

Melbourne Metro Rail Project – South Yarra Metro Station Customer Outcomes and Economic Assessment Report

June 2015

Executive Summary

Background

The Melbourne Metro Rail Project core project involves constructing a new tunnel from South Yarra to South Kensington, and includes new stations at Arden, Parkville, CBD North, CBD South and Domain.

This report outlines the customer outcomes and economics assessment of an option to include an additional stop at new station platforms on the Melbourne Metro alignment at South Yarra (“South Yarra Interchange Station”).

Forecasts of customer demand were undertaken for both scenarios using the Victorian Integrated Transport Model (VITM). This model forecasts trips across all modes, including trains, trams, buses and private car. Forecasts have been prepared for 2031 and 2046, and the modelled station design reflected easy interchange for customers (which provides for optimistic outcomes compared to potential outcomes if a lower quality interchange is ultimately delivered).

South Yarra is currently the 11th busiest station on the metropolitan rail network, serving a catchment comprising a mix of employment, retail and residential uses. South Yarra has been experiencing strong growth in the Chapel Street and Forrest Hill precincts in recent years. This growth is expected to continue, but is located closer to the existing station than the potential new platforms. Other areas in the station’s walkable catchment are zoned Neighbourhood or General Residential and will experience more limited growth. This influences the numbers of potential public transport customers within walking distance of the station and future patronage growth.

Overview of current Melbourne Metro Rail Project scope, indicating a possible station at South Yarra added



Customer Journey impacts

Public transport customers will experience benefits or disbenefits from the new South Yarra platforms on the Dandenong (Melbourne Metro) line depending on the journey they wish to undertake:

- > Customers wishing to travel to/from the South Yarra area (users/potential users of South Yarra Station at the start or end of their journey), benefit from additional rail services to South Yarra and a direct connection to the Dandenong rail corridor.
- > Customers travelling on the Dandenong line going through South Yarra who do not alight or interchange at South Yarra, will experience a small increase in travel time.
- > Customers may benefit from the option to use South Yarra as an interchange station, otherwise they may use a tram or alternative station to travel from the inner south east.

Over 100,000 customers per day would be a minute worse off if the South Yarra Interchange Station is included, compared to less than 14,000 customers who would be between one and ten minutes better off. In aggregate (i.e. taking into account all journey time savings and all slower journey times), the addition of a new station at South Yarra would add an additional 1,500 hours of travel time per day for public transport users in 2031.

Changes to Customer Demand

As a result of the new travel opportunities, some new customers will be attracted to use public transport instead of using a car. There will also be some customers who no longer use public transport, largely due to the increase in journey time on the Dandenong line. Overall, there is a small net uplift of around 1,000 public transport users (on an average weekday), particularly on the Dandenong, Frankston and Sandringham lines. These customers are taking advantage of the improved opportunities to access South Yarra or to interchange there.

This relatively minor uplift in public transport use is reflective of the rich public transport offering already available in South Yarra and the inner south east. By comparison, the new station at Southland is forecast to lead to an overall increase of approximately 4,000 customers per day despite being a fraction of the cost of a South Yarra interchange station.

In 2031, if Melbourne Metro is built as proposed (with no interchange at South Yarra), South Yarra Station will experience around 28,000 entries, exits, and interchanges between rail services each day. The inclusion of the interchange station would generate a significant increase in customer activity at South Yarra Station, particularly customer movements between rail lines. If it is built, the station would see 34,000 daily entries and exits overall at South Yarra (an additional 11,000 entries/exits) and 38,000 rail-rail interchanges across the old and new station (an additional 33,000 interchanges). The substantial increase in interchange behaviour at South Yarra is expected to place pressure on existing facilities.

However, the new station's overall impact on the public transport network is modest. This is because the changes felt at the station are a result of shifts in activity from a range of locations, meaning that there is limited relief to customer movements at other stations and the tram network. Domain and Caulfield stations experience the strongest impacts.

The increase in station entries and exits at South Yarra is drawn from customers who would otherwise have boarded a rail service at Domain, or caught a tram from South Yarra or other locations in the inner south east to St Kilda Road. Domain Station will remain a busy station, reducing from 66,000 daily entries and exits, to 60,000 if South Yarra interchange station is built.

With South Yarra interchange station, Caulfield Station will experience a daily reduction of around 6,000 daily transfers between rail services. This is low in the context of overall growth in activity that will occur at the station. Even with the interchange at South Yarra, Caulfield will remain a busy station, continuing to experience around 39,000 daily interchanges and around 50% more

station entries than today. Over time, enhancements are likely to be required at Caulfield irrespective of whether a South Yarra interchange station is built or not.

Overall, around 76% of the increase in rail interchanges at South Yarra is in line with the decrease in transfers between rail services at several stations across the network that offer similar interchange opportunities. The remaining 24% relates largely to people who would otherwise change from train to tram to access St Kilda Road.

Of the 16,300 customers using the new platforms at South Yarra, more than 87% would have used the existing platforms at South Yarra Station or Domain Station. The remaining 2,400 are new users of South Yarra, attracted by the improved public transport offering.

There is a limited impact on train and tram crowding. The volume of rail services that will travel through South Yarra in the base option means that there will be a marginal reduction in wait times from the additional services stopping at the station (around 20 seconds in the morning peak).

Economic Assessment

Analysis of the economic outcomes of including South Yarra interchange will lead to an overall increase in the Present Value in the Melbourne Metro project benefits stream of \$108 million. This is compared to a present value cost of \$644 million.

There is a net decrease in benefits to public transport users of about an additional 1,500 hours of travel time a day in 2031. These disbenefits accrue to existing public transport users, as there is an overall increase in time spent on public transport vehicles (mainly on the Dandenong corridor). There is a minor benefit to the new users, who are attracted to making trips by public transport through improved local travel networks.

Road users will see a minor net increase in benefits, with a slight reduction in road congestion over the project life. There are also broader societal benefits, including changes to travel behaviour that mean that more people will be walking to catch public transport and realising better health outcomes. The value of the project also includes the value of land that is not required at the end of construction.

Overall, the proposed new South Yarra interchange station delivers a poor outcome, with an estimated incremental Benefit Cost Ratio (BCR) of 0.2 and a Net Present Value of - \$535 million.

Other investment options

Consideration was given to other potential investment options that may provide benefits to public transport users and/or the local community. However, these potential benefits are not directly comparable to the benefits that would be provided by a Melbourne Metro interchange station at South Yarra and do not form part of the current scope of the Melbourne Metro Rail Project.

It is worth noting that South Yarra will continue to be well-served by public transport, including frequent trains. Melbourne Metro will enable a new short starter service (meaning that trains will start empty or nearly empty at South Yarra during peak hours) On these services, customers will easily find a seat at South Yarra.

Other potential improvements include:

- Improvements to tram and bus services in the south east to simplify networks and improve frequency and priority, which will benefit customers travelling between the Sandringham and Dandenong lines, as well as those travelling to St Kilda road;
- Improvements to access at Caulfield Station, which will help customers transfer from the Frankston to the Dandenong line and vice versa;
- Improvements to the existing South Yarra Station, which has closer proximity to the growing activity in the Forrest Hill precinct than the proposed interchange station.

Table of Contents

Executive Summary	2
Background	2
Customer Journey impacts	3
Changes to Customer Demand	3
Economic Assessment	4
Other investment options	4
Introduction	6
Current Customer Usage Context	7
Future Land Use and Activity	8
Changes in Journey Opportunities under South Yarra Options	10
Overview	10
Customers travelling to or from South Yarra	11
Customers who may take the opportunity to interchange at South Yarra	13
Customers travelling through South Yarra on the Dandenong Line	14
Customers who have a neutral outcome, but may change their journey	15
Customer Forecasts – Network Context	15
Quantifying Customer Journey Impacts	17
Impacts on Different Markets	17
New and Lost Customers	18
Customers’ response to changes in journey times – evidence from current customer behaviour	20
Where are Customers Interchanging?	20
Impact on Other Stations	22
Customers Using the New Station Platforms	23
Train and Tram Crowding	24
Impact on trams	24
Impact on trains	24
Service Frequency and Capacity at South Yarra	24
Comparison with Other Stations	25
Road Congestion Relief	26
Economic Assessment	26
Sensitivity analysis	28
Wider Impacts	28
Other investment options	29
Improving public transport in the south east	29
Better Station Access at Caulfield Station	30
Better Station Access at the Existing South Yarra Station	30
Conclusion	31

Introduction

The Melbourne Metro Rail Project provides capacity to cater for additional customers on the Dandenong and Sunbury rail corridors and improves access for public transport customers to major existing and growing destinations to the north and south of the CBD. The core project involves constructing a new tunnel from South Yarra to South Kensington, and includes new stations at Arden, Parkville, CBD North, CBD South and Domain.

This report considers an additional new station at South Yarra along the new Melbourne Metro tunnel alignment. It is assumed for the purposes of this report that the new station would have direct walking connections to the existing South Yarra Station, thereby providing an additional opportunity for customers to interchange between services operating on the Melbourne Metro corridor and services that will continue to operate through the existing South Yarra Station (as such, any potential solutions that deliver poorer customer connections will likely not realise the same benefits). The potential South Yarra interchange station will also allow customers on the Dandenong to Sunshine service to directly get to South Yarra without changing services. The location of the potential South Yarra interchange station is shown in Figure 1.

Figure 1: Overview of current Melbourne Metro Rail Project scope, with a possible station at South Yarra added



This report presents an updated assessment of customer outcomes and economic assessment of a potential new South Yarra interchange station. It complements other reports being prepared by Melbourne Metro Rail Authority to inform a full assessment:

- Overarching options assessment report; and
- Technical and planning assessment report.

The structure of this report involves:

- Current Customer Usage
- Future Land Use and Activity

- Change in Journey Opportunities under South Yarra options
- Customer Forecasts – Network Context
- Quantifying Customer Journey Impacts
- Economic Assessment
- Optional Mitigation Measures
- Conclusion

Current Customer Usage Context

On an average weekday South Yarra currently has around 8,300 customers entering the station, making it the 11th busiest station on the metropolitan network.¹ Around 33% of customers alighting at South Yarra come from the Dandenong line, as shown in Table 1. These customers would be affected if Dandenong trains no longer stopped at South Yarra, although they would still be able to access the station by changing to the Frankston line at Caulfield or access the St Kilda Road precinct directly from Domain Station.

The predominant reason why customers travel to South Yarra Station is for work, which accounts for approximately two thirds of all trips (64%).

Table 1: Origins of Customers alighting at South Yarra Station²

Origin Line	Percent	Indicative Average Weekday Alightings
Dandenong	33%	2,700
Frankston	22%	1,800
Sandringham	13%	1,100
City loop	21%	1,700
Remaining network	11%	1,000
Total	100%	8,300

South Yarra Station also serves as an important interchange station with the Cranbourne, Pakenham, Frankston and Sandringham lines currently converging on South Yarra. As a result, approximately 15% of customers alighting at South Yarra transfer to another line. Of those who choose to transfer at South Yarra, approximately half travel between the Sandringham and Frankston lines and the other half travel between the Sandringham and Dandenong lines. This includes people heading towards the city and transferring between services travelling through the City Loop and those travelling direct to Flinders Street (or vice versa), although the strong majority of people making this change do so at Richmond.

¹ Based on 2011 Origin-Destination data (PTV)

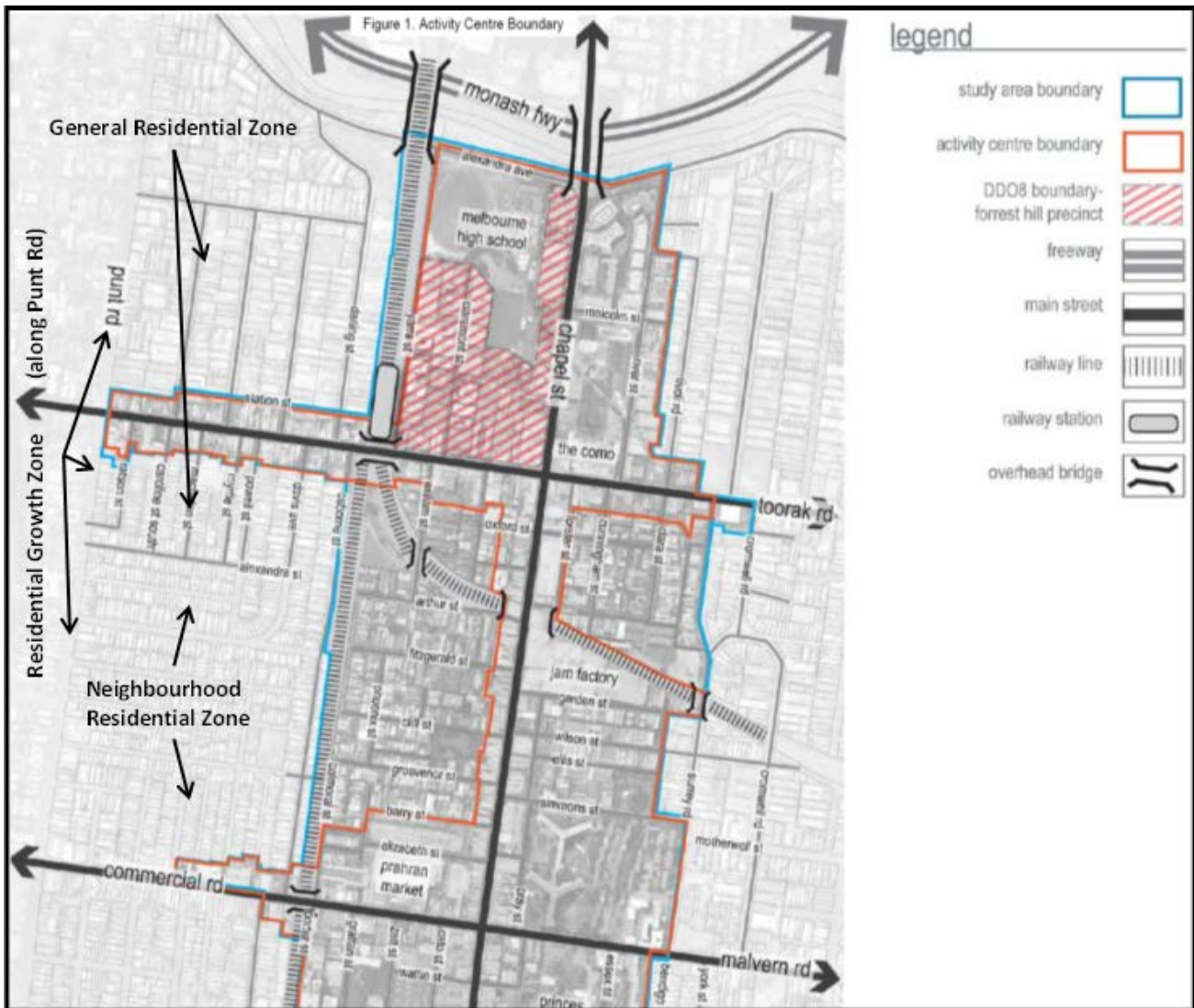
² Alighting numbers are indicative only, they have been apportioned to station entries based on stated destinations in PTV Origin-Destination (2011) survey data, assuming a balance of station entries and exits.

Future Land Use and Activity

The land use immediately surrounding a station is a key determinant of future customer demand as the vast majority of customers walk to and from a station. At South Yarra, 77% of customers walk to and from the station.

The land use zones and plans surrounding South Yarra Station are presented in Figure 2.

Figure 2: South Yarra Land Use (diagram based on Chapel ReVision Structure Plan, annotated with relevant residential zones)



South Yarra will continue to grow as a retail and hospitality hub. Parts of South Yarra are undergoing some major transitions, with areas moving from lower rise industrial and commercial uses to significant numbers of apartment developments. Key to this transition is the Forrest Hill³ precinct to the north east of the station, which has seen significant development in the past

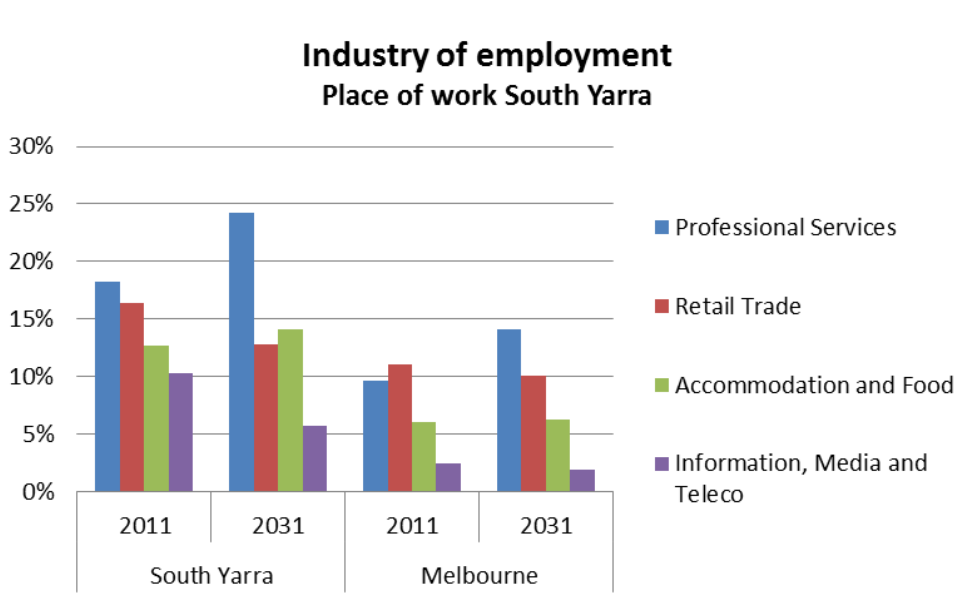
³ The Forrest Hill Precinct is bounded by the rail corridor, Toorak Road, Chapel Street to the east and Alexandra Avenue/Melbourne High School to the north.

decade, and will continue to experience growth. These developments are predominantly residential, with some commercial office space and retail uses. Other developments are slated to occur to the south east of the station, and in the vicinity of Toorak Road and Chapel Street, although not to the same extent.

Elsewhere along Toorak Road there will continue to be a mix of shops, dining and local services. These precincts will continue to operate as important destinations, and South Yarra Station will continue as a gateway to the area and Chapel Street, although it is the existing station that provides the most local access to the Forrest Hill precinct and Chapel Street rather than the potential interchange platforms on the Melbourne Metro line, which are to the western end of Toorak Road.

These changes will lead to a shift in the balance of employment types, with the proportion of people working in South Yarra in the professional services industry anticipated to rise from 18% to 24% by 2031. These sectors benefit from good transport connectivity, which enables access to collaborators, workers and markets. South Yarra's rich transport options have facilitated these trends.

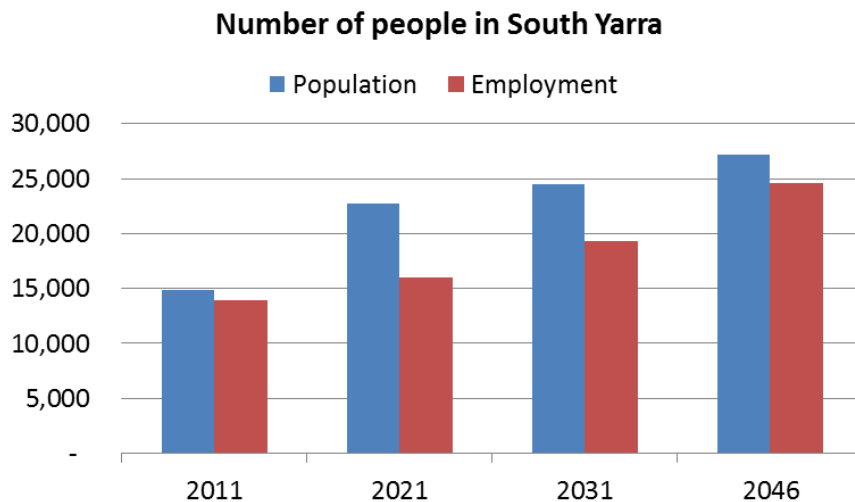
Figure 3: Change in employment mix in South Yarra



However, a substantial proportion of the area within walking distance of stations is restricted from further development, through the Neighbourhood Residential Zone and lower development-scheduled General Residential Zone. These include areas of high heritage value. This will limit the future growth of potential public transport customers who could walk to the station, particularly around the site of the potential interchange station which is surrounded by Neighbourhood or General Residential Zones beyond Toorak Road. This zoning is reflected in jobs and population forecasts for the area, which are moderate compared to other parts of Melbourne. This will impact the magnitude of expected patronage growth for South Yarra.

The forecast growth in land use for the region broadly within walking distance of South Yarra Station (the South Yarra SA2 region) is presented in Figure 4. The variety of change within walking distance of the station means that whilst some areas will experience growth, the overall growth in jobs and residents will be steady but not rapid compared to many areas in Melbourne, gaining around an additional 10,000 jobs by 2046 and around 12,000 residents in the same period. The majority of this residential growth is forecast to occur between 2011-2021, with growth then slowing as the Forrest Hill precinct is built out. These growth patterns are reflected in the subsequent patronage forecasts for South Yarra Station.

Figure 4: Forecast Population and Employment Growth in South Yarra SA2 region



Changes in Journey Opportunities under South Yarra Options

The Melbourne Metro rail tunnel will provide a new tunnel connection for services running from Dandenong to Sunbury via stations at Domain, CBD South (Flinders St interchange), CBD North (Melbourne Central interchange), Parkville and Arden. This will affect how customers are able to move around the network.

The option to interchange at South Yarra will further change how customers are able to move around the network. These changes may be positive or negative for public transport customers, depending on the journey. Journeys that will experience a change have been identified and summarised in terms of the quality of the options available to customers under existing conditions and the following future scenarios:

- Scenario 1: With Melbourne Metro without a new South Yarra interchange station; and
- Scenario 2: With Melbourne Metro with a South Yarra interchange station

Customer journeys that potentially include South Yarra Station can be thought of as three broad types:

- Customers wishing to travel to/from the South Yarra area (users/potential users of South Yarra Station at the start or end of their journey)
- Customers who may use South Yarra as an interchange station to reach their ultimate destination
- Customers travelling on lines going through South Yarra who do not alight or interchange at South Yarra.

To understand how the inclusion of a South Yarra Interchange Station will impact on customers, key public transport market segments whose journey time could potentially increase or decrease were identified.

Overview

Because customers in the inner south east have a wide range of public transport options, it is challenging to isolate the exact number of people who would be affected positively or negatively

by a potential interchange station – particularly those who would benefit, as most beneficiaries are located in the inner area. The figures in the table below therefore refer to all public transport customers who are travelling from one area to another area. Not all of them would actually take advantage of the option of using a South Yarra Interchange Station.

While it is difficult to isolate the beneficiaries, it should be emphasised that in aggregate all travel time impacts – both negative and positive – are captured in the modelling and therefore in the economics, summarised later in this report.

Over 100,000 customers per day would be a minute worse off if the South Yarra Interchange Station is included.

A range of customers would potentially benefit from the increased connectivity of a South Yarra Interchange Station, totalling in the order of 20,000 customers (daily, 2031) as summarised below. Of these, the number expected to save more than 1 minute is estimated to be less than 14,000.

Around 2,000 – 3,000 of the customers who could benefit from the station may need to change their journey compared to today, either modifying their route or starting to interchange at Caulfield. The rest of the customers who would benefit would be getting a better journey than they do today, regardless of which option is delivered, and their current public transport options are already relatively good (i.e. high frequency train or tram services available).

Customers travelling to or from South Yarra

All customers using South Yarra Station will continue to have direct access to Flinders Street, Southern Cross and the city loop stations in both scenarios (that is, with or without a South Yarra interchange station). As a minimum, this will be provided by the Sandringham and Frankston lines, with Frankston services continuing through the city loop.

In both scenarios, the Melbourne Metro project will enable additional services to run as short starter services (meaning that trains will start empty or nearly empty at South Yarra during peak hours), which customers travelling from South Yarra will easily be able to find a seat on.

With the inclusion of a Melbourne Metro interchange station at South Yarra, passengers in the precinct will have direct rail access to Parkville, Domain and Arden. This will provide a travel time improvement compared to tram, which currently provides direct access to Parkville and Domain by tram Route 8 along Toorak Road (potential changes to the tram network will reroute Route 8 to the west of the CBD, with tram access to Parkville requiring changing to a north bound tram at the Domain interchange, these trams run frequently but it will result in a small increase in travel time).

Rail access from the Sunbury line without interchanging would also be provided. In the longer term, the new interchange station would provide direct access from South Yarra Station to a rail link to Melbourne Airport. If no interchange station is built, access to this link would be possible through changing once at Flinders Street or Melbourne Central, which would be comparable to the experience of most rail customers across the network.






If a Melbourne Metro South Yarra interchange station is not provided, people on the Dandenong line would be able to change at Caulfield to access South Yarra.

The second largest market of potential beneficiaries from the South Yarra interchange option are customers travelling between South Yarra and the CBD, accounting for one-third of all beneficiaries. For these customers, the travel time savings would be around half a minute on average. Not all of these customers would necessarily use the new interchange station, many would continue to use the Sandringham and Frankston Line services, particularly those from the Forrest Hill precinct for whom these would be the closest option, or customers destined for Parliament, Flagstaff or Southern Cross stations, which are not served by the Melbourne Metro line.

Customers travelling from the Cranbourne/Pakenham lines to South Yarra would need to change their journey compared to today, needing to interchange at Caulfield to make this journey (<10% of potential beneficiaries, saving around 5 minutes if an interchange station were included).

The table below compares the two scenarios to the current situation.

Table 2: Impacts on customers travelling to or from South Yarra

Customer Journey	Conditions prior to Melbourne Metro construction	Journey impact: Melbourne Metro without South Yarra Station (2031)	Journey impact: Melbourne Metro with South Yarra Station (2031)	Relative size of market affected
South Yarra to CBD	Trains at 1.7 minute frequency	= Trains at 2 min frequency, new Sth Yarra starting services provide seating Average additional wait time of 10 seconds.	+ Trains at 1.25 min frequency, short starter services provide seating Reduced average wait time of around 22 seconds. Average wait time reduced by approx. 34 seconds in off-peak periods	 6,000-7,000
South Yarra to Domain	Toorak Road tram	= Toorak Road tram No impact on journey time	+ Rail access to Domain 5-8 minute travel time saving	 200-250
South Yarra to Parkville	Toorak Road tram OR catch train to Flinders St/Melbourne Central Stations and interchange to tram	+ Tram or train to Flinders Street Station or Domain, then train to Parkville 1-2 minute travel time saving	++ Direct train to Parkville 5-8 minute travel time saving	 600-700
West (e.g. Sunshine) to South Yarra	Interchange at Flinders Street Station	= Interchange at Flinders Street Station	+ Direct Access to South Yarra 5 minute travel time saving	 800-900
From Dandenong to South Yarra	Direct access to South Yarra	“-“ Interchange at Caulfield 5 minute travel time increase	= Direct access to South Yarra	 1,700-1,900

Legend: “+” Customers who benefit, “=” Similar level of service, “-“ Reduction in service

Customers who may take the opportunity to interchange at South Yarra

The opportunity to interchange at South Yarra may make some journeys easier for customers. It provides an additional opportunity for people wishing to transfer between the Dandenong and Sandringham or Frankston lines to access destinations along these lines. For example, the South Yarra interchange station provides an opportunity for people on the Sandringham line or inner south east to travel to the St Kilda Road (Domain) and Parkville precincts by train, rather than catching the tram.



These areas have a comparatively high level of public transport services and therefore a number of options for travellers. In absence of a South Yarra Station along the Melbourne Metro line, passengers on the Frankston line would be able to access these destinations by changing to the Dandenong line at Caulfield or catching a tram/interchanging from train at Flinders St if closer in. Passengers near the Sandringham line can catch the tram to St Kilda Road directly as they do today. They would also have an additional opportunity to catch the train to Flinders St and interchange to the Melbourne Metro service.

The single largest market of people benefitting from the South Yarra interchange option would be those travelling between inner south east and Domain/St Kilda Road, accounting for around 40% of all potential beneficiaries of a new interchange station. Some of these customers may still be better off continuing to use one of the seven tram routes linking the Sandringham Line to St Kilda Road, but many would opt to interchange at South Yarra to catch the train to Domain. Savings for this market therefore range from 0 – 8 minutes compared to the Melbourne Metro base option.

Customers travelling between locations on the Sandringham Line and Cranbourne/Pakenham lines (<10% of potential beneficiaries) may need to change their journey compared today. Some of these customers would continue using one of the 8 bus and tram routes that connect these corridors, while others who currently interchange at South Yarra would need to change their journey, so would be better off with a new interchange station. Overall journey time implications range from 0 – 10 minutes.

The table below compares the two scenarios to the current situation.

Table 3: Impacts on customers potentially interchanging at South Yarra

Customer Journey	Conditions prior to Melbourne Metro construction	Journey impact: Melbourne Metro without South Yarra Station (2031)	Journey impact: Melbourne Metro with South Yarra Station (2031)	Relative size of market affected
Between Dandenong & Sandringham lines	Interchange at South Yarra Station or catch tram or bus between Dandenong & Sandringham corridors	“-“ Interchange at Flinders Street Station or catch tram or bus between Dandenong & Sandringham corridors Up to 10 minute travel time increase for customers using rail.	= Interchange at South Yarra or catch tram or bus between Dandenong & Sandringham corridors	 1,200-1,300
Bayside or Inner SE to St Kilda Road	Catch tram direct to St Kilda Road, or transfer from train to tram to St Kilda Road	+ Complementary tram improvements and tram crowding relief enable better interchanges and more reliable trams to St Kilda Road	++ Transfer to train at South Yarra to access Domain + Complementary tram improvements and tram crowding relief enable	 8,000-8,800

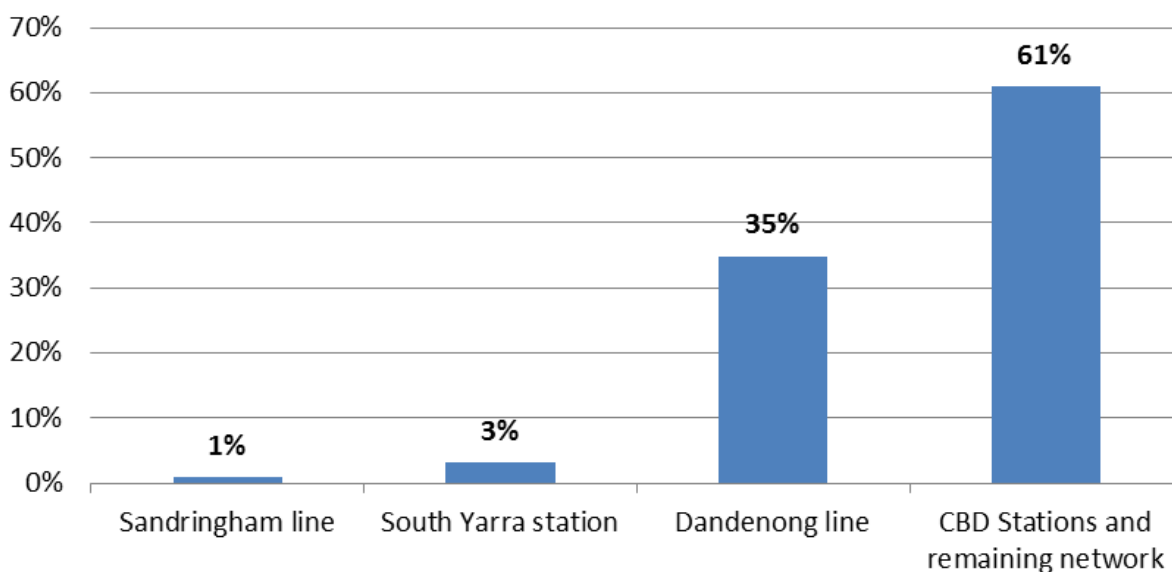
		<p>from inner south east stations</p> <p>+ Transfer at Flinders Street Station or Caulfield for rail access to Domain</p> <p>1-2 minutes journey time benefit</p>	<p>better interchanges and more reliable trams to St Kilda Road from inner south east stations for those who prefer to remain tram users</p> <p>Up to 10 minutes journey time benefit</p>	
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Customers travelling through South Yarra on the Dandenong Line

The majority of customers currently using the entire Dandenong line (including from Pakenham and Cranbourne) travel beyond South Yarra Station towards the CBD (61%). These passengers will be advantaged by a Melbourne Metro option that does not stop at South Yarra. Only 3% currently exit at South Yarra and a further 1% transfer at South Yarra to the Sandringham line. The remaining 35% travel to stations between Caulfield and Pakenham/ Cranbourne, which is before South Yarra on a city bound service. This is indicative of the relative impacts on future customers affected by the stop at South Yarra.

Figure 5: Locations where passengers on the Dandenong corridor are alighting

Alighting locations for passengers boarding on the Cranbourne/Pakenham line





Other customers who will be advantaged by the option that does not include a South Yarra interchange include passengers on the Dandenong and Frankston lines who currently exit at South Yarra to catch a tram to St Kilda Road. When Melbourne Metro is built, they will be able to catch a train directly to St Kilda Road (or interchange at Caulfield from the Frankston line) and disembark at Domain.

Customers who transfer from the Frankston to the Dandenong line to access other destinations beyond South Yarra, such as Parkville, will also be better off without the stop at South Yarra. Passengers transferring from the Frankston to the Dandenong line at Caulfield Station will have access to express services on the Dandenong corridor between Caulfield and Domain, which will generally be preferable to customers than staying on the stopping service to transfer at South Yarra.

In total, this amounts to around 100,000 – 110,000 customers (daily, 2031) who would have their journey time extended by one minute.

The table below compares the two scenarios to the current situation.

Table 4: Impacts on customers travelling through South Yarra without interchanging or alighting

Customer Journey	Conditions prior to Melbourne Metro construction	Journey impact: Melbourne Metro without South Yarra Station (2031)	Journey impact: Melbourne Metro with South Yarra Station (2031)	Relative size of market affected
Dandenong & Sunbury line customers travelling through to the city or through to other locations	Stop at South Yarra	+ Do not stop at South Yarra 1 minutes journey time benefit	= Stop at South Yarra	 93,000-102,000
Frankston line customers travelling to St Kilda Road/Parkville	Transfer to Toorak Rd tram at South Yarra/Flinders Street	++ Transfer to Dandenong line at Caulfield, do not stop at South Yarra 5-8 minute travel time saving	+ Transfer to Dandenong line at Caulfield, stop at South Yarra 4-7 minute travel time saving	 8,400-9,200

Customers who have a neutral outcome, but may change their journey

There is also a customer market segment who may change their journey in response to inclusion of a South Yarra interchange option even though it may make a negligible or neutral difference to their journey time. These customers are taking up the option to interchange at South Yarra rather than another location simply because the option is there. Included are customers who will need to change between trains to travel to a particular City Loop station, or to destinations further afield – such as from somewhere on the Cranbourne/Pakenham line to somewhere on the Werribee line, or from Sandringham to Sunshine.

If no interchange station at South Yarra is built, these customers will change at locations such as Caulfield, Flinders Street and Melbourne Central. This behaviour is reflected in the modelled increase in interchange at South Yarra station when the South Yarra interchange option is included, set out in a subsequent section.

Customer Forecasts – Network Context

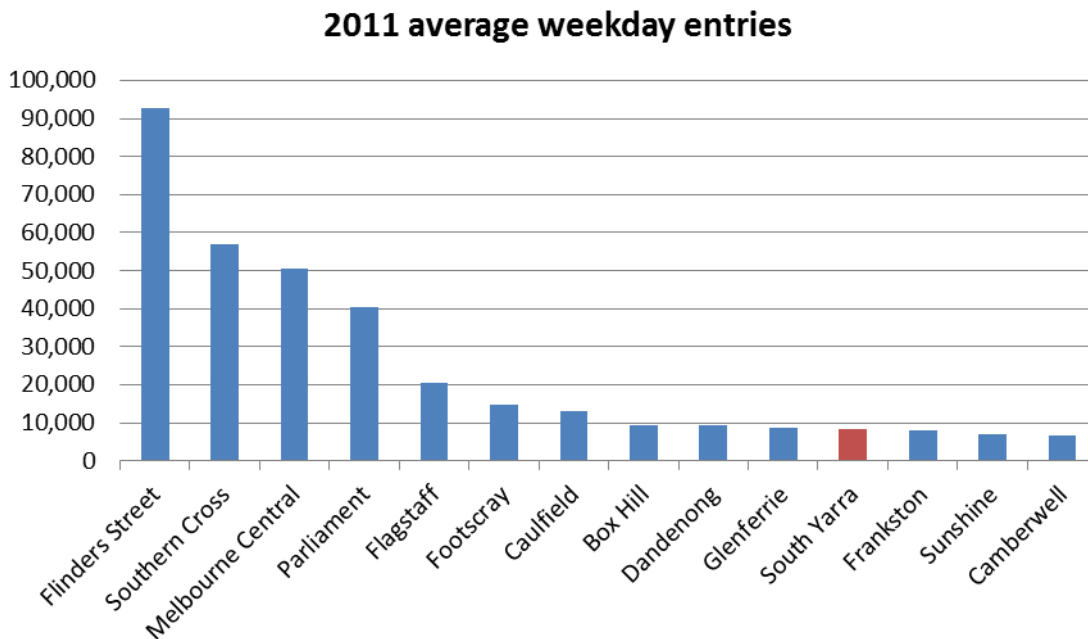
While there are a variety of customer journeys that will experience benefits or disbenefits under the two scenarios, it is important to understand this in the context of how many people will be affected. To understand the relative levels of impact felt on customers and their journeys under

the two scenarios, an assessment of future customer demand and the impact of a new South Yarra interchange station was undertaken. This enables the relative benefits and transport network impacts between the two scenarios to be determined. These impacts are then considered in an economic assessment of the station.

Forecasts of customer demand were undertaken for both scenarios using the Victorian Integrated Transport Model (VITM)⁴. This model forecasts trips across all modes, including trains, trams, buses and private car. Forecasts have been prepared for 2031 and 2046.

Currently South Yarra is the 11th busiest station on the network, with approximately 8,300 entries in 2011 (on an average weekday). By 2031, this is expected to grow to 12,000 station entries⁵ at South Yarra (without inclusion of a South Yarra interchange station).

Figure 6: Ranking of average weekday entries in metropolitan stations (2011)



Station entries are a common way of understanding station activity across the network, and for commuter stations it is reasonable to expect that morning entries are balanced by evening exits. However, at stations like South Yarra, which also serve as a destination for other types of trips, such as shopping, and a public transport interchange station, passenger movements are more complex and daily station entrances, exits and interchanges provide a fuller picture of the total movement of people through a station.

In terms of total movements, in 2031 the South Yarra existing station will be the 21st busiest station, if Melbourne Metro is built as proposed without platforms on the Melbourne Metro line, with approximately 23,000 entries and exits (excluding transfers between rail services). It will also experience around 5,000 daily interchanges between Frankston and Sandringham rail services. This compares to Domain Station (enabled by Melbourne Metro), the 7th busiest, which is expected which is expected to have a total of 66,000 entries and exits (and no interchange between rail services).

⁴ Unconstrained forecasts, which are forecasts that involve not limiting the number of people wanting to use a public transport service due to the carrying capacity of the train, were used to best reflect preferred travel choices.

⁵ Note that station entries exclude rail to rail transfers, including transfers between the new and existing South Yarra Stations. Station entries do include transfers between rail and tram.

Compared to today, South Yarra's ranking falls relative to other stations. Other stations have much higher customer growth, typically because they are experiencing higher levels of development as they grow strongly as activity centres and destinations. As they get busier, increasing numbers of people will find rail a convenient way to access the growing numbers of jobs in these centres. At the same time, many of these centres are also experiencing residential growth, further growing their passenger catchments.

If South Yarra interchange is included, South Yarra (existing and new interchange station) becomes the 13th busiest station, an increase of eight places, with 34,000 entries and exits (an additional 11,000 or 50%) and 38,000 daily transfers – discussed below. The number of entries and exits for Domain Station reduces by around 6,000 (10%). This reduction indicates people are choosing to take the opportunity to board the Melbourne Metro services at South Yarra rather than walking or catching a tram to Domain to board them there, as indicated by a drop in demand at Domain Station.

Quantifying Customer Journey Impacts

Impacts on Different Markets

The inclusion of a South Yarra Metro interchange station has several key outcomes, including:

- Changes to the way people choose to access the rail network;
- Changes to where people choose to change between rail services to get to where they need to travel to; and
- Changes to what mode people are choosing to travel by.

In line with the changes to journey opportunities introduced, the new South Yarra interchange station has the following key effects on existing public transport customers' travel patterns:

- Some customers already using public transport from other locations to get to South Yarra can get there more easily, from both the south eastern and western parts of Melbourne;
- Some customers coming from the south east change modes from tram to train;
- Some customers take the opportunity to transfer at South Yarra instead of other central city stations and Caulfield; and
- Some customers experience a longer travel time as a result of the additional station, with some deciding not to use public transport any longer as a result of the change in service.

These changes are most strongly felt in the inner south east, with some impacts also felt along the Dandenong, Frankston and Sandringham rail corridors, reflecting that the scale of the impacts are mostly at the local level. However, public transport users across Melbourne who travel to, or through South Yarra will feel the impacts of the change.

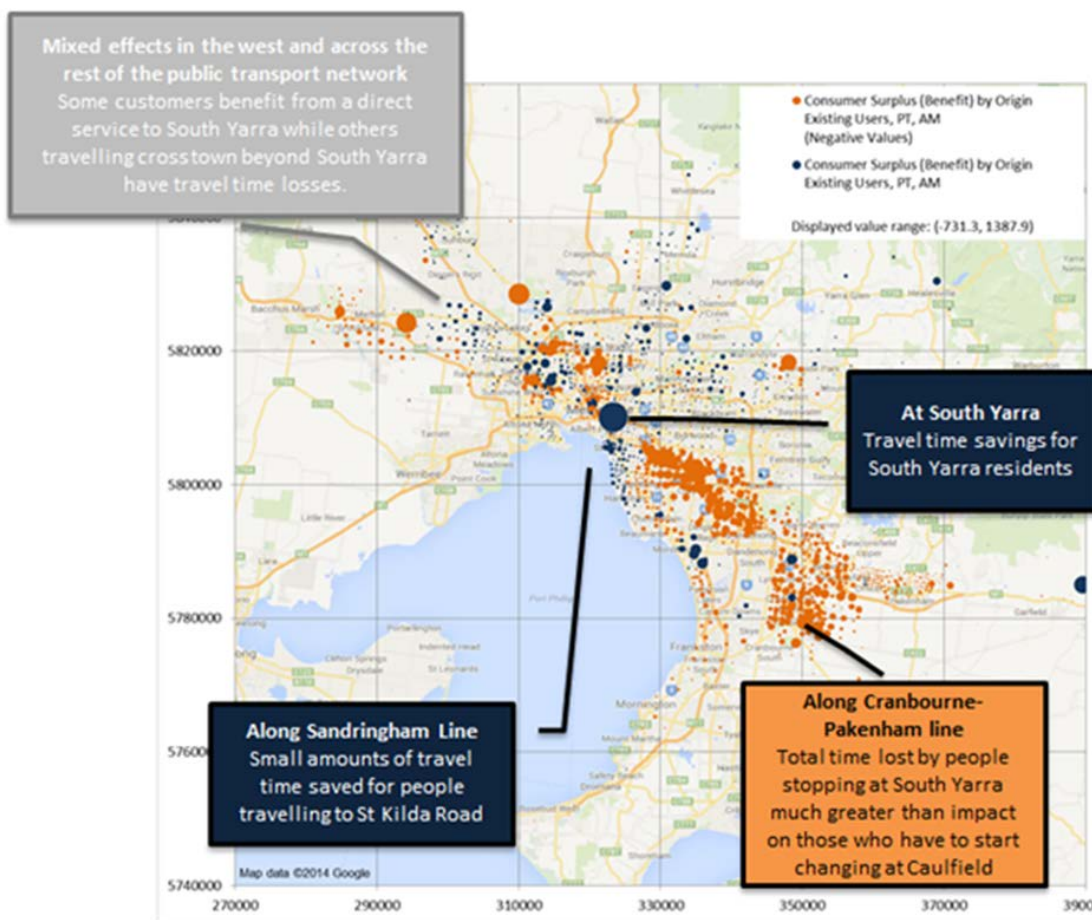
Of the customers who were using public transport in the scenario without a station, Figure 7 maps whether they gain or are disadvantaged in the scenario with the addition of an interchange station at South Yarra. This map identifies modelled travel zones across Melbourne and shows the overall outcome for travellers in each travel zone, looking at the benefits and disbenefits to the various trips made from each zone, with the circles representing the overall size of the impacts. Blue circles are benefits (net travel time reductions) and orange circles are negative impacts (net travel time increases).

For example, the number of customers living on the Dandenong corridor that are disadvantaged by an additional stop outweigh the number of passengers who benefit by an additional stop at South Yarra.

Key features of this map include:

- A substantial blue circle at South Yarra, reflecting the fact that South Yarra residents have travel time savings, and that there is a concentrated population of beneficiaries in this zone;
- A sweep of smaller blue circles along the Sandringham Line, reflecting customers who benefit from interchanging at South Yarra to access Domain, rather than catching one of seven tram services to St Kilda Road;
- A concentration of orange circles along the Cranbourne and Pakenham lines, given the number of customers who would be disadvantaged by one minute outweighs those who would be advantaged by five minutes by a ratio of 50 to 1.

Figure 7: Net Customer Impacts by Transport Zone



Note: Each dot represents a “travel zone” in the model. The size of the dot represents the net travel time saving or loss for people with origins in that travel zone. Blue dots denote a net travel time saving and orange dots denote a net loss.

New and Lost Customers

Some new customers will use public transport instead of using car as a result of a new South Yarra interchange station. There will also be some customers who will no longer use public transport.

Overall, the station leads to an increase in public transport use by 1,000 customers per average weekday in 2031. This is a net result of:

- New public transport customers are attracted by the benefits of a station, generally coming from South Yarra or the Cranbourne, Pakenham and Sandringham lines, as shown in Figure 8.

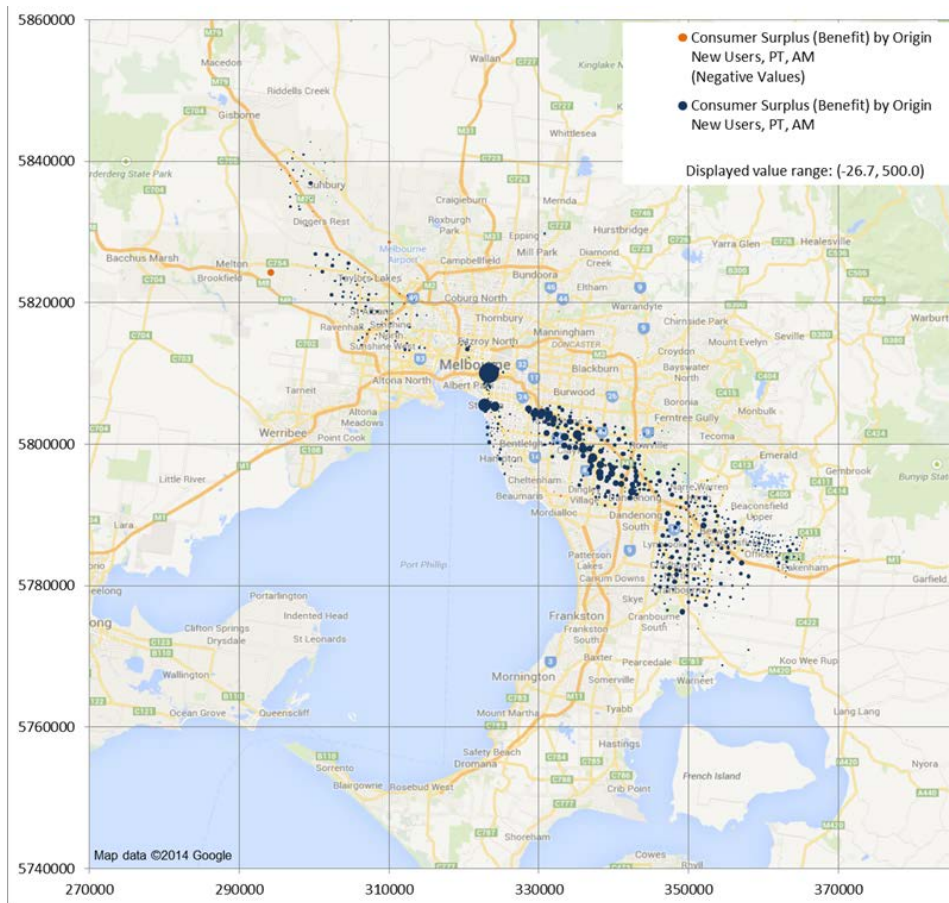
- Some customers stop using public transport, dissuaded by the additional travel time, generally coming from the Cranbourne-Pakenham lines (see break out box for an illustration of existing customer behaviour responses to additional travel time).

This is a relatively minor change in public transport use, representing a very small change in customer usage in context of the broader Melbourne Metro project.

In comparison, the new station at Southland is forecast to lead to an overall increase of approximately 4,000 customers per day, despite being a fraction of the cost of a South Yarra interchange station.

This relatively minor change in customers is a consequence of South Yarra's high levels of service even without a Melbourne Metro interchange station. These include the Sandringham and Frankston lines and tram services, meaning that the additional service offering provided by a new Melbourne Metro station at South Yarra is not significant relative to the service offering that would otherwise have been provided.

Figure 8: Origins of New Customers Attracted by the Benefits of a New South Yarra Interchange Station



Customers' response to changes in journey times – evidence from current customer behaviour

The modelling results in this report do not imply that a large number of people would immediately stop using public transport when a new timetable is introduced that adds a couple of minutes travel time to stop at a new station. Rather, in future years, the amount of patronage on the Cranbourne and Pakenham lines has been modelled to be higher if no South Yarra station was provided as part of Melbourne Metro than if the project did include this station.

Existing evidence indicates that customers are very sensitive to even a few minutes difference in travel time.

The alternating express and stopping all station services in the AM Peak on the Sunbury line provide evidence on the value customers ascribe to saving around a minute of travel time.

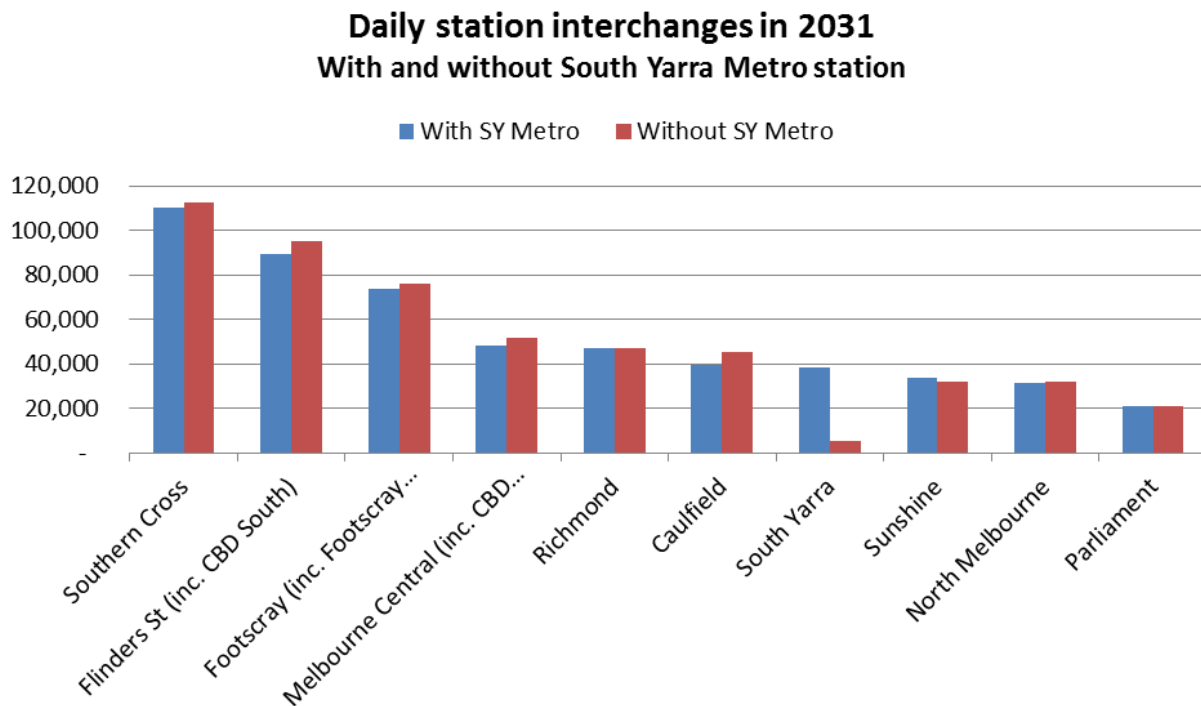
Counts were conducted in March 2013 and October 2014. On average the loads on the express trains (which save a minute of travel time) were 20% higher.

Where are Customers Interchanging?

Approximately 15% of the passengers who currently alight at South Yarra Station transfer to another rail service. South Yarra will continue to be a relatively busy interchange station. If no Melbourne Metro interchange station is developed, it will still experience the 12th highest level of rail to rail station transfers on the metropolitan rail network in 2031 (most stations on the network perform a limited or no interchange function).

With a new South Yarra interchange station, much more interchange activity happens at South Yarra (noting that the demand modelled design is for a very high quality interchange; were an alternative station design that was less conducive to interchange adopted, the attractiveness of South Yarra as an interchange location would be reduced). It is forecast that there will be around an additional 33,000 people transferring between rail services each day (a total of 38,000 comprising 20,000 movements from the new station and 18,000 from the existing station). This would increase its network ranking in terms of station rail to rail transfers to 7th highest.

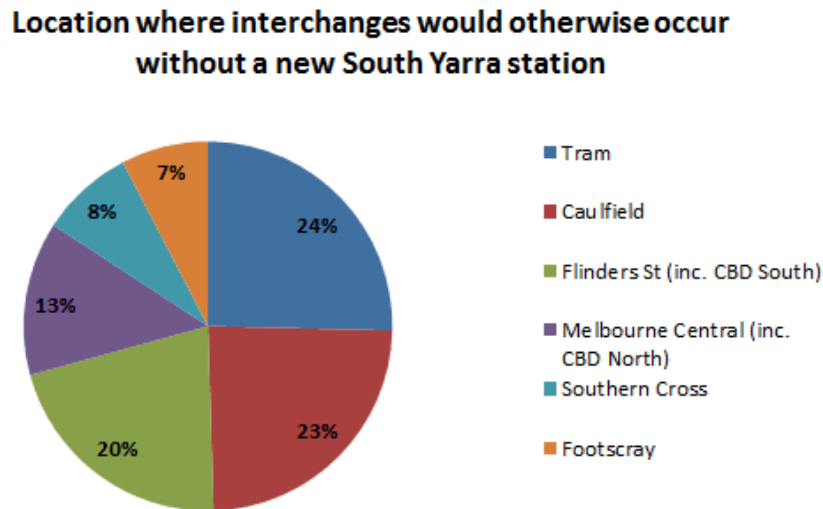
Figure 9: Daily station interchanges with and without South Yarra interchange station



Rather than being a significant shift from any one station, around 76% of these transfers are in line with the decrease in transfers at several stations across the network that offer similar interchange opportunities, as shown in Figure 10. One key shift is from Caulfield, which sees around 6,000 fewer daily interchanges. However, Caulfield Station remains a high rail-rail interchange station with 39,000 daily interchanges, ranking 6th highest for interchanges across the network.

The remaining 24% of people transferring between rail services relates largely to people who previously changed from train to tram along the Sandringham Line. For example, they would change at a station along the Sandringham Line such as Balaclava or Windsor to a tram to access St Kilda Road. With the option to interchange at South Yarra they are catching train to South Yarra and transferring to the Melbourne Metro services there.

Figure 10: Source of New Rail to Rail Transfers Occurring at New South Yarra Interchange Station



Impact on Other Stations

The Melbourne Metro project relieves busy CBD stations, particularly Flinders Street and Melbourne Central. It achieves this by:

- providing new stations at CBD North (Melbourne Central) and CBD South (Flinders Street) for one of the heaviest loaded and fastest growing corridors for customers to enter and exit the network; and
- spreading the distribution of customer interchanges to stations such as Caulfield and Footscray stations.

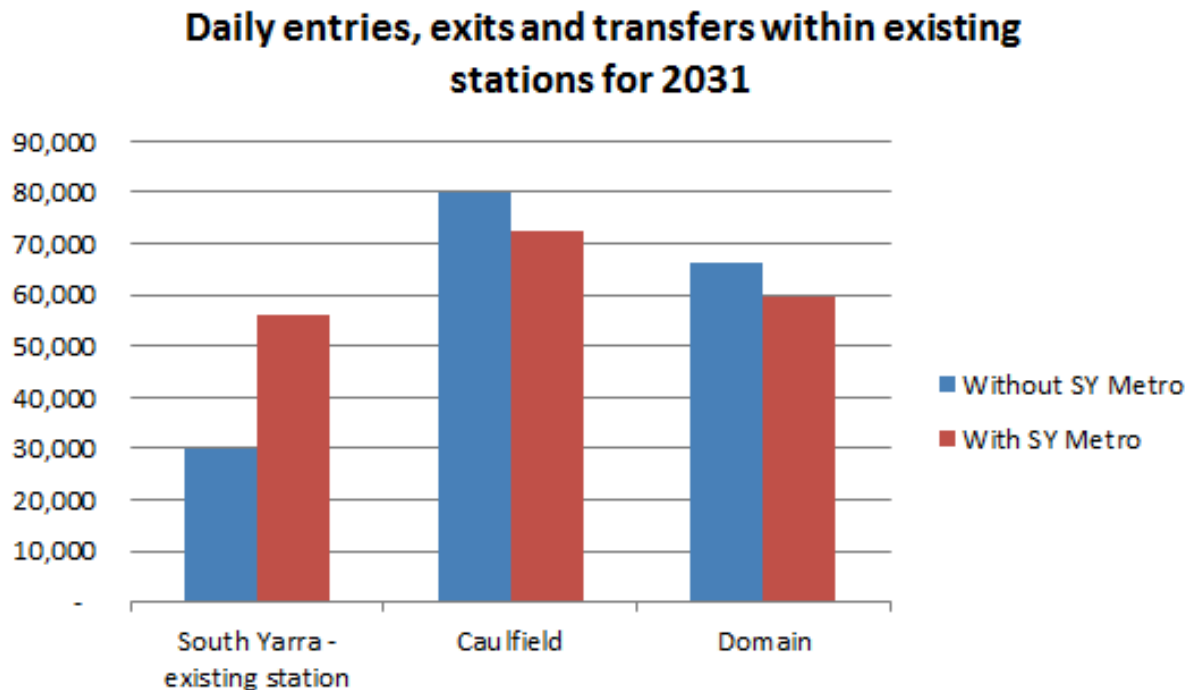
Adding a further station interchange opportunity at South Yarra would only marginally reduce the level of interchange at other stations. It would provide more significant relief to Caulfield Station, as outlined in the previous section, but even so, by 2031 Caulfield Station would need to cope with 50% more customers than today – meaning that Caulfield Station will exceed the capacity of its existing facilities and need to be upgraded irrespective of whether a new interchange station at South Yarra was built or not. Other stations, such as Domain, experience smaller impacts.

By 2031, with the base scope of Melbourne Metro, the existing South Yarra Station would need to cope with an additional 50% more entries. With the addition of the Melbourne Metro interchange station, the combined entries for all the platforms would result in 112% more entries than today's South Yarra Station.

If a South Yarra interchange station is built there is a reduction of around 7,000 station entries and exits at the existing South Yarra Station. However, there is also extensive growth in interchange, around 33,000 transfers back and forth between new and old platforms. Figure 11 illustrates the relative impacts of the new South Yarra platforms on the existing South Yarra, Caulfield and Domain stations. It shows that the most substantial impact is at the existing South Yarra platforms, where the increase in interchange strongly outweighs the decrease in entries and exits, leading to an overall increase of around 26,000 daily customer movements on the existing platforms.

Detailed modelling of crowding and congestion at the station has not been undertaken, but it is expected that there would be negative impacts on passenger amenity without upgrades to facilities to handle this substantial increase in passenger movements (occurring on top of underlying growth at the station). The ultimate configuration of the platforms at South Yarra would also be expected to have a significant impact on the movements of passengers within the station.

Figure 11: Comparison of Forecast Station Entries, Exits and Rail to Rail Transfers



Customers Using the New Station Platforms

The new platforms at the South Yarra interchange station would be used by 16,300 customers per day to come and go from the local area in 2031 (station entries and exits, not including interchange from rail services by people travelling through the station).

More than 87% of these customers would otherwise have used either the existing South Yarra Station or Domain Station (Figure 12). A number of customers are new users of South Yarra Station as a result of the increased accessibility that the new South Yarra Station provides.

Figure 12: Source of Local Area Rail Trips Diverting to New South Yarra Interchange Station

Source	Daily boardings
Existing South Yarra Station	6,900
Domain Station	7,000
New users	2,400
Total	16,300

The use of the new station platforms is driven by:

- Customers that would otherwise have boarded the existing platforms at South Yarra to catch a Frankston or Sandringham service (eg. to the CBD) taking advantage of the additional services on the Dandenong corridor;

- Customers who would otherwise find it easier to walk or catch a tram to board the Melbourne Metro line at Domain or Flinders St;
- Customers that would have otherwise transferred from a Dandenong service at Caulfield onto a Frankston service and emerge as users of the South Yarra existing station;
- Customers from a Sunshine/ Sunbury service who would otherwise transfer:
 - at Flinders Street to catch a Frankston or Sandringham service to South Yarra, or
 - at Domain to board a tram service on Toorak Road to get to South Yarra; and
- Customers who would otherwise find it easier to travel by tram to access St Kilda Rd and the CBD.

Train and Tram Crowding

Impact on trams

The Melbourne Metro Rail Project (without an interchange station at South Yarra) will relieve crowding on trams on St Kilda Road. by around 30%.⁶ The project does this by relieving the peak load point on this tram corridor (which in the AM peak occurs in the south bound direction at Federation Square), using the counter-peak train capacity to carry people from the CBD to Domain Station. Including a South Yarra interchange station reduces the number of customers travelling on St Kilda Road trams from the south east, but makes minimal further impact to the overall peak loading on trams travelling along St Kilda Road.

Impact on trains

Inclusion of a South Yarra interchange station will lead to an increase in average train loads on services travelling through the station. This is due to Cranbourne-Pakenham line trains being more fully loaded than the other lines. Furthermore, more people are using the station. This leads to an increase in the average load on trains departing South Yarra.

This increase includes more people from the Sandringham Line and stations between Caulfield and South Yarra changing onto trains from the Cranbourne-Pakenham Line at South Yarra – the busiest point on the line – to travel one station to Domain. They would do this instead of catching the tram along Toorak Road or any of the other trams that interchange with the Sandringham line.

Service Frequency and Capacity at South Yarra

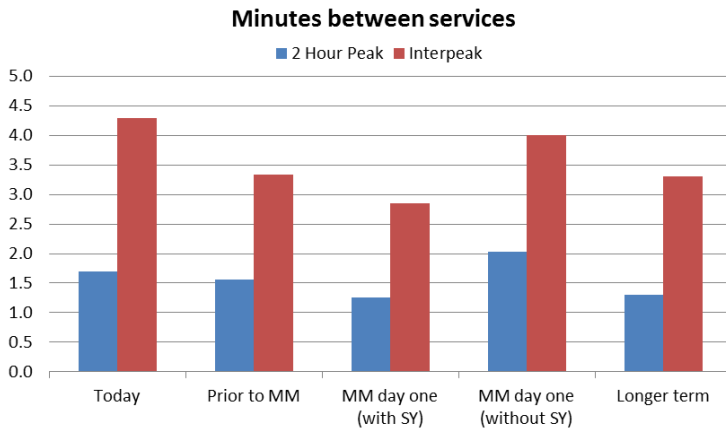
South Yarra is currently very well serviced by public transport, with trains departing on average every 1.8 minutes (110 seconds) towards Flinders Street in the morning peak, complemented by tram networks in the area including Route 8 that operates along Toorak Road to Domain. This is planned to improve to 95 seconds before Melbourne Metro opens.

On opening of Melbourne Metro, trains would be slightly less frequent at about every two minutes in peak (a change of about 10 seconds), as Cranbourne-Pakenham services divert into the tunnel (Figure 13). Adding a station would make trains more frequent instead, running every 1.25 minutes (75 seconds).

⁶ This figure is based on early analysis and is currently being updated.

In the longer term, more trains will run through South Yarra as additional services are scheduled to provide capacity on the Frankston and Sandringham corridors, with peak period services in the future being more frequent than offered before the project

Figure 13: Train Frequency at South Yarra – AM peak



Comparison with Other Stations

Compared to other busy stations, South Yarra will have a very high number of train services whether a new station is added or not. It will have more trains servicing it than Parkville or Domain.

In particular, as illustrated in Figure 14, the service level proposed for South Yarra compares well to stations at other busy locations in inner Melbourne, such as Parkville and Footscray, particularly when patronage is taken into account. To highlight just one example, South Yarra with no Melbourne Metro interchange will have approximately 87% of the peak hour service frequency of Footscray Station for approximately 13% of the passengers.

Figure 14: Comparison of the Number of Peak Services and Patronage (2031)

Station	No. services in 2 hour AM peak (inbound)	Boardings and Alightings in the 2 hour AM Peak	Average no. people getting on & off per train	Comments
South Yarra (if no additional station)	59	7,700	130	
South Yarra (incl. new station)	96	17,400	180	
Parkville	32	7,000	200	Figure relates to inbound services from Sunshine only, for comparability. Total entries and exits in is around 23,000
Footscray	68	58,100	170	Excludes regional
Camberwell	42	5,700	135	
Richmond	116	29,500	255	

Road Congestion Relief

Overall, the addition of a station at South Yarra would slightly reduce vehicle kilometres by 20,500 per day in 2031 as a result of the increase in public transport patronage (that is, as a result of more people using public transport rather than driving).

This increases the overall reduction in vehicle kilometres achieved by the Melbourne Metro project (with no interchange at South Yarra) by 0.02%, suggesting that the inclusion of a Melbourne Metro interchange station would have a negligible incremental impact on road congestion.

Economic Assessment

Economic analysis places a value on the impacts, both positive and negative, of a project according to Australian Transport Council National Guidelines. These impacts include travel time savings for public transport users and car drivers, environmental emissions impacts, and health benefits from travel behaviour change and are evaluated over a 30 year period beyond project opening.

These impacts are compared to the cost of undertaking a project to determine a benefit cost ratio. The analysis of the South Yarra interchange station considers the relative impacts of including this option relative to undertaking the Melbourne Metro Project without the South Yarra interchange station.

Analysis of the economic outcomes of including South Yarra interchange station highlights the following key economic factors, which are summarised in Table 5: Incremental Economic Benefits and Costs according to the value of headline categories and the relative contribution of key components.

Adding a South Yarra interchange station will lead to an overall increase in the Present Value in the Melbourne Metro project benefits stream of \$140 million. This is compared to a present value cost of \$644 million.

There is a net decrease in benefits to public transport users of about an additional 1,500 hours of travel time a day in 2031. These disbenefits accrue to existing users, as there is an overall increase in in-vehicle travel time (i.e. time spent on the train). There is a minor benefit to the new users, who are attracted to making trips by public transport through improved local travel networks. The station will have limited impacts on over-crowding and reliability.

Road users will see a minor net increase in benefits, with a slight reduction in road congestion over the project life.

There is a limited impact on most externalities, such as carbon dioxide emissions and accident savings (minor benefits due to reduced vehicle kilometres). The increase in people walking to access public transport services leads to a more substantial positive increase in health benefits. This increase in walking will include both new public transport customers and existing users who change their journey to incorporate more walking for an overall decrease in travel time (for example, walking further to South Yarra station rather than to a local tram).

The project also sees residual value benefits, which are generated from the value of land that is acquired for construction, but which can be sold once construction is completed, as well as from the assumed value of new infrastructure.

Overall, the proposed new South Yarra interchange station delivers a poor outcome, with an estimated incremental Benefit Cost Ratio (BCR) of 0.2 and a Net Present Value of -\$535 million. It is worth noting that the benefits have been assessed on the basis of a station design that has the highest quality interchange, which corresponds with the highest cost option. Were a cheaper design option with poorer interchange to be selected, the benefits could be expected to reduce from that shown here.

Table 5: Incremental Economic Benefits and Costs of adding a South Yarra interchange station

	Present Value (\$million)	Components
Project Cost	\$644 (increase in project costs)	Capital cost Operating and maintenance costs (small)
Project Benefits		
Public Transport Consumer Surplus	-\$39 (decrease in project benefits)	- - Existing Users + New users
Highway (car driver) Consumer Surplus	\$4 (increase in project benefits)	+Travel Time ++VOC
Unperceived/ Misperceived Cost of Travel	\$4 (increase in project benefits)	-Vehicle Operating Costs + Tolls + PT Fares
Other Societal Benefits	\$34 (increase in project benefits)	+CO2 Emissions +Other Emissions +Accident Savings ++Health Benefits (walk increase)
Residual Value	\$105 (increase in project benefits)	+ value of replacing the infrastructure at the end of project life ++ value of acquired land at opening
Total Net Benefits	\$108 (increase in project benefits)	
NPV	-\$535	Adding a South Yarra interchange station to the Melbourne Metro project would reduce the Net Present Value of the Melbourne Metro project
BCR	0.2	The incremental BCR of adding a South Yarra interchange station is 0.2. This reflects that there is a present value social-economic return of 20 cents per dollar spent. When added in to the overall project economic appraisal it would reduce the project's BCR.

Note: minor discrepancies in totals are due to rounding.

Sensitivity analysis

Sensitivity analysis has been undertaken and the results are summarised below. This shows that the economic impact remains negative and BCR below 1.0 when:

- Costs are reduced to align with Option A;
- Dis-benefits relating to travel time increases for “through customers” are removed, with only positive benefits of the interchange station included in the assessment; or
- Different discount rates are applied (increasing or decreasing the value of future costs and benefits).

In the outcomes of these tests, it should be noted that the BCR rises with a lower discount rate. This reflects that with lower discount rates the NPV of the benefits increases by a greater percentage than the NPV of costs.

The core economic assessment was based on a 7% discount rate.

Table 6: Summary of BCR sensitivity tests

Incremental economic benefit/disbenefit	Economic Impact (Present Value)	BCR
More conservative land use assumptions	-\$391 million (negative net present value)	0.2
Core economic result with dis-benefits relating to one minute travel time for “through” customers removed	-\$437 million (negative net present value)	0.3
Core economic result, but with 4% real discount rate	-\$516 million (negative net present value)	0.4
Core economic result, but with 10% real discount rate	-\$477 million (negative net present value)	0.1

Wider Impacts

The Wider Economic Benefits (WEBs) of the project are not captured in the above Cost Benefit Analysis (CBA).

The National Guidelines for Transport System Management (NGTSM), which is currently being revised, identified 3 principal types of WEBs that are likely to be relevant for most transport and/or urban renewal projects in Australian cities.

These include:

- WB1 – Agglomeration economies
- WB2 – Labour Market Deepening
- WB2a – Increased labour supply
- WB2b – Move to More Productive Jobs
- WB3 – Increased output in imperfectly competitive markets

Australian and overseas studies demonstrate that:

- WEBs tend to be higher for projects that have relatively strong conventional benefits (conventional BCR and NPV); and
- WEBs typically account for between 30% to 50% of total benefits (including conventional benefits and WEBs).

With the conventional CBA for South Yarra option demonstrating that it has a BCR of 0.2, it is reasonable to assume that a more detailed analysis that also considers WEBs is unlikely to make the South Yarra option viable from economic, social and environmental perspective.

Other investment options

Consideration was given to other potential investment options that may provide benefits to public transport users and/or the local community. However, these potential benefits are not directly comparable to the benefits that would be provided by a Melbourne Metro interchange station at South Yarra and do not form part of the current scope of the Melbourne Metro Rail Project.

South Yarra will continue to be well-served by public transport, including frequent trains. Melbourne Metro will enable a new short starter service (meaning that trains will start empty or nearly empty at South Yarra during peak hours) On these services, customers will easily find a seat at South Yarra.

With the potential exception of upgrading Caulfield Station, the potential need for these alternative/additional works is unrelated to the Melbourne Metro Rail Project. Potential investments would be subject to normal prioritisation and funding processes.

Improving public transport in the south east

South Yarra is currently very well serviced by public transport, including by train at the existing South Yarra Station (Pakenham, Cranbourne, Frankston and Sandringham lines), tram (currently routes 8, 72 and 78⁷) and bus (including major routes along Commercial Road and Punt Road).

Improvements to tram and bus services operating between the Sandringham and Dandenong lines, have the potential to provide an attractive option. This could include on-road priority. For example, complementary network improvements involve enhancing tram services operating between Balaclava and Caulfield stations.

Public transport customers who wish to travel between the Sandringham and Dandenong corridors are able to make use 8 bus or tram routes that provide direct connections between the two corridors. In many cases it is of comparable travel time, or faster, to use these services, rather than catching the train in to South Yarra and back out again.

Improvements to public transport in the south east will benefit passengers travelling between the Sandringham and Dandenong lines and passengers travelling from the South East into the CBD.

PTV is working to plan and deliver improvements to tram and bus routes, that will simplify and improve priority, reliability and potentially travel times for public transport customers.

Potential network upgrades include providing a Malvern Station to St Kilda Road tram service with a new tram to rail interchange at Malvern Station, and a service from Caulfield Station to St

⁷ Potential tram timetable changes will result in route 8 being discontinued. However, route 55 will be modified and will run from West Coburg to Toorak, replacing the current route 8 service along Toorak Road between Toorak and Domain.

Kilda Road, with a new tram to rail interchange at Caulfield Station. There could also be improved connectivity from South Yarra to the west of the CBD with the diversion of Route 8 up William Street and a new terminus on Toorak Road at Toorak Station.

The network changes are planned to lead to an enhanced St Kilda road service, including the operation of a regular ten-minute *“turn- up and go”* frequency on each of the nine St Kilda Rd routes in the inter-peak period (this is enabled by the diversions of Routes 8 and 5, which will run to the west of the CBD).

The Melbourne Metro project will also benefit tram users by providing over-crowding relief along the St Kilda Road corridor for customers. It will also enable more tram routes to serve the Southbank area including South Melbourne (Clarendon St), Melbourne Exhibition Centre and Casino rather than having to stay on St Kilda Road, thereby providing customers with improved access to a greater choice of destinations across Inner Melbourne.

Better Station Access at Caulfield Station

Improvements to the quality and capacity of the interchange at Caulfield to enable customers to more easily transfer between the Dandenong and Frankston lines would help to mitigate the effort to undertake this transfer. Improving service frequencies will also help to reduce times taken to connect between services.

An upgrade to Caulfield Station would improve outcomes for the additional passengers using the station under the Melbourne Metro base option to transfer to Frankston lines to access South Yarra Station. Over time, demand pressures are expected to continue to grow at Caulfield Station, and Melbourne Metro is expected to drive further increases in demand for interchange at the station.

Better Station Access at the Existing South Yarra Station

The main focus of growth in South Yarra is in areas north east of South Yarra Station at Forrest Hill. The proposed new South Yarra Interchange Station would be at the distant end of the station to this growing precinct than potential upgrades to the north of the station.

Potential upgrades to South Yarra Station could involve:

- Extending the existing concourse;
- Constructing a new concourse at the northern end of the station;
- Installing escalators and lifts to enable compliance with to enable compliance with the Disability Discrimination Act; and/or
- Adding a new entrance on Yarra Street (providing improved access for the Forrest Hill precinct which would reduce walk times between this fast-growing area and the existing station).

This could improve station access and amenity, reducing crowding at the main entrance on Toorak Road.

The existing tram stop outside South Yarra Station (stop 30) could be relocated to better connect with the station and upgraded into a “super stop”. This would achieve compliance with the Disability Discrimination Act, improve customer experience and facilitate better interchange between public transports modes.

Conclusion

This report has presented a forecast of customer outcomes with and without a new South Yarra interchange station. Implementation of a station has implications for both passenger journeys and usage of other parts of the public transport network.

A South Yarra interchange station will benefit some customer journeys, while disadvantaging others. Over 100,000 customers per day would be a minute worse off if the South Yarra Interchange Station is included, compared to less than 14,000 customers who would be between one and ten minutes better off. In aggregate (i.e. taking into account all journey time savings and all slower journey times), the addition of a new station at South Yarra would add an additional 1,500 hours of travel time per day for public transport users in 2031.

Those who will benefit from the South Yarra interchange station option include people travelling to and from South Yarra, particularly those on the Dandenong corridor who would otherwise have to interchange at Caulfield or access the line at Domain (if travelling from South Yarra or nearby). Passengers who would transfer at South Yarra to use the Dandenong line to get to St Kilda Road or Parkville will benefit if an interchange is built; however this represents a small share of affected customers, and they are well-served by other public transport alternatives.

These new interchange option and associated improvements to some journey times does result in a net uplift of around 1,000 public transport users (on an average weekday), particularly on the Dandenong, Frankston and Sandringham lines. These customers are taking advantage of the improved opportunities to access or interchange at South Yarra. Overall the interchange station option leads to a net decrease in benefits to public transport users, as those who experience increased journey times outnumber those who benefit.

The interchange station would generate a significant increase in customer activity at South Yarra Station, particularly customer movements between rail lines (rather than exiting to the local area), with an increase in 33,000 daily interchanges. Entries and exits across the two stations would increase by 11,000 movements, for a total of 34,000 daily entries and exits across the old and new stations. However, while these uplifts are largely drawn from elsewhere on the public transport network, the new station's overall impact on the public transport network is modest as the changes felt at the station are a result of shifts in activity from a range of locations. This means that there is limited relief to customer movements at other stations and the tram network.

Caulfield and Domain stations experience the strongest impacts. However, while Caulfield Station will experience a daily reduction of around 6,000 daily interchanges, this is low in the context of overall growth in activity that will occur at the station. Over time, enhancements are likely to be required at Caulfield irrespective of whether a South Yarra interchange station is built or not. Domain Station will also remain a busy station, reducing from 66,000 daily entries and exits, to 60,000 if South Yarra interchange station is built.

The benefits of a new South Yarra interchange station are very low compared to the construction costs. This results in an overall Benefit Cost Ratio for the South Yarra interchange station option of 0.2. Key to this result is South Yarra already having a high quality public transport network, and that Melbourne Metro without the South Yarra interchange station provides appreciable benefits such as improved service frequencies and capacity. Therefore any improvements result in small net benefits to customers.