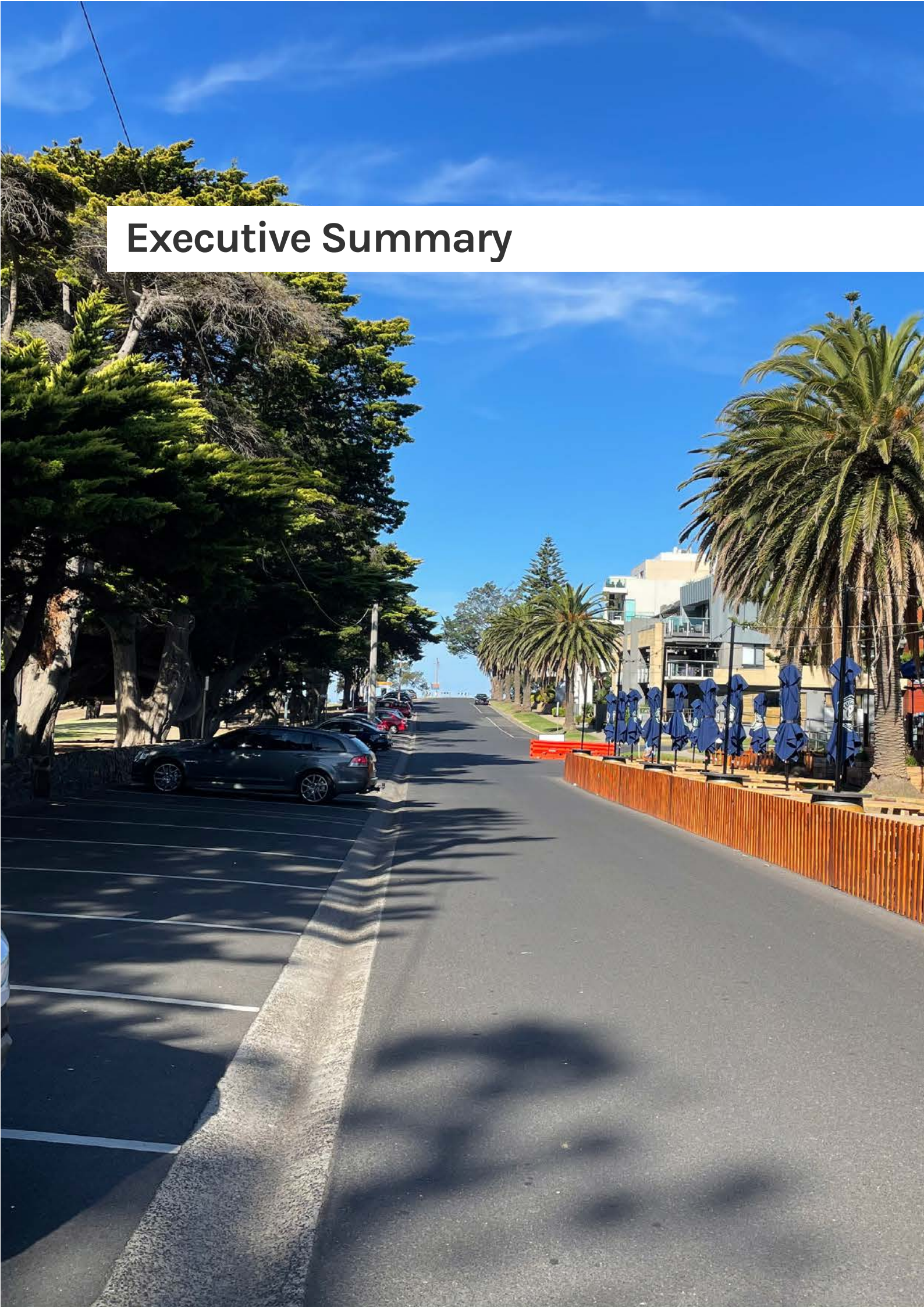
List of figures

Figure 1 Population by age of Phillip Island and San Remo 12
Figure 2 Average overnight visitors per day in Phillip Island region, 2021 13
Figure 3 Proposed hubs and associated catchment area 20
Figure 4 E-bike share 39
Figure 5 Implementation plan steps 42

List of tables

Table 1 Spectrum of transport services from buses to taxis 9
Table 2 On-demand sub-types 9
Table 3 Commuter use of an on-demand transport service 11
Table 4 Estimated community trips per person per day 12
Table 5 Community trips on an on-demand transport service 13
Table 6 Mode share of Metropolitan Melbourne and Geelong residents when in regional Victoria 14
Table 7 Tourist trips on an on-demand transport service 14
Table 8 Potential daily use of an on-demand transport service 15
Table 9 Proposed operating hours by type of day 17
Table 10 FlexiRide operating hours by area 17
Table 11 Proposed 2023 operating schedule 18
Table 12 Victorian school terms in 2023 19
Table 13 Victorian public holidays in 2023 19
Table 14 V/Line coach arrival/departure times 21
Table 15 Cowes to Wonthaggi bus arrival/departure times 21
Table 16 Western Port Ferry arrival/departure times 21
Table 17 Potential vehicles for an on-demand transport service 22
Table 18 Proposed fare structure 26
Table 19 Comparison of international tourist passes 27
Table 20 Four operating models 29
Table 21 Basic service - capital expenditure 30
Table 22 Basic service - operational expenditure 30
Table 23 Community service - capital expenditure 31
Table 24 Community service - operating expenditure 31
Table 25 Local service - capital expenditure 32
Table 26 Local service - operating expenditure 32
Table 27 Full service - capital expenditure 33
Table 28 Full service - operational expenditure 33
Table 29 Comparison of use costs 34
Table 30 Comparison of capital expenditures 34
Table 31 Comparison of operational expenditures 34
Table 32 Sensitivity analysis of full service model 35

Executive Summary



This report provides the service design considerations and implementation plan for an on-demand transport service for Phillip Island and San Remo.

What does this report do?

This report describes the design considerations and an implementation plan for a future on demand transport service for Phillip Island and San Remo.

What is on demand transport?

On-demand transport is an agile form of public transport that operates based on demand, rather than fixed routes or timetables.

How was this report developed?

This report was developed in close collaboration with Council, and dialogue with the Department of Transport. Additionally, two community stakeholder workshops and a series of interviews with industry and government stakeholders. Researchers examined different on demand transport services and used this desktop research to develop a service design customised to the Phillip Island and San Remo context.

The proposed model

Four models were assessed as part of this project, with various levels of service. In addition, electric buses were assessed for their suitability in operating the service.

A full service model with electric buses was found to best meet the needs of users and deliver lowest operating costs per km of operating and per passenger carried.

A full service model with electric buses was found to best meet the needs of users.

The full service model would see buses operating from 6am to 11pm on weekday and from 7am to 11pm on weekends and public holidays during peak periods. This would reduce to 6am to 9pm on weekdays and 7am to 9pm on weekends and public holidays during off-peak periods. These hours of operation would support the local community, commuters, and tourists to get around Phillip Island and San Remo without a car.

All existing public transport services in Phillip Island and San Remo would be met by the on-demand service, creating an integrated service that supports travel to the broader region.

A digital booking system, with accessible options to help those unable to use digital systems, will provide a convenient, user-friendly booking experience.

The full service model is estimated to cost approximately $1 million per annum in operating costs. The vehicles are expected to cost $1.6 million. Including a 50% operating cost contingency, the three year trial would be funded to $6.25 million.

What are the benefits of an on-demand service?

An on-demand transport service holds a number of important benefits for Phillip Island and San Remo, including:

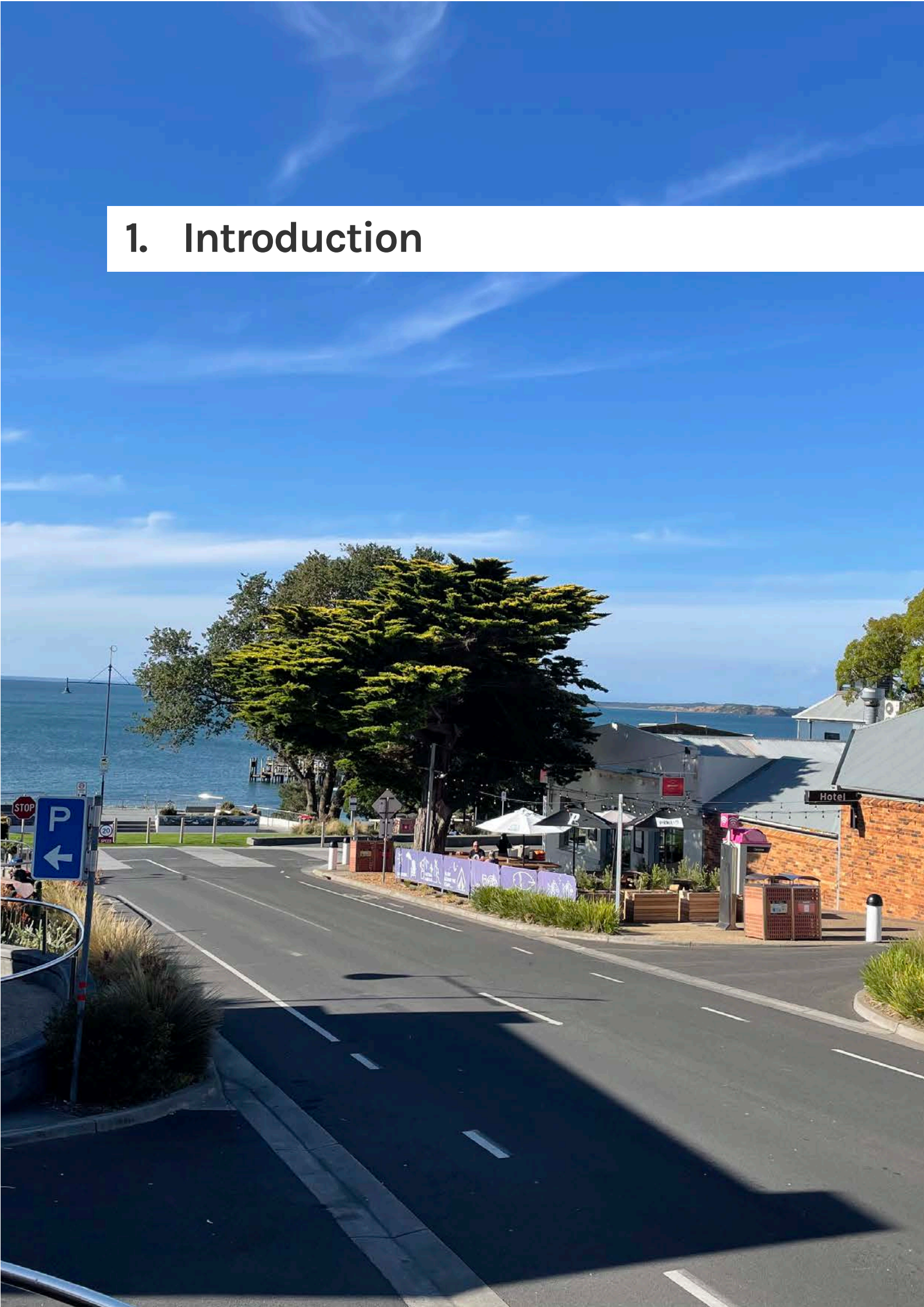
- Enhanced transport options for those who cannot or choose not to drive. This can help those who may otherwise experience transport disadvantage to access employment, medical services, shopping and social visits.
- Using an on-demand service is likely to be faster and more convenient than current services.
- Providing visitors with transport options to key destinations, with a service customised to the seasonal tourism peaks.
- Non-polluting. An electric bus would avoid over 350 tonnes of CO_2 per year, compared to a diesel bus.

It is estimated that during peak periods, up to 223 trips per day could be made using an on-demand transport service, dropping to 178 during off-peak periods

Implementation plan

This report provides an outline of the key steps to make the proposed on-demand service a reality.

1. Introduction



Bass Coast Shire Council have a commitment to improving transport connectivity between different parts of Phillip Island. On-demand transport service presents an opportunity to enhance transport services on Phillip Island.

This report details the design and implementation plan for an on-demand transport service to meet the needs of residents and visitors to Phillip Island and San Remo.

1.1 Project background

Bass Coast Shire Council have undertaken work to identify current and future transport needs on Phillip Island for locals and tourists. A feasibility assessment was undertaken in March 2021 to assess the potential for on-demand bus services. They envisage that a service focused on visitors, while complementing local resident transport options would provide an improved visitor experience and reduce unnecessary private vehicle trips.

A short-lived visitor bus service, the *Island Explorer*, operated for 11 weeks over the 2015/16 summer and was well received, carrying 3,709 passengers, eight per cent of which were locals. This service was run with a full-sized bus, on a fixed route, with a fixed timetable. These three factors reduced operating flexibility and attractiveness.

An international review, as part of the earlier feasibility assessment report noted that high-quality and frequent bus services free of charge are not always enough to attract sufficient demand to the service; private vehicle use will still dominate if it is more convenient than a free high-quality bus offering.

The earlier assessment also provides high-level local and tourist figures to assess different bus scenarios. They found that a mixed model, including some fixed services to and from key destinations, with door-to-door services in between would offer a best fit for Phillip Island. Having a flexible number of vehicles within the fleet would help match the fluctuations in visitor numbers across the year and allow for surge times of the year, such as school holidays.

1.2 About this project

This project builds on the earlier feasibility assessment report and provides sufficient detail to enable Council and the Department of Transport to work together to achieve an on-demand transport service for Phillip Island and San Remo. This report includes detail on design parameters, financial operating modelling, identification of potential operators, and a proposed implementation plan.

An earlier *Desktop Review* report was provided as part of this project.

1.3 What is on-demand transport?

On-demand transport is an agile form of public transport that operates based on demand, rather than fixed routes or timetables. This allows for a more direct, often door-to-door, experience. Users book or hail the bus via a Smartphone app, inputting their pick-up location and time and their destination. Routing algorithms are then applied to most efficiently pick-up and drop-off other users. Some services allow for immediate bookings while others require pre-booking in advance to determine the bus route. On-demand vehicles are often smaller than a standard bus to account for their smaller passenger needs and broader network area, including smaller residential streets that regular passenger buses normally travel.

Table 1 provides a comparison of different forms of passenger transport, with on-demand (or Demand Responsive Transit) sitting in-between a traditional bus service and a taxi service.

Table 1 Spectrum of transport services from buses to taxis

	Bus	Paratransit	On-demand	Shared taxi	Taxi
Vehicle	Bus	Bus or van	Bus or van	Van or car	Van or car
Occupants	Shared	Shared	Shared	Shared	Exclusive use
Route	Fixed	Fixed	Semi/fully-flexible	Fully-flexible	Fully-flexible
Timetable	Fixed	Flexible	Flexible	Fully-flexible	Fully-flexible
Need to pre-book?	No	No	Usually	Usually	Not usually

Source: Adapted from Enoch 2015[1]

There are four common sub-types of on-demand transport systems, defined by their level of freedom within a given operating area, shown in Table 2.

Table 2 On-demand sub-types

Sub-type	Explanation
Door-to-door	Provides a direct connection from door-to-door.
Hub-to-hub	Provides connections between key points of interest (shopping centre, railway station, school).
Virtual bus stops	Generates virtual bus stops that are mid-points for several passengers and drops people off at mid-points.
Line	Follows fixed routes but will skip stops that haven't been booked.

1.4 Ideal operating context for on-demand transport

On-demand transport is well suited for areas with lower population density and/or employment density with uneven and non-linear development. These characteristics make traditional fixed route transport services difficult. An on-demand service is better able to support accessibility and lower cost than fixed route services. Moreover, where the road network is incomplete or unsuitable for standard size buses, smaller, on demand vehicles are more able to navigate smaller streets. Finally, on-demand works well in areas where there are natural barriers which help define the service area.

Phillip Island and San Remo have:

- Population and jobs located in pockets across the service are, with little to no linear development.
- A road network with narrow and sometimes unsealed roads which would be difficult for a full-sized bus.
- Obvious natural service area, as Phillip Island is an island.
- A population that is not only lower density, but also ageing; a cohort which can face transport disadvantage in car dominated areas.
- Many attractions which are located too far from accommodation for people to walk, creating a context where tourism could be supported.

Victoria's Bus Plan identifies on-demand transport as suitable in two contexts:

- areas where demand may be too low for fixed routes services
- in growth areas where there is still considerable change to land use and transport network.

For the above reasons, Phillip Island and San Remo are ideally suited for an on-demand transport service pilot. This trial should last for at least three years, being refined along the way. There are also broader learnings for efficient and user-focused public transport from the trial, which could be applied in other regional contexts.

Phillip Island and San Remo meet all the above criteria for on-demand transport, and are an excellent context for an on-demand transport service.

[1] https://doi.org/10.1080/09537325.2015.1024646

2. User markets

Three users markets have been identified in the design of the on-demand transport service. Each of these user markets have differing demand profiles, and are largely complimentary. These three markets are commuters, community use, and tourists, described in more detail below.

2.1 Commuters

Commuting refers to travel to and from work, and is often a major focus of transport planning. Some 20-25% of trips are for commuting purposes. Offering a choice in transport modes can open economic possibility for a wide variety of members of the community. For example, people below 18 years of age are too young to drive and can find participation in the labour market challenging. Likewise, others may not have a car, or may not wish to drive.

According to the 2016 census there were 9,741 residents in Phillip Island and San Remo who are employed. Of these, 2,961 are employed on Phillip Island or San Remo. On Census day, 75% of those employed travelled to work (2,224), with 0.8% or 18, catching public transport.

Current levels of public transport commuting by Phillip Island and Ran Remo residents is very low.

Not all of Phillip Island and San Remo have the same level of service of public transport. All those who indicated they used public transport at the 2016 census live in areas within 1km of a bus stop. When looking at these areas alone, the mode share of commuters using public transport to commute to work rises to 1.5%.

2.1.1 Forecast changes in public transport usage with on-demand transport - *commuters*

Providing public transport to the entire population is expected to increase overall mode share to 1.5%, which, as highlighted above, is the mode share of areas already proximal to public transport within Phillip Island/San Remo. Further, the higher quality service offering of an on-demand service is likely to be more attractive, potentially increasing demand to 3%. Such an increase is broadly consistent to other areas which have had on-demand services introduced, which have often seen patronage levels at least double. The combination of increased catchment and increased attractiveness has the potential to significantly increase the number of residents using public transport for their work commute, as outlined in Table 3.

It is estimated that an on-demand transport service could attract up to 49 additional commuters on the average weekday. This could result in 73 trips per weekday from commuters.

Table 3 provides an overview of the estimated changes in public transport usage from an expanded service area and an increase in useability (attractiveness), due to an on-demand offering.

Table 3 Commuter use of an on-demand transport service

	Estimated current use	Estimated use from expanded service area	Estimated use from increased attractiveness	Net increase from expanded service area	Net increase from increased attractiveness
Users per weekday	18	33	67	16	49
Users per weekend day	6	11	23	5	17
Trips per weekday	27	50	100	23	73
Trips per weekend day	9	17	34	8	25

Note: Weekend day use is estimated to be 34% of weekday use, based on analysis of VISTA.

Note: It is estimated that each user makes 1.5 trips per day, accounting for asymmetrical travel, where someone may catch an on-demand service to work in the morning and be picked up or driven home in the evening, or vice versa.

2.2 Community use

The general community is a key market segment for an on-demand transport. The 2021 census revealed a population of 15,499. The population by age is shown in Figure 1. This clearly shows a large proportion of the population are older, with 47% being over 55, compared with 28% for the whole of Victoria.

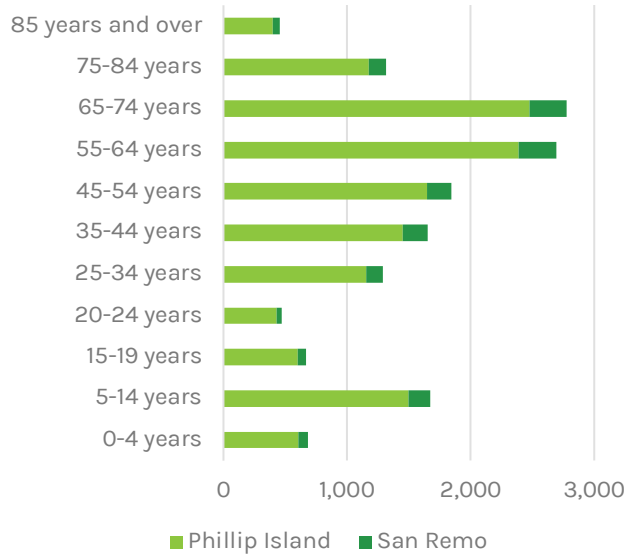


Figure 1 Population by age of Phillip Island and San Remo

Source: ABS 2021 Census

For the purposes of this analysis, community use is non-commuter or education trips, of a day-to-day or social nature. The Victorian Integrated Survey of Travel and Activity (VISTA) provides a comprehensive picture of all travel by all modes, and all purpose. VISTA only surveys residents of Metropolitan Melbourne and Geelong, meaning that data is not available for Bass Coast Shire. However, Mornington Peninsula can be used as a surrogate, having the most similar demographic and built form characteristics to Phillip Island and San Remo.

Analysis of VISTA data for Mornington Peninsula reveals that there are an average of 2.6 trips per day per resident within Mornington Peninsula. There are 14 different categories of trips, with four being relevant to this analysis (social, recreational, personal business, and buy something). These trip purposes, and average trips per day per resident are shown in Table 4. It is estimated that each resident takes an average of 1.48 trips per weekday and 2.19 per weekend day.

Table 4 Estimated community trips per person per day

	Trips per person per weekday	Trips per person per weekend day
Social	0.33	0.72
Recreational	0.31	0.38
Personal Business	0.33	0.41
Buy Something	0.52	0.69
Total	1.48	2.19

Note: Figures are from Mornington Peninsula, but are assumed to be similar for Phillip Island and San Remo

Source: VISTA

VISTA data for Mornington Peninsula is also used as a surrogate for mode share. Approximately 0.2% of community trips (listed in Table 4) are taken by public bus. It is estimated that this mode share of 0.2% should be applicable for areas of Phillip Island and San Remo, which are currently within a walkable distance of an existing bus service. It is estimated that 75% of residents are within the catchment of the Cowes to Wonthaggi bus when counting the route deviation.

2.2.1 Forecast changes in public transport usage with on-demand transport – *community use*

Current and projected bus use, based on the trip generation rates in Table 4 and 2021 population of Phillip Island and San Remo, are shown in Table 5. It is estimated that increased catchment will grow the reach of the system. Moreover, the increased attractiveness of an on-demand service has the potential to lift public transport mode share to 0.4%.

In combination, it is estimated that there could be a net increase of 57 trips per weekday and 85 trips per weekend day, as highlighted in Table 5.

Table 5 Community trips on an on-demand transport service

	Estimated current use	Estimated use from expanded service area	Estimated use from increased attractiveness	Net increase from expanded service area	Net increase from increased attractiveness
Trips per weekday	34	46	92	11	57
Trips per weekend day	51	68	136	17	85

2.3 Tourism

Tourists are a key market segment identified by the PIVETNS Study and through stakeholder consultation conducted as part of this project. The tourist sector is a major contributor to the economic prosperity of Phillip Island, San Remo, and the surrounding areas. An on-demand transport service has the potential to compliment tourism, by providing convenient travel to key destinations.

The Department of Jobs, Precincts and Regions (DPJR) provide regional tourism summaries for the 12 tourism regions of Victoria, with Phillip Island being one. It should be noted that the Phillip Island tourism region includes most of Bass Coast Shire. This provides annual visitation data, with 1.2 million day trippers and 832,000 overnight visitors to the Phillip Island region in 2021. Overnight visitors stayed for an average of 3.4 nights. Although the breakdown of tourists per month is not provided in the DJPR, there is a breakdown provided in the PIVETNS Study which has been used to spread overnight visitors across the year.

Overnight visitors are identified as more likely to use an on-demand transport service. The estimated number of overnight visitors at any one time (that is, total overnight visitors per year, apportioned to a month, multiplied by 3.4 nights, then divided by the number of days per month) is shown in Figure 2. The busiest period is January, with an estimated 16,425 overnight visitors in the Phillip Island region on any given day. June is the quietest month, with an estimated 4,715 visitors in the Phillip Island region on any given day.

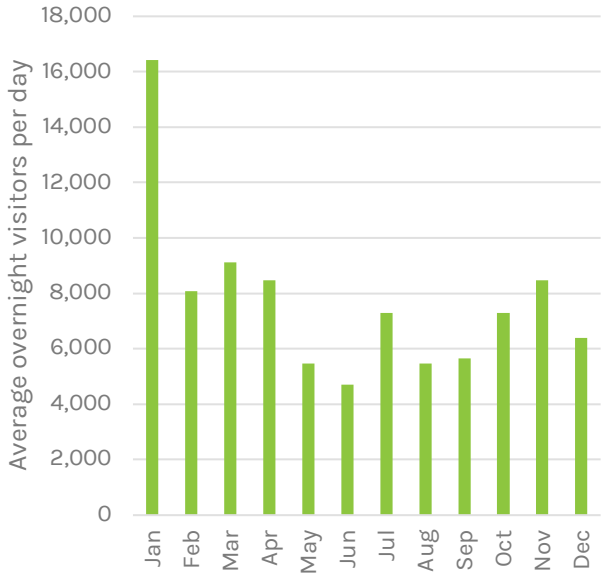


Figure 2 Average overnight visitors per day in Phillip Island region, 2021

Source: Adapted from DPJR [2]

2.3.1 Forecast changes in public transport usage with on-demand transport – *tourism*

There is no clear indication of how many of these visitors may use an on-demand service. User surveys have not been performed. The sole source of tourist public transport use data is from the 11-week *Island Explorer* tourist bus which operated from 28 December 2015 to 13 March 2016. This service carried 3,709 passengers. Drawing on DJPR data, it is estimated that there were 809,417 overnight visitor days over the period the Island Explorer operated. Assuming four trips per day, these visitors would have made approx. 3.2 million trips, and Island Explorer would have accounted for 0.1% of these trips.

[2] https://business.vic.gov.au/__data/assets/pdf_file/0003/2052588/Phillip-Island_Regional_Summary_year_ending_Dec-2021_RTSA-2019-20.pdf

VISTA data has been analysed to determine the mode share of trips which start and finish in the same LGA which is outside of Metropolitan Melbourne or Geelong. These trips can only have been made by residents of Metropolitan Melbourne or Geelong, and therefore provide an insight into the localised travel patterns of those residents while away. The mode shares are presented in Table 6. It is estimated that around 0.1% of trips which start and finish in the same LGA which is outside of Metropolitan Melbourne or Geelong are made by public bus. This correlates with mode share estimates of the Island Explorer.

Table 6 Mode share of Metropolitan Melbourne and Geelong residents when in regional Victoria

Mode	Share
Vehicle Driver	36.6%
Vehicle Passenger	34.8%
Train	0.0%
Tram	0.2%
Public Bus	0.1%
School Bus	0.5%
Walking	23.3%
Bicycle	3.3%
Motorcycle	0.1%
Taxi	0.4%
Other	0.6%

Note: Only includes trips which start and finish in the same LGA which is outside of Metropolitan Melbourne or Geelong
Source: VISTA

Estimated tourist use of an on-demand transport service, based on peak and off-peak periods of the year is shown in Table 7. Assumptions which underpin this are:

- 70% of all overnight visitors to Phillip Island Region stay in Phillip Island or San Remo
- Each overnight visitor makes an average of 4 trips per day
- Overnight visitors are currently total unserved by public transport, but would be total covered
- Baseline expected mode share is 0.1%
- With a highly attractive service mode share could lift to 0.2%

It is estimated that providing public transport services to tourist destinations could encourage up to 46 trips per day during peak periods, and up to 24 trips per day during off-peak periods. When considering increased attractiveness, this could lift to 92 trips per day during peak periods, and up to 48 trips per day during off-peak periods.

The above is a conservative estimate of tourism demand based on available tourist travel data. It is likely that actual use could exceed the above estimate for two reasons. Firstly, Phillip Island and San Remo have a significant, and widespread night-time economy, which would be a driver of demand. Secondly, Phillip Island has a highly decentralised accommodation model, with short-stay rental located across the service area. The exact amount of patronage generated by these two factors is unable to be determined, hence the above conservative estimate of tourist patronage.

Table 7 Tourist trips on an on-demand transport service

	Estimated use from expanded service area	Estimated use from increased attractiveness
Peak period (quietest month)	26	51
Peak period (busiest month)	46	92
Off-peak period (quietest month)	13	26
Off-peak period (busiest month)	24	48

Why *school* has not been included as a user group

School and education are not included as a user market. Discussion with planners and operators has revealed that the use profile of school users has large overlap with commuters. This can be a challenge as on-demand vehicles typically have smaller seating capacities of around 15, which is quickly occupied by school goers. According to the 2021 census, Phillip Island and San Remo have 793 secondary school students, this group is too large to be accommodated by on-demand vehicles and provide reliable services to other users. It is recommended that school buses remain the prime transport option for school goes, while acknowledging that some may use an on-demand service.

2.4 Potential daily ridership

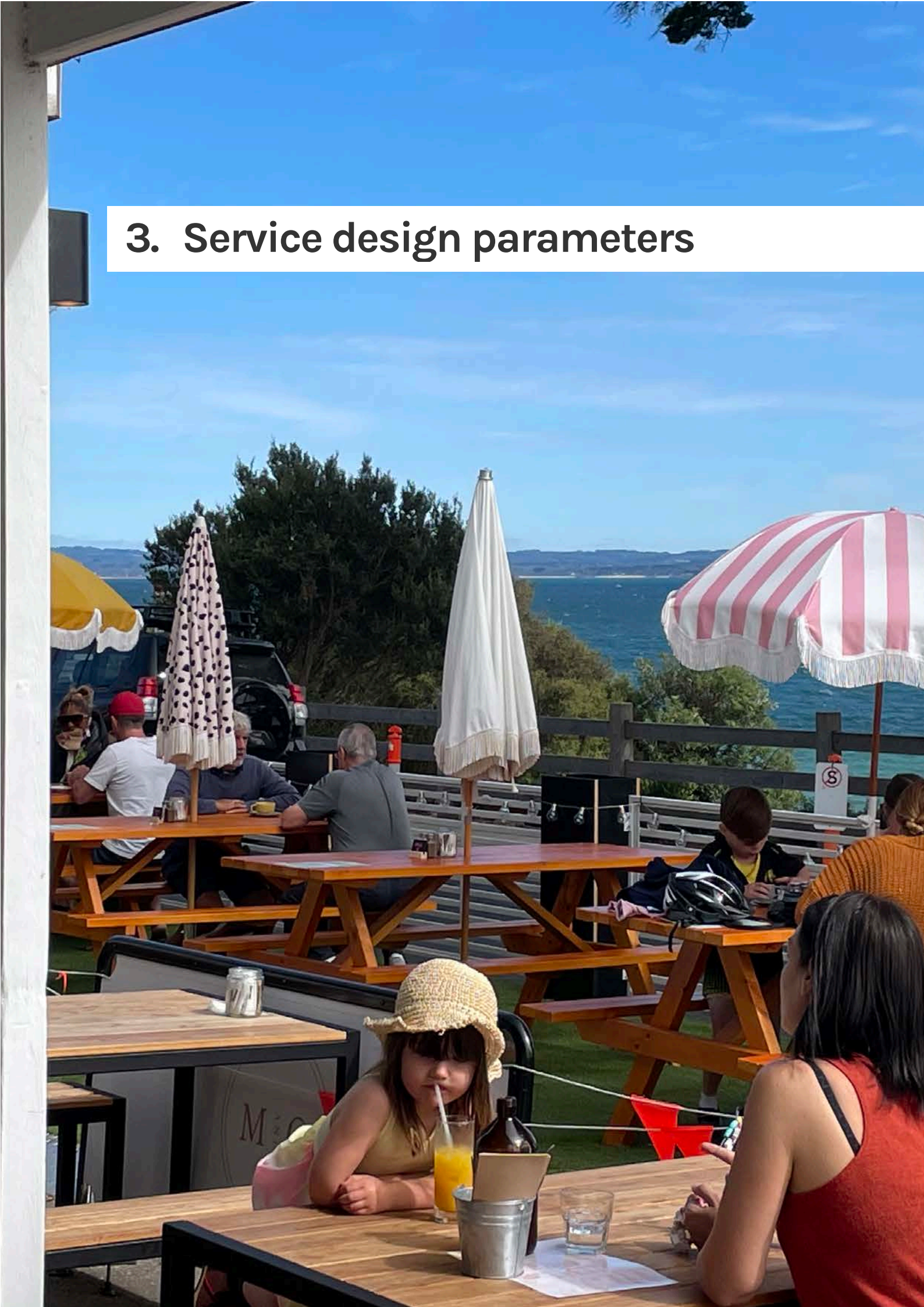
The total potential daily ridership of an on-demand transport service is shown in Table 8. This draws on the figures discussed above. It is estimated that during peak periods, up to 223 trips per day could be made using an on-demand transport service, dropping to 178 during off-peak periods.

An average figure has also been included, which gives a more conservative indication of levels of use which could be expected with increased coverage and somewhat increased attractiveness. Under these figures, up to 142 trips per day could be expected during peak periods, and up to 113 during off-peak periods.

Table 8 Potential daily use of an on-demand transport service

Period	Day	Trip type	Lower estimated daily trips	Higher estimated daily trips	Middle estimated daily trips
Peak	Weekday	Commute	23	73	48
		Community	11	57	34
		Tourism	26	92	59
		Total	**60**	**223**	**142**
	Weekend day	Commute	8	25	17
		Community	17	85	51
		Tourism	26	92	59
		Total	**50**	**202**	**126**
Off-peak	Weekday	Commute	23	73	48
		Community	11	57	34
		Tourism	13	48	30
		Total	**48**	**178**	**113**
	Weekend day	Commute	8	25	17
		Community	17	85	51
		Tourism	13	48	30
		Total	**38**	**157**	**98**

3. Service design parameters



This section details he service design parameters for an on-demand transport service in Phillip Island and San Remo. A wide variety of considerations are described, focused on meeting passengers needs and expectations.

A service which meets the needs of all three groups – commuters, community uses, and tourism – is outline. In the later parts of this section, four separate system designs are outlined, offering a comparison of different service levels which would meet different user needs.

A robust costing model has been developed as part of this plan. This model considers vehicle capital costs, vehicle operating costs, staffing costs, and other costs. The model has been calibrated against high level costing provided to the authors by those with industry knowledge.

3.1 Coverage

On-demand transport services work best when they have a well-defined, and legible service area. It is recommended that all of Phillip Island and San Remo be within the service area of an on-demand service. Western Port Bay provides a natural barrier on most sides. The only land-based border is east of San Remo. It is recommended that buses do not travel further east than Potters Hill Road (while still serving addresses on both sides of Potters Hill Road).

3.2 Operating schedule

The operating schedule of an on-demand transport service should meet the needs of all user groups at all times. To do so, it is recommended that a peak and off-peak season operating schedule be implemented, where more buses are available for longer hours during peak (summer) periods to better meet the needs of users, particularly tourists.

A proposed running schedule to 2023 is shown in Table 11. Dates are colour coded, with Table 9 acting as a legend, identifying hours of operation and peak number of buses. School and public holidays have been marked, with dates shown in Table 12 and Table 13, respectively.

Table 9 Proposed operating hours by type of day

Day	Hours of operation	Buses operating
Peak Weekday	6am to 11pm	3
Peak Saturday	7am to 11pm	3
Peak Sunday	7am to 11pm	3
Peak Public holiday	7am to 11pm	3
Off-peak Weekday	6am to 9pm	3 (during peak time of day)
Off-peak Saturday	7am to 9pm	2
Off-peak Sunday	7am to 8pm	2
Off-peak Public holiday	7am to 8pm	2

Note: Cells colouring aligns with colouring in Table 11

The proposed operating schedule is more comprehensive than FlexiRide offers, as shown in Table 10. This is to properly accommodate the needs of tourists. Later operating times will be necessary as the Penguin Parade, a major drawcard for the Island, occurs at sunset, which is late in summer. Similarly, later operating hours will support the night-time economy, by safely transporting residents and visitors alike from licenced venues home or to accommodation.

Table 10 FlexiRide operating hours by area

	Monday to Friday	Saturday	Sunday or public holidays
FlexiRide Croydon	6am to 8pm	8am to 6pm	No services
FlexiRide Lilydale	6am to 8pm	8am to 6pm	No services
FlexiRide Mooroolbark	6am to 8pm	8am to 6pm	No services
FlexiRide Rowville	6am to 8pm	No services	No services
FlexiRide Melton South	6am to 9:30pm	7am to 9:30pm	8am to 9:30pm
FlexiRide Rosebud	8am to 3:45pm	No services	No services

Table 11 Proposed 2023 operating schedule

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						1-Jan
2-Jan	3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan
9-Jan	10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan
16-Jan	17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan
23-Jan	24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan
30-Jan	31-Jan	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb
6-Feb	7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb
13-Feb	14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb
20-Feb	21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb
27-Feb	28-Feb	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar
6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar
13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar
20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar
27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	1-Apr	2-Apr
3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr
10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr
17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr
24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr
1-May	2-May	3-May	4-May	5-May	6-May	7-May
8-May	9-May	10-May	11-May	12-May	13-May	14-May
15-May	16-May	17-May	18-May	19-May	20-May	21-May
22-May	23-May	24-May	25-May	26-May	27-May	28-May
29-May	30-May	31-May	1-Jun	2-Jun	3-Jun	4-Jun
5-Jun	6-Jun	7-Jun	8-Jun	9-Jun	10-Jun	11-Jun
12-Jun	13-Jun	14-Jun	15-Jun	16-Jun	17-Jun	18-Jun
19-Jun	20-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun
26-Jun	27-Jun	28-Jun	29-Jun	30-Jun	1-Jul	2-Jul
3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	8-Jul	9-Jul
10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul
17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	22-Jul	23-Jul
24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul	30-Jul
31-Jul	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug
7-Aug	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug
14-Aug	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug
21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug
28-Aug	29-Aug	30-Aug	31-Aug	1-Sep	2-Sep	3-Sep
4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep
11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	16-Sep	17-Sep
18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep
25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct
2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct
9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct
16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct
23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
30-Oct	31-Oct	1-Nov	2-Nov	3-Nov	4-Nov	5-Nov
6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov
13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov
20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov
27-Nov	28-Nov	29-Nov	30-Nov	1-Dec	2-Dec	3-Dec
4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	9-Dec	10-Dec
11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec
18-Dec	19-Dec	20-Dec	21-Dec	22-Dec	23-Dec	24-Dec
25-Dec	26-Dec	27-Dec	28-Dec	29-Dec	30-Dec	31-Dec

Table 12 Victorian school terms in 2023

	Start date	Finish date
Term 1	27 January (students start 30 January in government schools)	6-Apr
Term 2	24-Apr	23-Jun
Term 3	10-Jul	15-Sep
Term 4	2-Oct	20-Dec

Source: https://www.vic.gov.au/school-term-dates-and-holidays-victoria

Table 13 Victorian public holidays in 2023

Holiday	Date
New Year's Day	Sunday 1 January Monday 2 January
Australia Day	Thursday 26 January
Labour Day	Monday 13 March
Good Friday	Friday 7 April
Saturday before Easter Sunday	Saturday 8 April
Easter Sunday	Sunday 9 April
Easter Monday	Monday 10 April
ANZAC Day	Tuesday 25 April
Queen's Birthday	Monday 12 June
Friday before the AFL Grand Final	Subject to AFL schedule
Melbourne Cup	Tuesday 7 November
Christmas Day	Monday 25 December
Boxing Day	Tuesday 26 December

Source: https://business.vic.gov.au/business-information/public-holidays/victorian-public-holidays-2023

The schedule outlined in Table 11 and Table 9 should act as a base for a full-trial offering services to all three identified user groups. Patronage should be monitored monthly, with the number of vehicles, and potentially hours of operation adjusted accordingly. It is likely that patronage will take at least several months to come close to a regular level, which has been the experience with FlexiRide in Victoria. As such, if possible, there should be no reductions in service levels for the first year of operation.

3.3 Service operation

The service should operate in a way which is easy to use and maximises passenger experience. It should also seek to maximise visibility to promote awareness. Simultaneously, it should keep operating costs as low as possible.

It is proposed that an on-demand service follow an address/street corner to hub service pattern. This would provide coverage to all areas of Phillip Island and San Remo, while providing defined drop-off and pick-up points in key areas. Service buffers should be placed around hubs, so that passengers are directed toward their nearest hub. A concept of this has been provided in Figure 3, noting that the service is active across the entire island.

In addition to the hubs, there should be physical signage a key tourist locations. Examples include the Newhaven Visitor Centre, YHA in Newhaven, Berrys Beach, Pyramid Rock, Churchill Island, and Shelley Beach, to name a few.

Discussions with industry have revealed that dispatch software will direct a bus driver to a location after completing a drop-off. This is intended to move the bus closer to where the next passenger is likely to be, and is based on machine learning (contained in off the shelf software, described in Section 3.6). This can have the potential to move a bus into a position which is actually further, increasing waiting time, and increasing 'dead running' (bus kilometres travelled without performing a public transport service). To minimise 'dead running' and associated operational costs, it is recommended that software relocation be disabled, and bus drivers be given the authority to cast judgement on where to relocate the bus too.

Dispatch software can also book a bus out of service ahead of a meal break. This is designed to allow the bus driver to return to the depot, where another drive may take over the bus and start their shift. This has the consequence of reducing bus availability at certain times during the day. It is proposed that rather than returning to the depot and sending the bus out of service, drivers perform

a vehicle swap on the road. This requires a small vehicle (e.g., a passenger vehicle) and for the drivers to be able to communicate on the road.

Figure 3 Proposed hubs and associated catchment area

3.3.1 Timetabled connections

To maximise visibility of the service, and create a seamless public transport experience, it is recommended that all public transport services onto Phillip Island and San Remo be met by an on-demand bus.

This is likely to require bookings to be made within the software, to ensure drivers are directed towards transport interchange points to meet other services.

Key connections, and times are listed in Table 14, Table 15, and Table 16 for V/Line coaches, Cowes to Wonthaggi buses, and Western Port Ferries, respectively. On-demand services should arrive five minutes before departure of a connecting service, and wait for at least five minutes after arrival of a connecting service, to allow passengers sufficient time for interchange.

In addition to the above connections, it is recommended that the on-demand service connect with the Friday night V/Line coach through Anderson. While Anderson interchange is outside the service area, it is noted there is no connection between Anderson and Cowes. This would provide a highly useful connection, which addresses a current network gap. It is recommended this be a fixed time service, to ensure it always connects.

Table 14 V/Line coach arrival/departure times

Day	Cowes Transit Centre	San Remo
From Phillip Island and San Remo		
Monday to Friday	6:38 AM	7:08 AM
	10:21 AM	10:51 AM
	2:21 PM	2:51 PM
	6:38 PM	7:08 PM
Saturday and Sunday	11:43 AM	12:13 PM
	5:51 PM	6:21 PM
To Phillip Island and San Remo		
	San Remo	**Cowes Transit Centre**
Monday to Friday	8:19 AM	8:46 AM
	12:56 PM	1:23 PM
	4:56 PM	5:23 PM
	9:06 PM	9:33 PM
Saturday and Sunday	11:05 AM	11:32 AM
	5:03 PM	5:30 PM

Table 15 Cowes to Wonthaggi bus arrival/departure times

Day	Cowes Transit Centre	San Remo
From Phillip Island and San Remo		
Monday to Friday	5:16am	5:41am
	7:33am	7:59am
	9am	10am
	12:19pm	12:44pm
	4:19pm	4:44pm
Saturday and Sunday	7:34am	8:00am
	11:38am	12:14pm
	2:20pm	2:46pm
	6:10pm	6:36pm
To Phillip Island and San Remo		
	San Remo	**Cowes Transit Centre**
Monday to Friday	7:04am	7:28am
	11:18am	11:42am
	2:05pm	3:02pm
	3:18pm	3:42pm
	6:12pm	6:36pm
	7:31pm	7:56pm
Saturday and Sunday	8:52am	9:17am
	1:03pm	1:38pm
	5:32pm	6:06pm
	7:48pm	8:23pm

Table 16 Western Port Ferry arrival/departure times

Day	Estimated time of ferry arrival at Cowes Jetty	Ferry departs Cowes Jetty
Monday to Friday	8:30am	8:35am
	3:20pm	3:20pm
	6:00pm	6:00pm
Saturday	8:20am	8:30am
	10:45am	10:50am
	2:45pm	2:45pm
	5:15pm	5:25pm
Sunday	9:00am	9:00am
	11:00am	11:05am
	12:40pm	12:40pm
	3:00pm	3:05pm
	5:30pm	5:35pm

3.4 Stop infrastructure and wayfinding

While an on-demand service is not as dependent on stop infrastructure as a traditional route bus service, there are some benefits to providing a physical presence in the form of a bus stop. These are only required at the proposed hubs listed in Figure 3. The benefits include:

- Providing shelter from sun and rain
- Offering an awareness raising and promotional opportunity. Signage highlighting the key features of the on-demand service, where it goes and how to use it
- An obvious pick up point for those close to a hub location. This helps to minimise confusion as to where to meet the service.

While not essential, it is also possible to integrate a stop a small solar panel and battery to enable waiting passengers to charge small devices like mobile phones.

3.5 Vehicles

Eight different vehicles were included in the analysis, shown in Table 17. The columns in Table 17 include the features considered important in a future on-demand service, based on stakeholder consultation or previous material reviewed as part of this project.

The Hino Poncho is the most robust of these vehicles. It can perform a role which best meets the needs of the majority of the community, having DDA compliant stepless entry, a low-floor section, and ample space for storage of luggage and other small items. While it Is the most expensive, these costs are spread over a large amount of time, estimated to be 14 years (which is consistent with Department of Transport contracting). The cost of a Hino Poncho electric is currently unknown, but it is assumed to be 1.5 times the cost of the diesel variant in the costing model (which is consistent with industry experience for full-size buses).

Table 17 Potential vehicles for an on-demand transport service

Vehicle	Purchase price	Fuel source	Consumption	Seats	DDA	Luggage	Pram	Surfboard or bikes
EC11 bus	$100,000	Electricity	300 (Wh/km)	Up to 12	Possibly with wheelchair lift	Yes	Not easily	With seating loss
Joylong E6	$90,000	Electricity	310 (Wh/km)	Up to 14	Possibly with wheelchair lift	Yes	Not easily	With seating loss
Toyota HiAce Slwb Commuter	$69,650	Diesel	10 (l/100km)	Up to 15	Possibly with wheelchair lift	Yes	Not easily	With seating loss
Iveco Daily Minibus Shuttle 11	$104,500	Diesel	12 (l/100km)	Up to 11	With wheelchair lift	Yes	Not easily	With seating loss
Iveco Daily Minibus Shuttle 16	$122,870	Diesel	13 (l/100km)	Up to 16	With wheelchair lift	Yes	Not easily	With seating loss
Iveco Daily Minibus Shuttle 22	$144,100	Diesel	14 (l/100km)	Up to 22	With wheelchair lift	Yes	Not easily	With seating loss
Hino Poncho (ICE)	$250,000	Diesel	22 (l/100km)	Up to 18	Yes	Yes	Yes	Yes, small only
Hino Poncho (EV)	Not yet known	Electricity	350 (Wh/km)	Up to 18	Yes	Yes	Yes	Yes, small only

3.6 Digital interfaces

Three different digital interfaces have been analysed in the development of this service plan. All offer similar functions and customisations. The *moovit* platform is already widely used in Victoria, providing back and front-end service to most FlexiRide services. It is recommended that requests for service clearly identify the needs of digital interfaces, but allow respondents to identify their preferred options. Digital interfaces must be able to:

- Accept bookings via mobile phone app
- Accept bookings via web page
- Accept bookings via phone (if this is not possible, Council should establish a call line, where bookings are made on behalf of callers).
- Operate a door-to-hub / hub-to-door service, and a door-to-door service. This requires geofenced hub areas, where passengers will be directed to the nearest pick-up location.
- Allow for chained trips, where multiple trips can be carried at once.
- Allow for diversion to pick-up passengers while a vehicle is already on a trip.
- Allow impromptu pick-ups, where passengers can board at a hub without using the app. This may require the driver to be able to input an address.
- Allow operators to make fixed-time bookings to reliably meet with timetabled public transport services.

If Council and DoT were to opt for the most basic service provision (essentially a community bus with dispatch software), they would need to enter into an agreement with a provider themselves. It is not recommended that *Via* be used as it requires additional developer support to wrap the package. If possible, Council should seek to 'piggy-back' on the FlexiRide service, if not, the *Routing Company* platform is preferred option as it is the most easily deployable.

Additionally, drivers will need to be able to accept payment for tickets. This should be through cash and contactless card payments (e.g., tap-and-go).

4. Operating models

This section outlines the costing estimates of an on-demand transport service for Phillip Island and San Remo. The assumptions of the financial assessment tool and operating model considerations are laid out. Secondly, an assessment of different delivery options has been provided.

Different assumptions of service level are used in each, with different assumed attractiveness by key user markets. Comparisons can be made between different options, to assess which is best suited for Phillip Island and San Remo, both in terms of value for money and quality of service in meeting user need and expectation.

4.1 Financial operating model

The following outlines the financial elements identified by the authors which underpin our costing model. An effort has been made to make these as consistent as possible with current Department of Transport contracting. However, suggestions for alternative operating models have been proposed where authors believe they have the potential to improve service delivery or remove unintended consequences (such as perverse incentives).

4.1.1 Capital expenditure

There are two major elements of capital expenditure; vehicles (including fitting of dispatching equipment) and stop infrastructure/wayfinding.

4.1.1.1 Vehicles

Vehicle costs are usually embedded into the service contract as part of the per km payment to operators, over a 14-year period (with a discount of approx. 3%). This is appropriate for traditional bus services, as the payment is for a full-sized bus which may be deployed anywhere on the operators network. Even if the service were a trial, the operator would be able to shift the vehicle to another service if the trial were not converted to a permanent service.

This model has been assumed in the modelling, but may not be appropriate for a trial on-demand service. The vehicles proposed for an on-demand service in Phillip Island and San Remo are all mini-bus sized, and may not be readily deployable on other routes, generally lacking the versatility of a full-sized bus. Potential operators may be reticent to pay the full capital costs of the vehicles, while only being guaranteed payments for the period of the trial.

One option to avoid this potential issue is for Department of Transport to purchase the vehicles and make them available to the operator for the duration of the trial. Another option is for the Department of Transport to offer to purchase the vehicles for a pre-agreed sum if the trial is not converted to a permanent service. Lastly, it may be possible to lease buses.

4.1.1.2 Stop infrastructure and wayfinding

As highlighted in Section 3.4, provided a physical presence at key hubs is likely to enhance awareness of the service and offer greater convenience. The cost of providing simple, modular stops is not known, but expected to be within the $8,000 - $12,000 range. A design that offers re-location possibilities may be useful, as the trial may find more appropriate locations for the stops.

4.1.2 Operational expenditure

There are two broad categories of operational expenditure; vehicle expenses and staff/operations expenses.

4.1.2.1 Vehicle expenses

Vehicle expenses comprise the fixed and variable operating costs of the vehicles. Fixed costs are:

- Registration - VicRoads registration fees for the vehicle class
- Insurance - Assumed to be 4.5% of vehicle cost
- Dispatch software - Assumed to be $11,000 per month (a figure revealed through discussions with industry).

Variable costs are dependent on the level of use the vehicles get, and comprise:

- Servicing costs - Stated costs, or costs revealed through discussions with industry, with service intervals included.
- Tyres - Assumed based on years or km, which ever comes first.
- Fuel - Fuel consumption rates.

Each of these costing components have been estimated for each different vehicle, allowing for testing of overall costs of the vehicle. This allows for sensitivity testing between diesel and electric variants.

4.1.2.2 Staff and operations expenses

Staff and operations expenses comprise the costs of staff, providing depot space, and overall overheads:

- Driver wages - Based on the Passenger Vehicle Transportation Award 2020 for a grade 3.[3] Assumed to be operating hours, and an additional 5% to allow for time and duties other than bus driving.
- Administration wages - Based on the Passenger Vehicle Transportation Award 2020 for a grade 2.[3] Assumed to be 5% of driver hours.
- Superannuation - 10% of all wages
- Imputed depot land costs - Assumed to be $2 per m^2, based on assessment of land values from the Valuer-General's valuations data.[4]
- Overheads and ROI - Assumed to be 10% of the above costs.

4.1.3 Revenue sources

There are three possible revenue sources for an on-demand transport service for Phillip Island and San Remo.

4.1.3.1 Government subsidy

The largest single revenue source for public transport services in Victoria is via government subsidy. In the 2020-21 financial year, almost $3 billion was provided to operators of trains, trams and buses in Victoria by the Department of Transport. On average, this equates to $5.51 per kilometre of travel by a regional bus, or $17.87 per passenger carried. Given that farebox revenue is not able to cover all costs, some level of government subsidy is required to make a quality on-demand transport service a reality.

4.1.3.2 Fares

Fares from tickets comprise a source of revenue. Experience from public transport systems across Australia and the world shows that farebox revenue is not sufficient to cover all operational costs. In Victoria in the 2020-21 financial year, fares made up around 9% of operational costs of public transport. Before COVID-19, fares accounted for 27% of operating costs across Victoria, but this includes Melbourne which has more patronage and relatively lower costs. It is not feasible to have a service where all operational costs are covered by fares.

The current fare structure across Phillip Island and San Remo operates with two zones. This creates differential pricing and may detract from attractiveness. Further, there can be technical issues with implementing zones into on-demand software. It is recommended that flat fares be implemented across the service area as shown in Table 18. This fare structure aligns with PTV fares for non-myki regional buses.[5]

Table 18 Proposed fare structure

	Full Fare	Concession
2 Hour	$2.40	$1.20
Daily	$4.80	$2.40
Weekly	$22.40	$11.20
Monthly	$94.80	$47.40

Usually all farebox revenue collected is accounted for in the contracting payment. This effectively means that bus operators receive the same level of funding from government, regardless of the number of passengers carried. For fixed route services this poses no problems, as the bus operating costs remain stable if there are five passengers or one hundred passengers. However, in

[3] https://awardviewer.fwo.gov.au/award/show/MA000063
[4] https://www.land.vic.gov.au/__data/assets/pdf_file/0035/584279/A_Guide_to_Property_Values_2021.pdf
[5] https://www.ptv.vic.gov.au/tickets/fares/regional-fares/

the case of on-demand transport, more passengers requires more operating kilometres and therefore increases costs. This has implications for risk. The operator stands to receive a windfall gain if patronage is low, as they operate fewer kilometres and may reduce costs. Conversely, the operator is exposed to the risk of high patronage, which will increase costs and threaten financial viability of the service. It is recommended that the contracting includes a mechanism in which operators receive a share of the farebox revenue. This would increase operator payments in line with increased patronage, minimising risk and incentivising the operator to maximise patronage.

Tourist tickets

There is potential to include weekend or three-day tickets aimed directly at tourists. Internationally, cities provide tourist tickets which include free or discounted entry to key attractions, with key examples, shown in Table 19. Tourist bus tickets which include entry discounts could attract a premium price.

It is recommended that an *Island Pass*, of three days, with a cost of at least $30 be investigated. The success of such a pass relies on discounted or free entry to major attractions in Phillip Island and San Remo.

Table 19 Comparison of international tourist passes

Pass Name	Cost in AUD	Transport	Perks
Osaka Amazing Pass 1-day	$30 (2800 JPY)	Unlimited rides on non-JR buses, trams and trains	Free and discounted (between 10 – 50%) entry to attractions Free gifts or discounts at shops
Singapore Tourist Pass (1 to 3 days)	$10/$11/$21 ($10/$16/$20 SGD) $10 Refundable rental deposit of pass is required	Unlimited rides on public transport	Discounts for entry and purchases at participating attractions and businesses
Berlin WelcomeCard 48h AB	$35 (24 EUR)	Unlimited rides on buses, trains and trams	Discounts at participating attractions and services
Oslo Pass 24h	Adult - $66 (445 NOK) Child (6 – 17 yrs) - $35 (235 NOK) Seniors (from 67 yrs) - $53 (355 NOK) Students under 30 yrs – 20% discount	Unlimited travel on public transport system	Free admission to 30 museums and sights Discounts on sightseeing, restaurants, and services
I Amsterdam City Card (24 hours to 120 hours)	$94 (€65) (24 hours) to $175 (€121.50) (120 hours)	Unlimited travel of public transport system	Free entry to 70 museums and sights Discounts on sightseeing, restaurants and services.

4.1.3.3 Tourism sector contribution

Tourism stands to benefit from a quality on-demand service in Phillip Island and San Remo. To be attractive to tourists, it would likely need to operate later in the evening, supporting those participating in the night time economy, and those visiting the Penguin Parade. Later operation will increase operating costs, estimated to be up to $130,000 per year.

There is scope for the tourism sector to contribute towards these increased costs. There are two options which could be used to facilitate tourist sector contributions. Firstly, there are sponsorship and advertising opportunities, including advertising rights inside the vehicles, on vehicles, and at stops/hubs, which the tourist sector could acquire. Secondly, the tourist sector could offer discounted entry for holders of an *Island Pass*, which offers unlimited free use of the on-demand transport service. This which would encourage tourists to buy passes, which could be considered an 'in kind' contribution. All revenue from this pass would be subject to negotiated revenue sharing, but revenue to governments should exceed base ticket pricing.

4.1.3.4 Other operational savings

While not strictly a revenue source, there is the potential to off-set operational costs through savings elsewhere. An on-demand transport service on Phillip Island and San Remo would remove the need for the daily Cowes to Wonthaggi diversion route, which services communities across the island but is very time consuming. These trips (one per direction, per day) are 66.3km longer than the direct routes. This accounts for 17,238km of travel per year, which at the average payment per kilometre is estimated to be around $95,000 per annum in service payments. These services would not be necessary, and these payments could be redirected to an on-demand transport service.

This would mean that every bus between Cowes and Wonthaggi would take the direct route, rather than divert through Ventnor, Rhyll, Cape Woolamai, Newhaven, and San Remo suburbs. These suburbs would be served by the on-demand service, which would be more flexible and attractive, while supporting interchanges with the Cowes to Wonthaggi bus.

4.2 Four operating models

Four operating models have been tested as part of this service design. These range from full-time on-demand services which are envisaged as meeting the needs of all key user groups, to a basic service which meets some community use needs. The assumptions of these models are shown in Table 20.

Patronage assumptions are:

- Yes = patronage increase from expanded service area and increased attractiveness
- Some = patronage increase from expanded service area and some increased attractiveness
- No = no patronage increase

Assumed patronage increases are discussed in *Section 2 User markets*.

Operating models that serve commuters will help to overcome transport challenges experienced those who cannot of do not drive. This has particular implications for youth in Phillip Island and San Remo. As such, this will help support local business in attracting staff. An additional co-benefit, is that less workers driving to activity centres is likely to reduce car parking demand.

Table 20 Four operating models

		Basic service	Community service	Local service	Full service
Vehicles	**Type**	HiAce	Hino Poncho	Hino Poncho	Hino Poncho
	Number operating (total)	2 (2)	2 (2)	3 (4)	3 (4)
Operating characteristics	**Days of operation**	3 days (no weekends or public holidays)	5 days (no weekends or public holidays)	7 days a week	7 days a week
	Operating hours	9am to 4pm	9am to 4pm	6am to 9pm	6am to 11pm (peak periods) 6am to 9pm (off-peak periods)
Users groups served	**Community**	Some	Yes	Yes	Yes
	Commuters	No	No	Yes	Yes
	Tourist	No	No	Some	Yes

4.2.1 Basic service

The estimated capital expenditure of the basic service model is shown in Table 21, while the operational expenses are shown in Table 22. The basic service requires the purchase of two Toyota HiAce vans, with an estimated annualised cost over 14 years of $15,782. Operational costs are estimated to be $244,048 per annum. Combined, this service is expected to cost $259,830 per annum to deliver.

It is estimated that approximately 5,000 trips could be made each year, solely for community use. If all trips were full fare, this could generate slightly over $12,000 in revenue, resulting in a potential net cost of $247,671 per annum. This revenue would be reduced by concession fares, which could account for a substantial number of trips. Decreased revenue would increase net costs.

Table 21 Basic service - capital expenditure

		Cost	Number	Total
Vehicle	Toyota HiAce SIwb Commuter	$71,535	2	$143,069
Dispatch equipment	moovit	$1,500	2	$3,000
CapEx Total				**$146,069**
Annualised cost of vehicles over 14 years				**$15,782**

Table 22 Basic service - operational expenditure

		Cost or measurement	Number	Total
Expenses				
Vehicles	Registration	$742	2	$1,485
	Insurance	$3,219	2	$6,438
	Technology (moovit)	$132,000	1	$132,000
	Servicing	$260	5	$1,300
	Tyres (sets)	$800	0.8	$640
	Fuel	km travelled (all vehicles)	45,594	$8,891
Vehicles sub-total				$150,754
Staff and operations	Driver wages	Hours (incl. depot and positioning time)	2,190	$59,638
	Administration wages	Hours	110	$2,823
	Superannuation			$6,246
	Imputed depot land costs			$2,400
	Overheads and ROI			$22,186
Staff and operations sub-total				$93,294
OpEx Total				**$244,048**
Revenue				
	Fares		5,066	$12,158
Revenue Total				**$12,158**
Net operating position (excl. bus capital costs)				**-$231,889**
Net operating position (incl. bus capital costs)				**-$247,671**

4.2.2 Community service

The estimated capital expenditure of the community service model is shown in Table 23, while the operational expenses are shown in Table 24. The community service requires the purchase of two Hino Poncho (diesel) buses, which would be fully DDA compliant, and have an estimated annualised cost over 14 years of $55,804. Operational costs are estimated to be $366,944 per annum. Combined, this service is expected to cost $422,748 per annum to deliver.

It is estimated that approximately 14,000 trips could be made each year, all of which would are estimated to be community use; this is higher than the basic service due to increased accessibility and hours of operation. If all trips were full fare, this could generate slightly over $34,000 in revenue, resulting in a potential net cost of $388,685 per annum. This revenue would be reduced by concession fares, which could account for a substantial number of trips. Decreased revenue would increase net costs.

Table 23 Community service - capital expenditure

		Cost	Number	Total
Vehicle	Hino Poncho (Diesel)	$256,750	2	$513,500
Dispatch equipment	moovit	$1,500	2	$3,000
CapEx Total				**$516,500**
Annualised cost of vehicles over 14 years				**$55,804**

Table 24 Community service - operating expenditure

		Cost or measurement	Number	Total
Expenses				
	Registration	$529	2	$1,058
	Insurance	$11,554	2	$23,108
	Technology (moovit)	$132,000	1	$132,000
	Servicing	$520	7	$3,640
	Tyres (sets)	$800	2.2	$1,760
	Fuel	km travelled (all vehicles)	127,737	$54,799
Vehicles sub-total				$216,365
	Driver wages	Hours (incl. depot and positioning time)	3,660	$99,664
	Administration wages	Hours	183	$4,718
	Superannuation			$10,438
	Imputed depot land costs			$2,400
	Overheads and ROI			$33,359
Staff and operations sub-total				$150,580
OpEx Total				**$366,944**
Revenue				
	Fares		14,193	$34,063
Revenue Total				**$34,063**
Net operating position (excl. bus capital costs)				**-$332,881**
Net operating position (incl. bus capital costs)				**-$388,685**

4.2.3 Local service

The estimated capital expenditure of the local service model is shown in Table 25, while the operational expenses are shown in Table 26. The local service requires the purchase of four Hino Poncho (diesel) buses, which would be fully DDA compliant, and have an estimated annualised cost over 14 years of $111,608. Operational costs are estimated to be $931,914 per annum. Combined, this service is expected to cost $1,043,522 per annum to deliver.

It is estimated that approximately 14,000 trips could be made each year, which would be from commuters, community use, and some tourism. If all trips were full fare, this could generate slightly over $120,000 in revenue, resulting in a potential net cost of $923,275 per annum. This revenue would be reduced by concession fares, which could account for a number of trips. Decreased revenue would increase net costs.

Table 25 Local service - capital expenditure

		Cost	Number	Total
Vehicle	Hino Poncho (Diesel)	$256,750	4	$1,027,000
Dispatch equipment	moovit	$1,500	4	$6,000
CapEx Total				**$1,033,000**
Annualised cost of vehicles over 14 years				**$111,608**

Table 26 Local service - operating expenditure

		Cost or measurement	Number	Total
Expenses				
	Registration	$529	4	$2,116
	Insurance	$11,554	4	$46,215
	Technology (moovit)	$132,000	1	$132,000
	Servicing	$520	23	$11,960
	Tyres (sets)	$800	7.6	$6,080
	Fuel	km travelled (all vehicles)	450,927	$193,448
Vehicles sub-total				$391,819
	Driver wages	Hours (incl. depot and positioning time)	12,154	$393,947
	Administration wages	Hours	608	$15,667
	Superannuation			$40,961
	Imputed depot land costs			$4,800
	Overheads and ROI			$84,719
Staff and operations sub-total				$540,095
OpEx Total				**$931,914**
Revenue				
	Fares		50,103	$120,247
Revenue Total				**$120,247**
Net operating position (excl. bus capital costs)				**-$811,667**
Net operating position (incl. bus capital costs)				**-$923,275**

4.2.4 Full service

The estimated capital expenditure of the full service model is shown in Table 27, while the operational expenses are shown in Table 28. The full service requires the purchase of four Hino Poncho (diesel) buses, which would be fully DDA compliant, and have an estimated annualised cost over 14 years of $111,608. Operational costs are estimated to be $1,063,340 per annum. Combined, this service is expected to cost $1,174,948 per annum to deliver.

It is estimated that approximately 14,000 trips could be made each year, which would be from commuters, community use, and tourism. If all trips were full fare, this could generate almost $160,000 in revenue, resulting in a potential net cost of $1,016,817 per annum. This revenue would be reduced by concession fares, which could account for a number of trips. Decreased revenue would increase net costs. Conversely, tourist tickets could increase revenue.

Table 27 Full service - capital expenditure

		Cost	Number	Total
Vehicle	Hino Poncho (Diesel)	$256,750	4	$1,027,000
Dispatch equipment	moovit	$1,500	4	$6,000
CapEx Total				**$1,033,000**
Annualised cost of vehicles over 14 years				**$111,608**

Table 28 Full service - operational expenditure

		Cost or measurement	Number	Total
Expenses				
	Registration	$529	4	$2,116
	Insurance	$11,554	4	$46,215
	Technology (moovit)	$132,000	1	$132,000
	Servicing	$520	30	$15,600
	Tyres (sets)	$800	9.9	$7,920
	Fuel	km travelled (all vehicles)	592,992	$254,394
Vehicles sub-total				$458,245
	Driver wages	Hours (incl. depot and positioning time)	13,231	$440,788
	Administration wages	Hours	662	$17,056
	Superannuation			$45,784
	Imputed depot land costs			$4,800
	Overheads and ROI			$96,667
Staff and operations sub-total				$605,096
OpEx Total				**$1,063,340**
Revenue				
	Fares		65,888	$158,131
Revenue Total				**$158,131**
Net operating position (excl. bus capital costs)				**-$905,209**
Net operating position (incl. bus capital costs)				**-$1,016,817**

4.2.5 Services comparison

A comparison of capital expenditure across service options is shown in Table 30, while a comparison of operational expenditure is shown in Table 31. The above discussion, and in Table 30 and Table 31 demonstrates that operating costs increase as service quality improves. However, as patronage and utilisation rates of the vehicles increases the cost on a per passenger or kilometre basis decrease, as shown in Table 29.

Table 29 Comparison of use costs

	Basic Service	Community Service	Local Service	Full Service
Cost per km	$5.70	$3.31	$2.31	$1.98
Cost per hour	$124.56	$121.27	$90.15	$93.24
Cost per passenger	$51.29	$29.79	$20.83	$17.83

The cost per kilometre is estimated to be $5.70 for the basic service but decreases to $1.98 for the full service. It should be noted than in both cases, these are total operating kilometres, not passenger kilometres, and it is assumed roughly half of all kilometres will be empty (hence, cost per km should be doubled to represent cost of passenger km).

The reason for this is high standing costs. There are two critical components to this. Firstly, the vehicles have capital outlay, and many fixed costs which do not change based on use (e.g., registration and insurance). Secondly, discussion with industry revealed the licences for the dispatching software is in the vicinity of $11,000 per month, with this cost carrying regardless of patronage.

The local service has the lowest cost per hour, however, the full service has the lowest cost per km and per passenger. While the full service has marginally higher costs overall, it provides additional benefits to tourism on the island and is the recommended as the preferred option to implement.

The full service model provides additional benefits to tourism on the island and is the preferred option.

Table 30 Comparison of capital expenditures

	Basic Service	Community Service	Local Service	Full Service
CapEx Total	$146,069	$516,500	$1,033,000	$1,033,000
Annualised cost over 14 years	$15,782	$55,804	$111,608	$111,608

Table 31 Comparison of operational expenditures

	Basic Service	Community Service	Local Service	Full Service
Vehicles OpEx sub-total	$150,754	$216,365	$391,819	$458,254
Staff and operations OpEx sub total	$93,294	$150,580	$540,095	$605,096
OpEx Total	**$244,048**	**$366,944**	**$931,914**	**$1,063,340**
Revenue	$12,158	$34,063	$120,247	$158,131
Net operating position (excl. bus CapEx)	**-$231,889**	**-$332,881**	**-$811,667**	**-$905,209**
Net operating position (incl. bus CapEx)	**-$247,671**	**-$388,685**	**$923,275**	**-$1,016,817**

4.2.6 Sensitivity testing

Four sensitivity tests were performed on the full service model to investigate different operating conditions. Different patronage levels were tested, to understand how costs rise and fall with patronage, and testing overall costs of an EV vehicle.

The results of the sensitivity testing are shown in Table 32. Electric vehicles, despite much higher capital costs (which include $15,000 per vehicle for charging infrastructure) have lower overall costs under a high use scenario. This is driven by much lower operating costs, with fuel costs being reduced by 80%.

EV buses provide significant benefit. Despite increased capital costs, the overall costs are lower, with significant additional environmental co-benefits. EV buses could avoid the emissions of up to 372 tonnes of CO_2-e emissions every year.

EV buses could avoid the emissions of up to 372 tonnes of CO_2-e emissions every year.

Reduced patronage levels similarly reduce operating costs, and therefore overall costs. The no patronage scenario reveals a standing cost of approximated $70 per hour, which rises with patronage. This has implications for contracting and funding models. Having a base rate included in an operator contract, with an additional payment for every passenger carried, will spread risk while providing incentives to an operator to increase patronage.

Table 32 Sensitivity analysis of full service model

	Full service	Full service - EV	Full service - low patronage	Full service - No patronage
Capital Expenditure Total	$1,033,000	$1,606,500	$1,033,000	$1,033,000
Annualised cost of vehicles over 14 years	$111,608	$173,570	$111,608	$111,608
OpEx: Vehicles sub-total	$458,245	$278,845	$355,981	$184,491
OpEx: Staff and operations sub-total	$605,096	$587,156	$594,869	$577,720
Operational Expenditure Total	$1,063,340	$866,001	$950,850	$762,211
Patronage	65,888	65,888	41,629	0
Fares	$158,131	$158,131	$99,910	$0
Net operating position (excl. bus capital costs)	-$905,209	-$707,870	-$850,940	-$762,211
Net operating position (incl. bus capital costs)	-$1,016,817	-$881,440	-$962,548	-$873,819
Total cost per hour	$93	$82	$84	$69

4.3 Recommended Model

It is recommended that the full service model be implemented as an on-demand transport service in Phillip Island and San Remo, for a trial basis of at least three years. Four vehicles should be acquired for the trial, allowing one vehicle to be spare during normal operating periods, but allowing flexibility to increase service levels through the trial, if need be.

The full service model provides additional benefits to tourism on the island and is the recommended preferred option.

The full service model provides the most benefit of the assessed models to the tourism sector, by providing a broader range of operating hours and increased service levels during peak holiday times. This caters directly to the needs of tourists. However, the operational expenditure is estimated to be $130,000 higher, while increased revenue from fares could be up to $40,000, there is still a net increased cost of $90,000 or more. It is recommended that the tourist sector contribute to reduce this cost.

There are sponsorship and advertising opportunities. The local tourist sector could contribute money towards the operation of the on-demand transport service in return to advertising rights inside the vehicles, on vehicles, and at stops/hubs. The amount of tourist sector contribution needs to be within the means of the sector, especially given the difficulties of COVID-19 and the effects it has had on business.

It is recommended that the tourist sector contribute to reduce the cost to government.

Additionally, the establishment of an Island Pass, which offers unlimited free use of the on-demand transport service and free or discounted entry to attractions should be considered. All revenue from this pass would be subject to negotiated revenue sharing, but revenue to governments should exceed base ticket pricing.

There is strong local desire for EV buses, which embody the strong culture of sustainability on Phillip Island and San Remo. EV buses are proven technology and have the potential to reduce operating and overall costs of an on-demand service. Trialling EV buses in an on-demand service in regional Victoria would be a ground breaking move. It is recommended that the requests for tender emphasis the desire for EV buses to be used.

It is recommended that requests for tender emphasis the desire for EV buses.

There is the need to consider vehicle ownership models, given the proposed trial period is shorter than the 14 years which bus procurement payments usually last. This has the potential to increase risk to potential operators, which may reduce the number of tenderers and/or increase tenders costs. There are three alternatives which should be investigated. Firstly, the Department of Transport could purchase the vehicles and make them available to the operator for the duration of the trial. Secondly, the Department of Transport could offer to purchase the vehicles for a pre-agreed sum if the trial is not converted to a permanent service. Thirdly, it may be possible to lease buses. It is recommended the first or second options be adopted, as they maintain asset ownership with government.

Unlike regular, fixed route buses, the costs of an on-demand transport service increase with patronage. Under a traditional contract arrangement, this increased cost is borne by the operator, while conversely, lower than expected patronage is received by the operators as a windfall gain. This creates perverse incentives to carry fewer passengers. It is recommended that a base rate be included in an operator contract, with an additional payment for every passenger carried. Doing so spreads risk while providing incentives to an operator to increase patronage.

It is recommended that a base rate be included in an operator contract, with an additional payment for every passenger carried. Doing so spreads risk while providing incentives to an operator to increase patronage.

An on-demand transport service reduces the need for the Cowes to Wonthaggi deviation. It is recommended contracts be renegotiated for the duration of the trial, and funding (estimated to be up to $95,000 per annum) be redirected to the trial on an on-demand transport service.

Lastly, it is recommended that all contracting be conducted through Department of Transport. Council has no institutional experience managing the contracts for public transport services, and placing the contract management within Council has significant risks. In contrast, the Department of Transport has substantial experience, and is best placed to oversee the management of the on-demand transport contract.

5. Micromobility

This project has been principally focused on *buses* as the vehicles that would provide the basis for an on demand service. As highlighted in the *desktop review, Micro mobility* describes a segment of the transport market that include slow speed, light vehicles. In general, the speed is 25km/h or less. While micro mobility includes regular bicycles, it is very often the case that these devices are powered by a small motor, with an output of 250W.

5.1 Introduction

Micromobility devices are typically either e-scooter or e-bike, and for the purposes of this project, *shared* micro mobility will be the focus of this section. A large number of companies work in the shared micro mobility space and have established platforms to allow users to easily sign up, unlock and use either the e-scooter or e-bike. Of particular relevance to this project, the commercial sector is often prepared to provide a service without a subsidy from government. In Victoria, an e-scooter trial is currently in operation and pending the results of the trial, there may be a possibility of expansion. At the time of writing, all e-scooters not part of the trial cannot be operated legally on Victorian roads. E-bike share is legal, but all bikes must adhere to the current regulations regarding power output.

Some of the advantages of micro mobility include:

- Can be provided at little or no cost to government
- Offers the user complete flexibility; they choose when to start and end their journey and the route they take.

5.2 E-scooter or e-bike share?

Many of the commercial providers of shared micro mobility offer both e-bike and e-scooters. There are pros and cons to each. E-scooters are often preferred for very short trips, while e-bikes provide a more comfortable rider for longer trips, allow the rider to carry items in the front basket and more easily enable the user to indicate. Additionally, e-bikes are better suited for uneven terrain. For these reasons, it is suggested that e-bikes are more suited to the Phillip Island/San Remo context. Figure 4 provides an example of e-bike share bicycles, from an existing program in Melbourne.

Figure 4 E-bike share

5.3 Where would a micro mobility service operate?

To provide the strongest value proposition to the user, it is recommended the service area include the same catchment as the on-demand bus service.

The e-bikes would be able to travel anywhere a regular bicycle can travel. Operators are able to work with Council to 'geo-fence' certain areas out of bounds (e.g. areas with very high pedestrian traffic etc).

5.4 Seasonality

Given that winter has lower levels of tourism, it is likely that commercial operators may wish to remove the e-bikes during this period.

5.5 Costs

As it is envisaged that the program would be provided entirely by the private sector, pricing is generally the reasonability of the operator. It is however recommended that pricing avoid *by the minute* chargers, as this can cause unsafe riding behaviour and lower the degree to which the bikes are used in a relaxed manner, in keeping with the feel of the island.

5.6 Next steps

It is recommended Council consult with the community and tourism industry regarding a shared micro mobility service. Should this consultation find strong support for such a service, Council should call for Expressions of Interest from the commercial shared micro mobility sector. All proposals should be examined by a suitability qualified reviewer before selecting one or more operators that meet Council's minimum requirements.

6. Implementation Plan

This section highlights the steps required to implement the on-demand service described in this report. Figure 5 provides a summary of the key steps required.

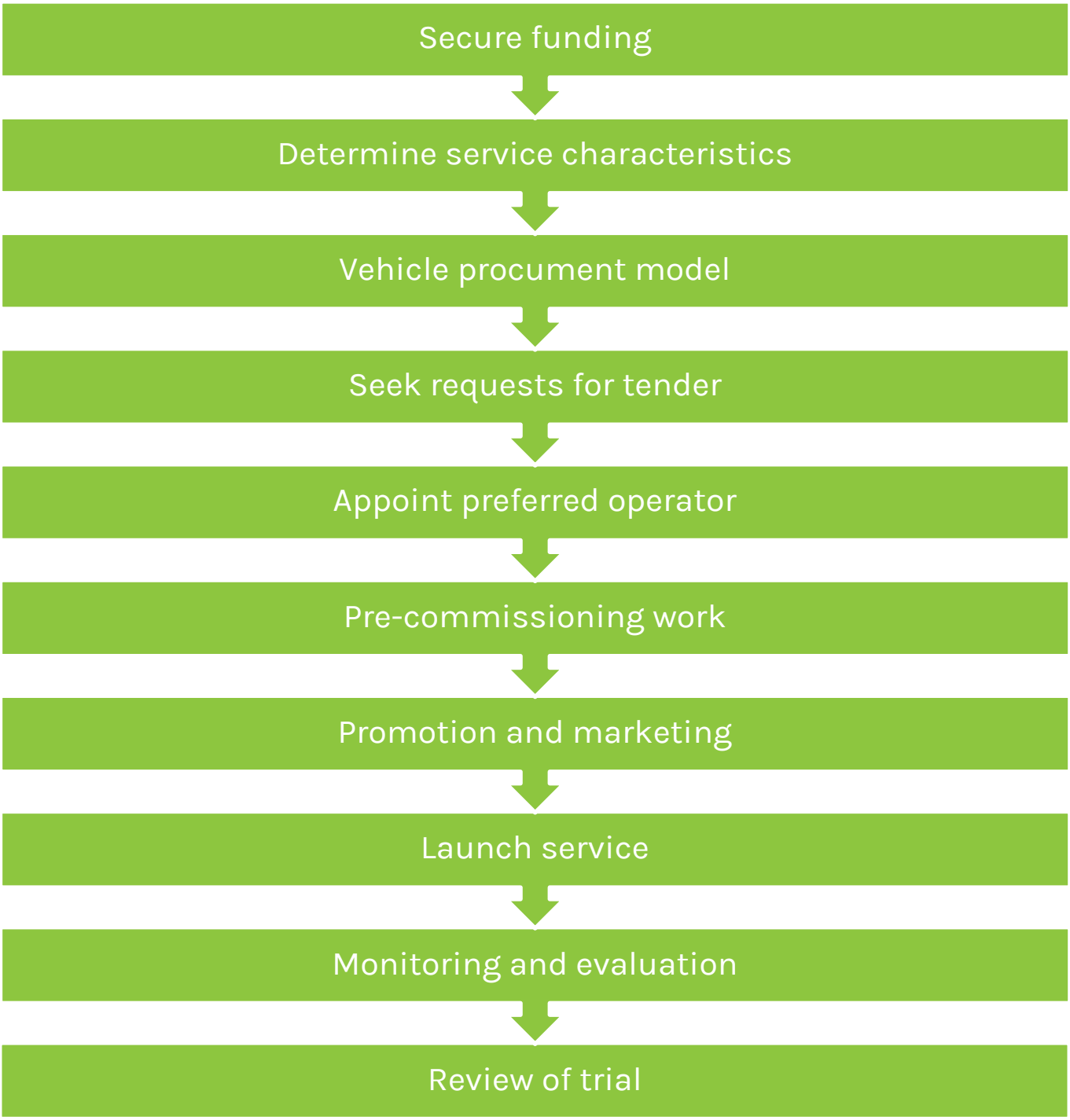


Figure 5 Implementation plan steps

6.1 Secure funding

The first step is to secure funding for the procurement of vehicles and the commissioning of service. Vehicles are estimated to cost $1.6 million, which is for small electric buses. Operating costs over three years are estimated to be $3.1 million. A contingency of 50% on operating costs would be prudent, to allow to cost variations and to expand services if require. A total of $6.25 million in funding, over three years, should be secured.

6.2 Determine service characteristics

Full specification of service needs to be defined. This includes a refinement of:

- Hours of operation, and the variation through the year, based on what has been recommended in *Section 3.2* of this report.
- The exact location and size of hubs, and location of all physical and virtual stops will need to be determined.
- Financial models for fares and operator payments, as discussed in *Section 4.1.3* and *Section 4.3*.

This could include consultation with key community groups to ensure needs of users are met.

6.3 Service commissioning

6.3.1 Selection of vehicle procurement model

Ahead of launching a request for tender, the Department of Transport must determine the preferred vehicle procurement model. It is recommended that the Department of Transport purchase vehicles and make them available to the operator (this is the same model as is used with rail services in Victoria).

6.3.2 Request for tender

A request for tender needs to be developed for Department of Transport to put to the market. This needs to include:

- Information about the service offer, including service area and key user markets. It is important to emphasis the role of the on-demand service in providing an accessible and inclusive offering which supports mobility of everyone in the community, including the young and the elderly.
- Service catchment area, as outlined in *Section 3.1* of this report.
- Operating schedule as determined above.
- Vehicle storage, charging and maintenance strategies, including for 100% renewable power to be used.
- Booking systems and interfaces, including methods for accessible bookings from those who are unable to use Smartphone or computer booking systems (for example, bookings over the phone).
- Accessibility strategies, to ensure everyone can access the vehicles, including those with mobility issues. Additionally, the potential for carrying bikes and surfboards must be considered.
- Three year trial, with an option of extension.
- A monitoring and evaluation strategy, including the operator being available for regular meetings with the Department of Transport. Council can also be included at the Department of Transport's discretion.

6.3.3 Appointment of operator

All tenders are to be evaluated with Department of Transport frameworks to select the most suitable operator.

6.3.4 Pre-commissioning work

Physical infrastructure needs to be installed prior to commencement of the services. This includes any infrastructure required at hubs and physical stops. At a minimum, bus stop flags must be installed.

6.3.5 Promotion and marketing

Promotion and marketing, as outline below, needs to be undertaken prior to commencement of the service. In addition, wayfinding and promotional material would be advantageous.

6.3.6 Service launch

The service should launch following all pre-commissioning work, promotion and marketing. It is suggested that the service launch one month prior to the September school holidays. This would allow time to refine any service operations prior to the influx of tourist. It would also allow the opportunity to evaluate how the service operates in advance of the major summer holiday season.

If a September launch is not possible, the service should launch one month before any school holidays period for the reasons identified above.

6.4 Service promotion

The promotion of the on-demand service is critical to achieving the level of awareness required to maximise the success of the service. Ensuring the service begins with relatively high levels of use will help others seek the service as a useful transport option.

There are two key phases within this component;

1. Development of marketing/promotion strategy
2. Implementation of marketing/promotion strategy

It is recommended that the *Communications and Customer & Visitor Experience* and *Economic Development & Investment* units within Council lead the development the strategy to market and promote the on-demand service. This can occur in partnership with the Department of Transport.

Once the preferred operator has been selected, the implementation of the marketing/promotion strategy can commence. It is recommended this occur with sufficient time to ensure both the local and regional market have been suitably exposed to the promotional material prior and during the launch period.

Marketing and promotional opportunities include:

- Direct dialogue with local businesses and all accommodation options, including Airbnb operators.
- Brochures and posters that can be placed at local businesses.
- Director communications with the travel editor of major metropolitan newspapers and digital media editors.
- Information at V/Line outlets, especially those buying tickets to Gippsland.
- Advertising on social media channels including PTV and V/Line.
- Engagement with Council's aged and community care, to ensure residents are aware of how to use the service. This should include information on how to access the service for those unable to operate a Smartphone or computer booking system.

6.5 Monitoring and evaluation

It is recommended a monitoring and evaluation program be developed from the beginning of the service. This should include:

- Market research with users of the service (to understand what they liked, and what could be improved).
- Intercept surveys with those that have not used the service, but live or visit Phillip Island and San Remo (to understand potential barriers).

The above two surveys should be completed 3, 9, 21, 33 months following launch. This provides sufficient time to be able to consider and integrate service improvements based on the results of the surveys. The final survey would be used to evaluate the trial as a whole, and determine next steps.

Interviews with the operator should also be conducted, to gain insights on what is working well, and what could be improved. Engagement with the operator should occur one week following the commencement of the service, as well as regular, monthly meetings. These meetings can include representatives from the Department of Transport, Council and others by mutual agreement.

In addition to the above activities, it is recommended usage data be captured, analysed and evaluated to gain insights that can be used to help enhance the service. This data will help better understand:

- Usage profile, during day, week, month etc
- Hot spots for origin and destination

- Characteristics of frequent users
- Integration with public transport.

6.6 Review of trial

At the end of three years, the trial should be evaluated to determine how best to continue to offer public transport to Phillip Island and San Remo. The data from the monitoring and evaluation steps, discussed above, is critical to this step.

Key considerations in the review should include to what extent on-demand service supports:

- Mobility of the general public.
- Inclusion, especially of the aging population and those experiencing transport disadvantage.
- Employment options, and the ability of workplaces to attract staff.
- The tourist experience whilst in Phillip Island and San Remo.

How best to meet the user experience expectations of people in Phillip Island and San Remo should be considered the most important aspect of the review. If successful in meeting people's user experience expectations, the on-demand service should be converted to a permanent service.

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