

Melbourne Airport Rail Link – Rationale and Options

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Introduction

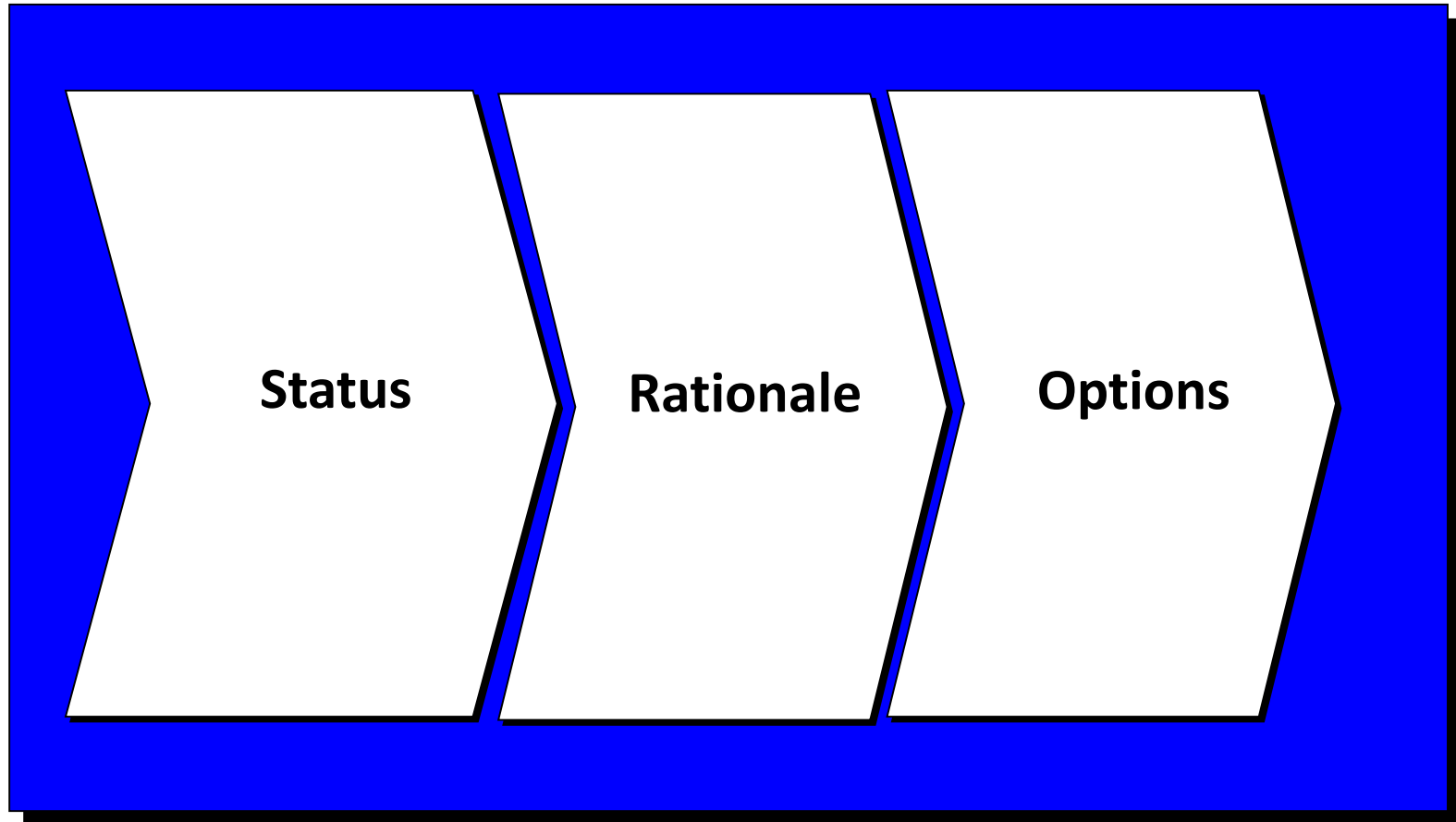
Status

Rationale

Options



This paper is a personal revisit of the Melbourne Airport Rail Link project – its current status, rationale and options



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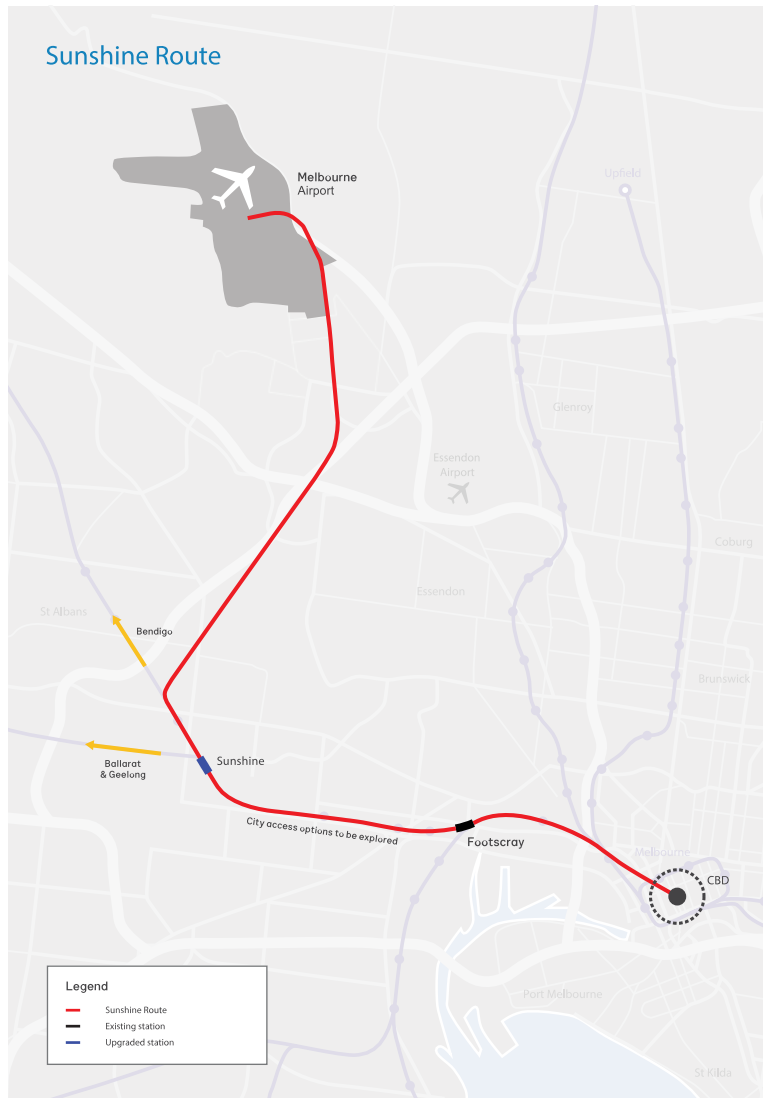
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There is all party and State/Federal Support for the airport rail link – The Sunshine option was selected...

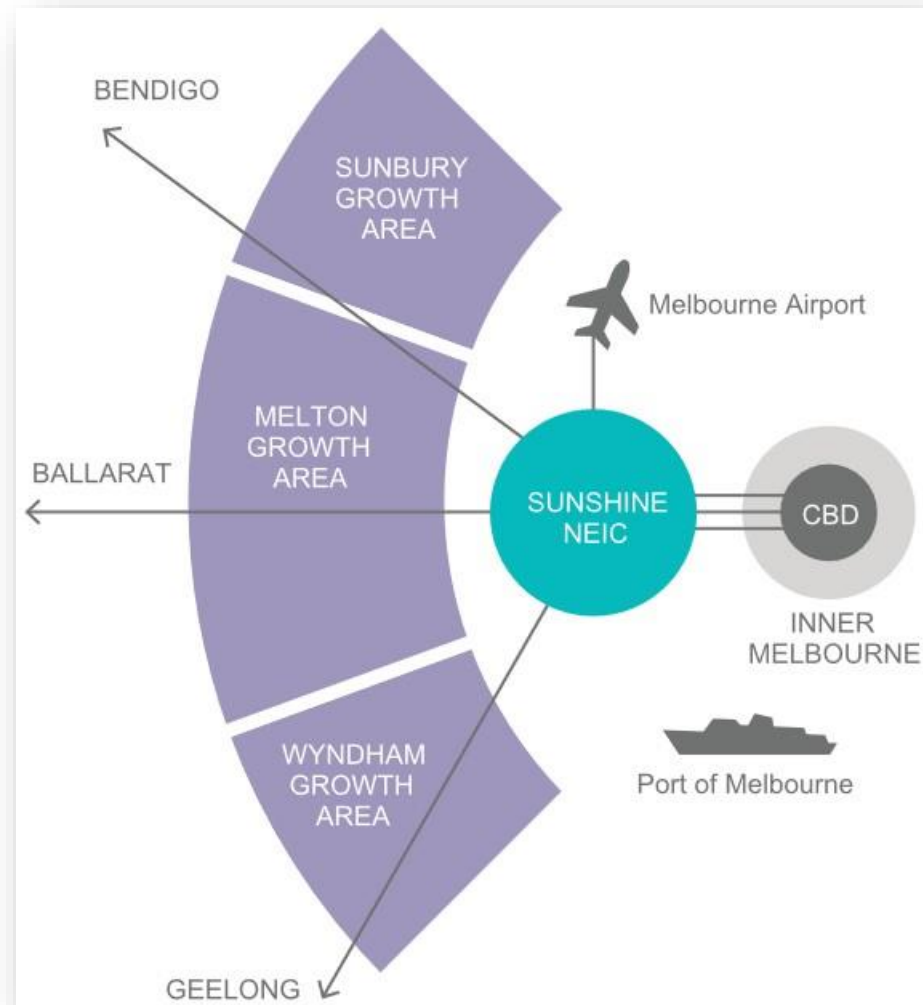




Melbourne Airport Rail Link – Current Status

- State Govt developing a business case – selected the Sunshine route as the preferred route in a 2012 study
- Next step is the business case due 2019/2020
- Construction set to begin in 2022

Melbourne Airport Rail Link – Rationale for Sunshine Route


- Superior connections to more areas of Melbourne via the Metro Tunnel
- Superior connections to Regional Victoria via Sunshine Interchange
- Earlier delivery at a lower cost



A world-class Airport Rail Link

AirRail Melbourne has developed a proposal to accelerate the delivery of a world-class, fast, reliable and competitive Airport Rail Link Victorians can be proud of.



Legend
 - Airport Rail Link
 - Metro Tunnel
 - City Loop
 - Airport Rail Station
 - Surface section
 - Tunnel section
 - Existing track

Unlocks opportunities for either:
 • High speed rail to Sydney
 • Northern rail connections to Seymour and Shepparton
 • Suburban rail loop

MELBOURNE AIRPORT

Integrated underground Airport Station

For Geelong, Wyndham Vale and the west:
 Unlocks more frequent, electrified services and high speed rail

TO/FROM SUNBURY AND BENDIGO

TO/FROM MELTON/BALLARAT AND WYNDHAM VALE/GEELONG

27km of new, dedicated tracks

SUNSHINE STATION 'SUPER-HUB'

Southern Cross Station

TO/FROM CITY LOOP TRAM, UBER, TAXI, BUS

TO/FROM SOUTH EAST

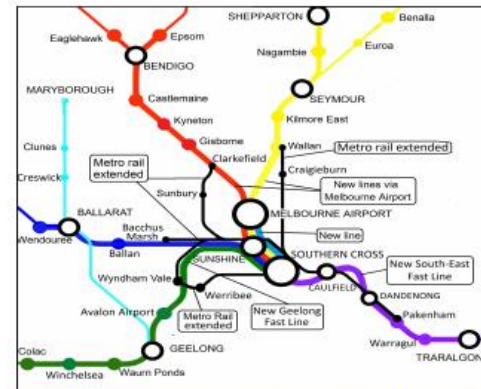
AirRail Melbourne investment in revitalising Sunshine Station precinct

Believes congestion on M1, M2 and M80

New Metro Tunnel from south east will enable interchange at Sunshine

Sunshine Express Link
 Dedicated track for Airport trains, Geelong and Victoria's regions

Seamless connections via Victoria's busiest transport hub, Southern Cross Station



Connectivity!

Melbourne's population is set to double in the next 35 years.

We need high capacity, connected transport systems that get people around the city and to and from peri-urban and regional centres quickly and safely.

Only a heavy rail, networked solution has this capability.

These diagrams show how AirTrain will provide connectivity to the CBD, to regional cities via the InterCity rail network, and to all suburbs with a quick interchange at Sunshine for Melbourne Metro, and at Southern Cross for other suburban lines.



Why is AirTrain the best solution ?

Alternative proposals do not have the capacity, engineering or operational solutions to provide service quality that Air Train provides

- Driverless Monorail Direct to the Airport**
 - Has around half the capacity people/hour of heavy rail
 - Doesn't provide a network solution
 - Doesn't connect airport with Sunshine, western suburbs, any Melbourne Metro lines or regional cities
 - Elevated structure above Tullamarine Freeway likely to reduce freeway capacity
 - Unproven route into city
 - Unproven performance
 - Too slow - few overseas examples and all appear to have 80km/h or lower operating speed
- Alternative metro route via Maribyrnong**
 - More tunnelling and more underground stations with higher capital cost than AirTrain via Sunshine
 - Too slow - stops at several stations and hence not suitable for integration with regional network
 - Doesn't connect airport with western suburbs or Melbourne Metro
 - Regional connections all require travel via Southern Cross
 - Maribyrnong defence site will require years of expensive remediation
 - Mixes airport passengers with suburban commuters on standard metro trains
 - Less reliable than a dedicated line segregated from the metro network

Shepparton News 13 April 2018

"The fact that there is no rail link from the airport to the CBD... is a major transport planning failure... The fact that there is no rail link from the airport to the CBD... is a major transport planning failure... The fact that there is no rail link from the airport to the CBD... is a major transport planning failure..."

Only Heavy Rail has the capacity to deal with the future growth in air traffic at Melbourne Airport; Only dedicated heavy rail can reliably deliver 15 minute journeys CBD to Airport.

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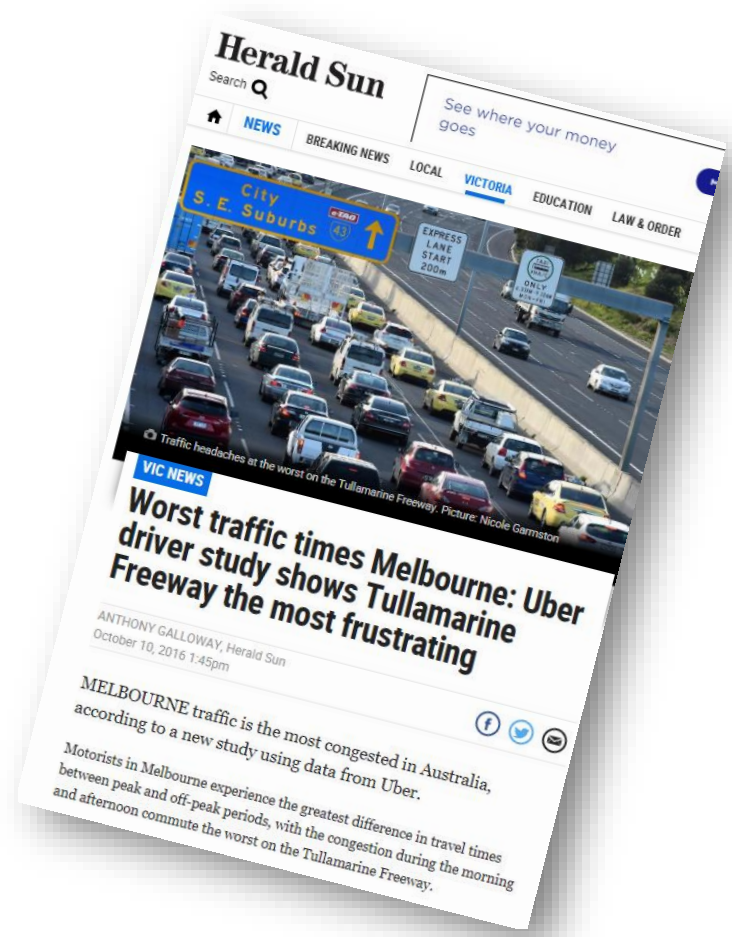
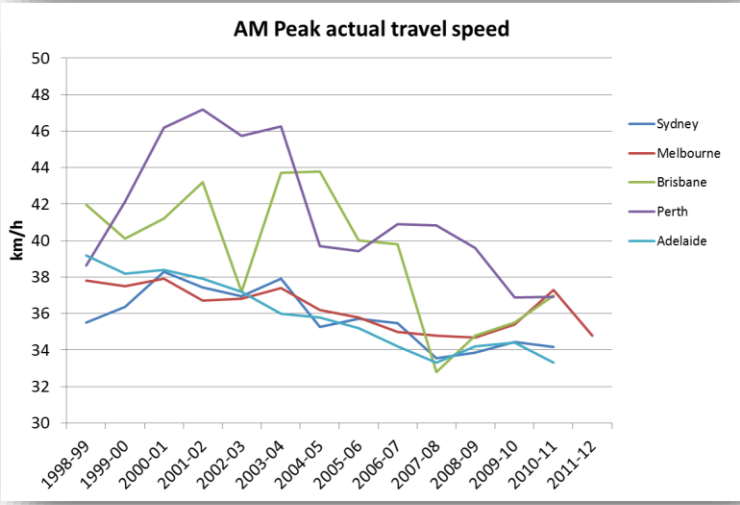
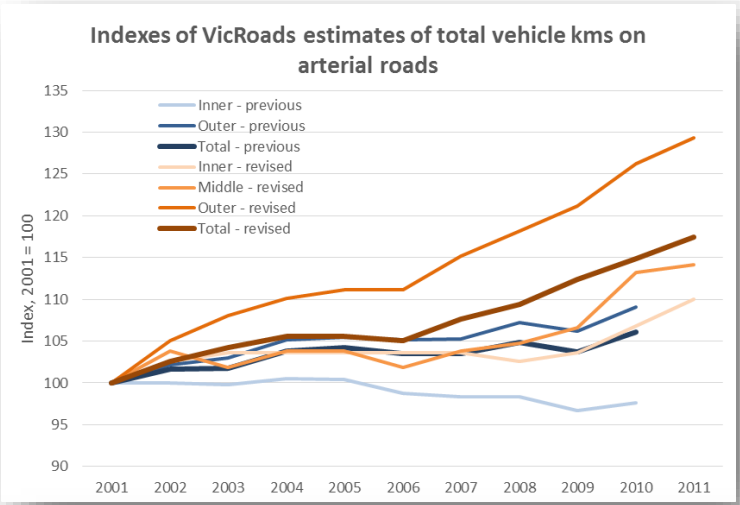


State Govt has shown some of the rationale in its recent publications

	Major International Airports						
	Sydney Kingford Smith Airport	New York JFK Airport	Singapore Changi Airport	Melbourne	Paris Charles De Gaulle Airport	Hong Kong International Airport	London Heathrow Airport
Approx current annual air passengers	43 million	59 million	62 million	35 million (68 million in 2038)	69 million	73 million	78 million
Transport Infrastructure	1 freeway 1 rail line	2 freeways 2 rail lines	1 freeway 1 rail line	1 freeway	2 freeways 2 rail lines	1 freeway 1 rail line	2 freeways 3 rail lines

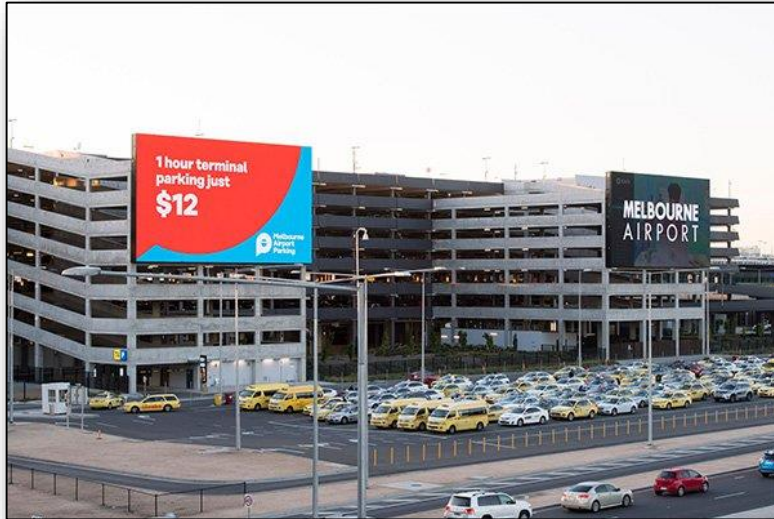
- Melbourne expected to grow to 8-million by 2051
- Airport demand expected to increase from 35-million to 68-million passengers by 2038
- Forecasted that 40% of growth to 2031 will be in regional cities of Geelong, Ballarat or Bendigo.

Growing traffic, slower speeds and congestion are the norm as a result of car access

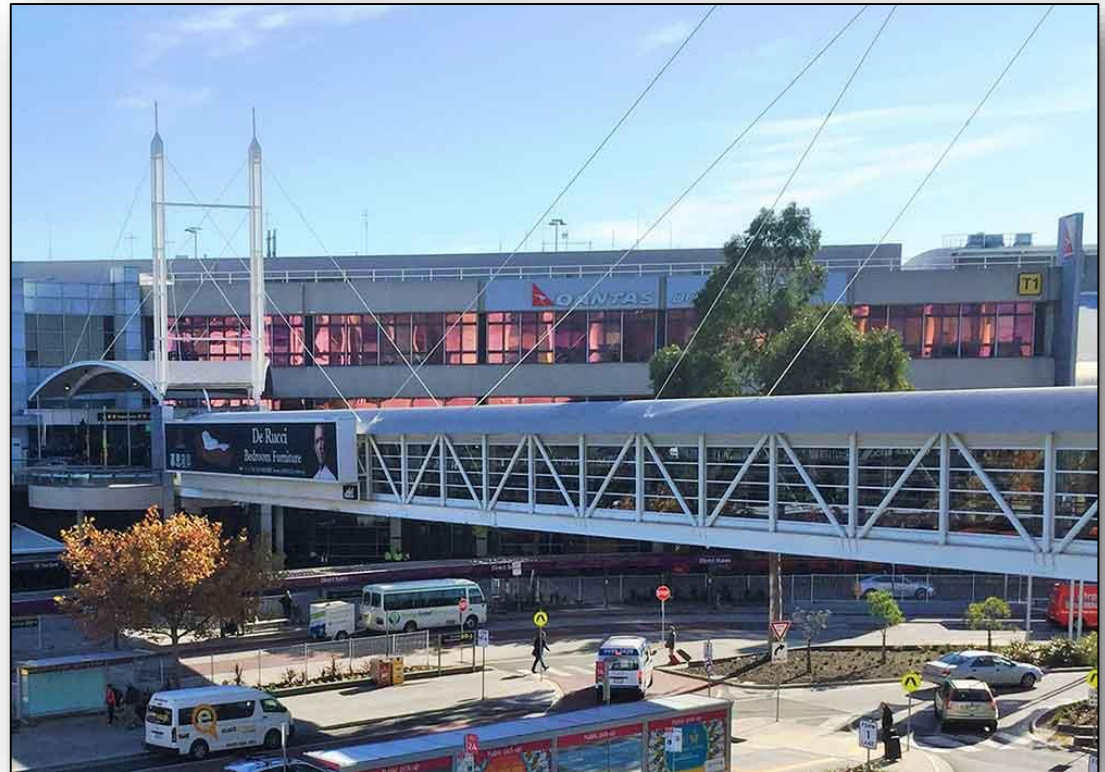


Source: Charting Transport

And Airport Parking Capacity grows

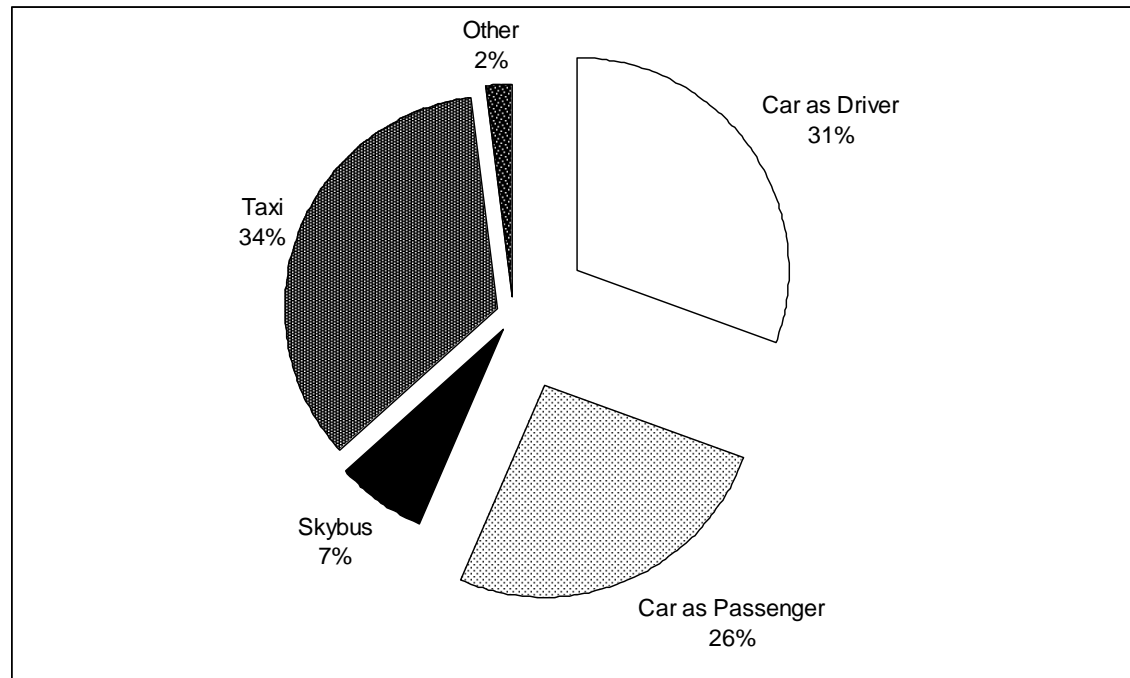


[a pet peeve; lack of ped grade separated terminal access]



Car access dominates land side travel; 91% mode share bus 7% (1992)

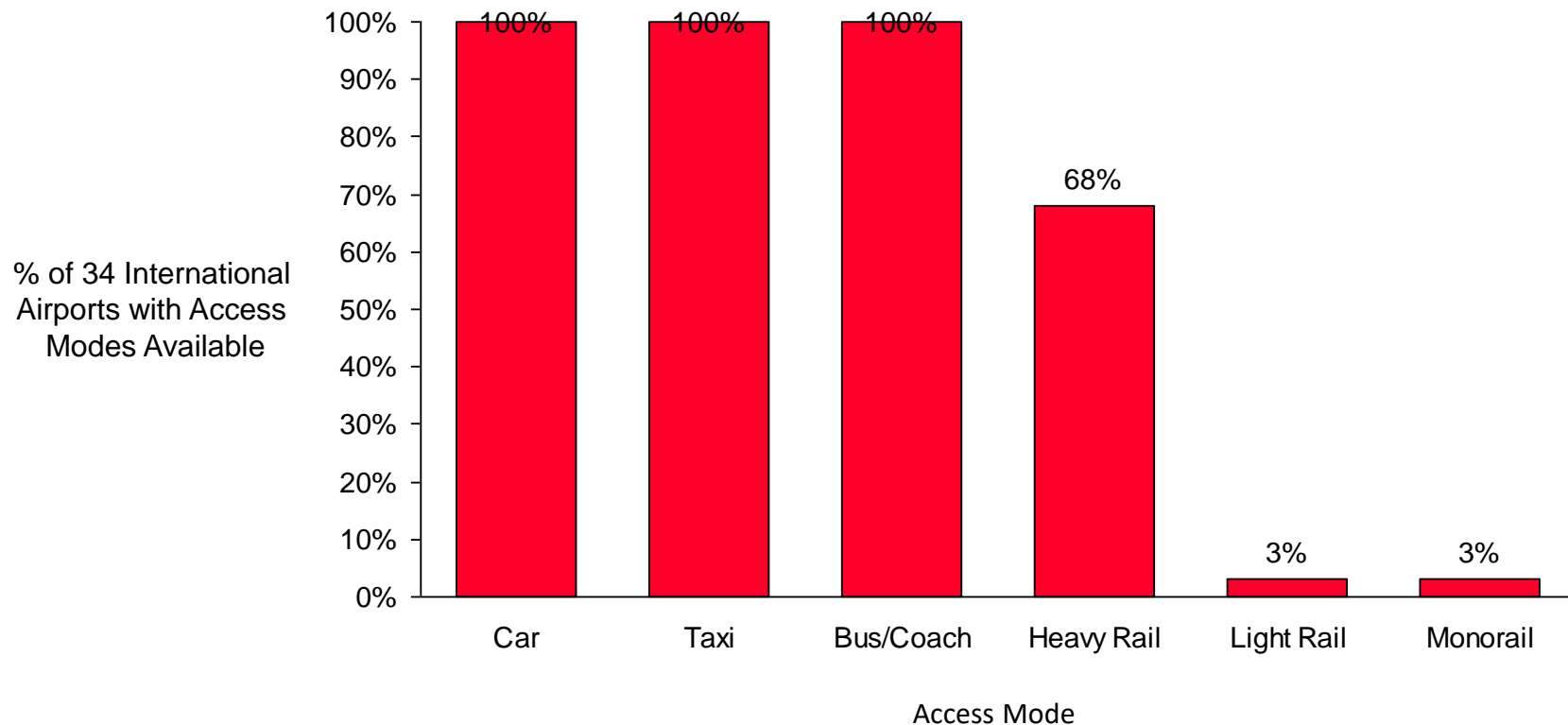
Mode Share of Travel to Melbourne Airport - Airport Travellers



Source: Ove Arup (92) 'Proposed Rapid Transit Link: Melbourne CBD to Melbourne Airport - Demand Study'

In a sample of 34 international airports (2000); over 68% had rail

Access Modes Available at a Sample of 34 Major International Airports

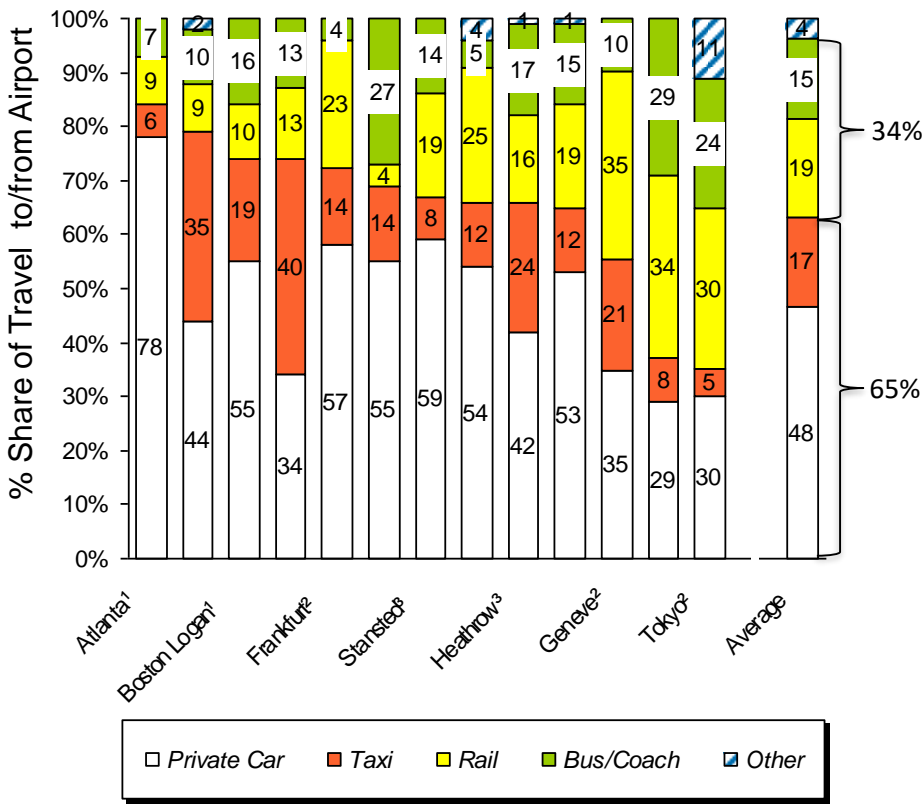


(1) Authors analysis sourced from a literature and internet search - current at Oct 2000 - Considers access from associated urban areas to/from the airport - Internal/Local Access not included

Note: Following Airports included in the sample: Amsterdam, Atlanta-Hartsfield, Birmingham, Boston-Logan, Brisbane, Brussels, Changi (Singapore), Chicago - Midway, Chicago - O'Hare, Cleveland Hopkins, Dallas Fort Worth, Denver, Dusseldorf, Frankfurt, Geneva, Haneda - Tokyo, Hong Kong, Kansai, Las Vegas, London Gatwick, London Heathrow, London Stansted, Manchester, Munich, Newark, Orlando, Paris Orly, Paris, CDG, Philadelphia Int, Seattle, Tampa, Washington, Zurich, Vancouver

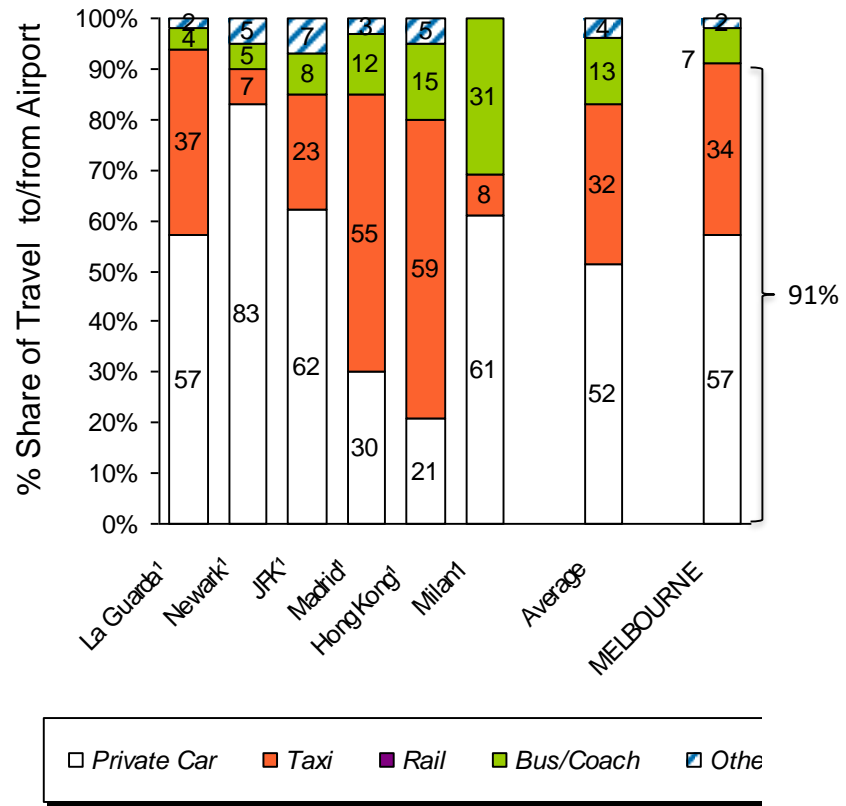
Airports with rail access have significantly lower car usage (& traffic congestion)

Mode Share for Travel to Airports WITH Rail



Airports WITH Rail

Mode Share for Travel to Airports WITHOUT Rail



Airports WITHOUT Rail

Source: (1) Authors analysis, (2) Scott and Black (1998), (3) CAA Transport Statistics 1997, (4) Niblett (1995)

Note: Hong Kong Airport is Kai Tak pre opening of the new Chek Lap Kok airport - Heathrow Airport data is pre-airport express rail link (no data available post heavy rail link provision to date to 2000)

There are 5 key factors for a successful transit link

Key Factors to Achieve High Mode Share for Transit Links - Research Literature

Key Success Factor	Discussion of Issues
▶ Relative Mode Price	▶ Transit should be considerably cheaper than alternative modes – this includes relative taxi fares and airport car parking charges
▶ Relative Travel Time	▶ Transit should be considerably time competitive to travel compared to alternatives
▶ Passenger Amenities	▶ Good transit baggage handling and real time passenger information are cited as important elements of good airport transit modes
▶ Relative Accessibility	▶ Good transit modes should provide door to door access covering a full range of destinations or catchments
▶ Frequency of Service	▶ High frequency is important for a good transit link service – the service should also cover a wide range of time periods

Key Sources Are:

Niblett, R., (1995) 'Keys to Success in Airport Rail Links', Railway Gazette International, December

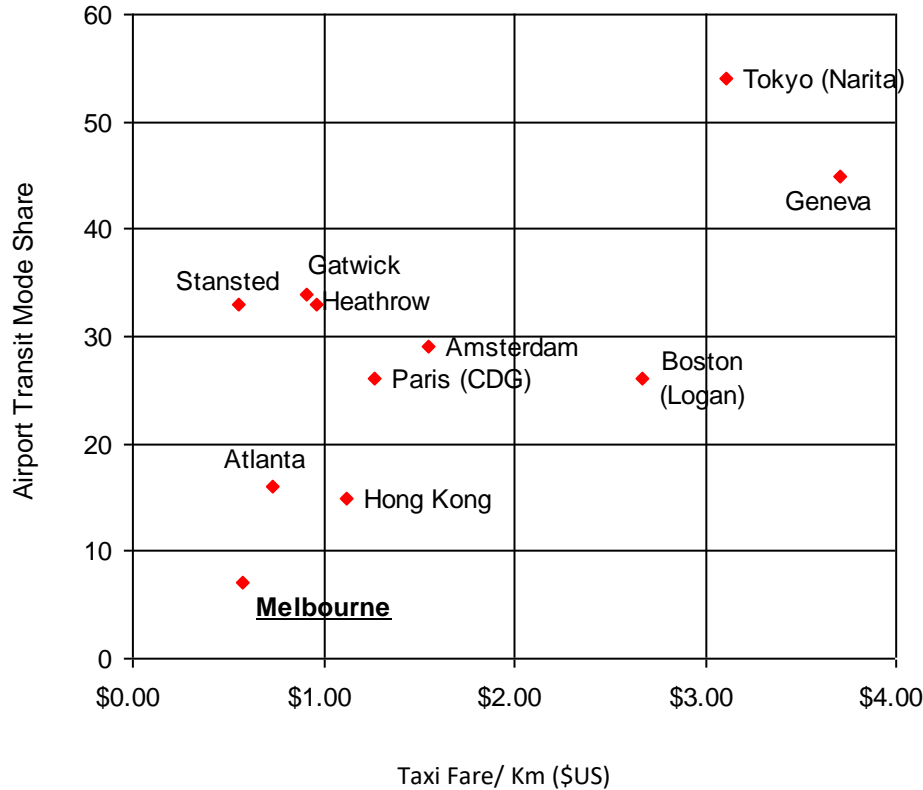
Scott, F. and Black, J., (1998) 'CBD-Airport Rail Access: Institutional Arrangements and Decision Making', paper presented to the 22nd Australasian Transport Research Forum, Sydney, September

Buchanan and Partners.,(1995) 'Optimising rail/air intermodality in Europe', Study undertaken for the European Commission, November, 1995

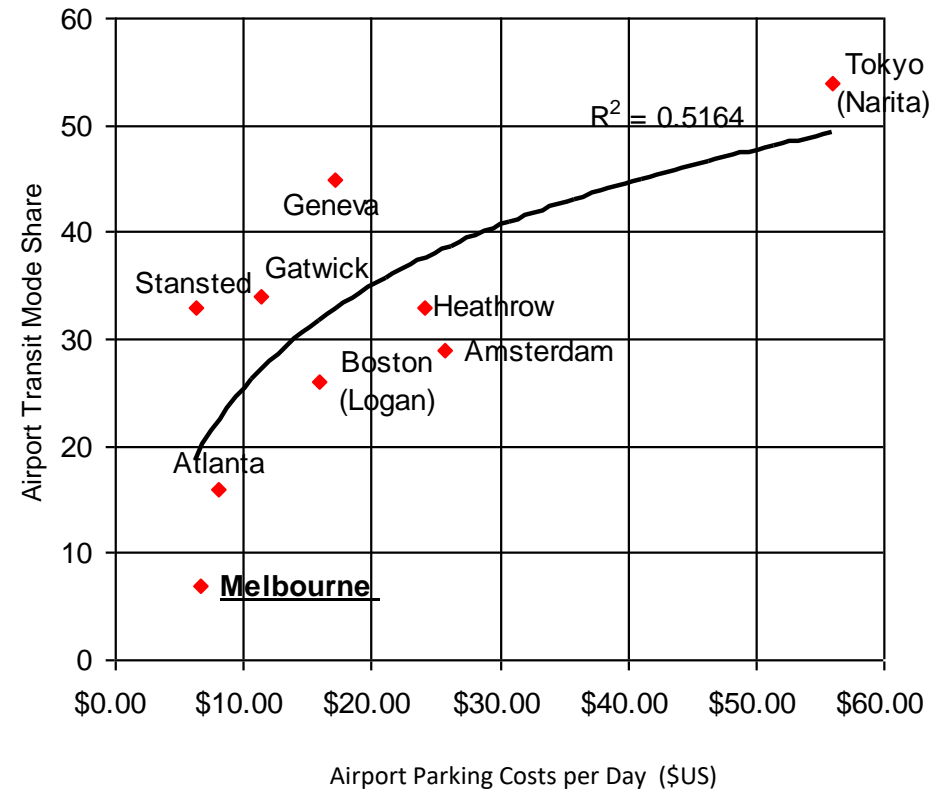
Civil Aviation Authority cited in Transport Statistics for London, (1997)

When I last measured this ; relative prices made transit unattractive at Melbourne airport compared to other airports

Airport Transit Mode Share and Taxi Fare Levels



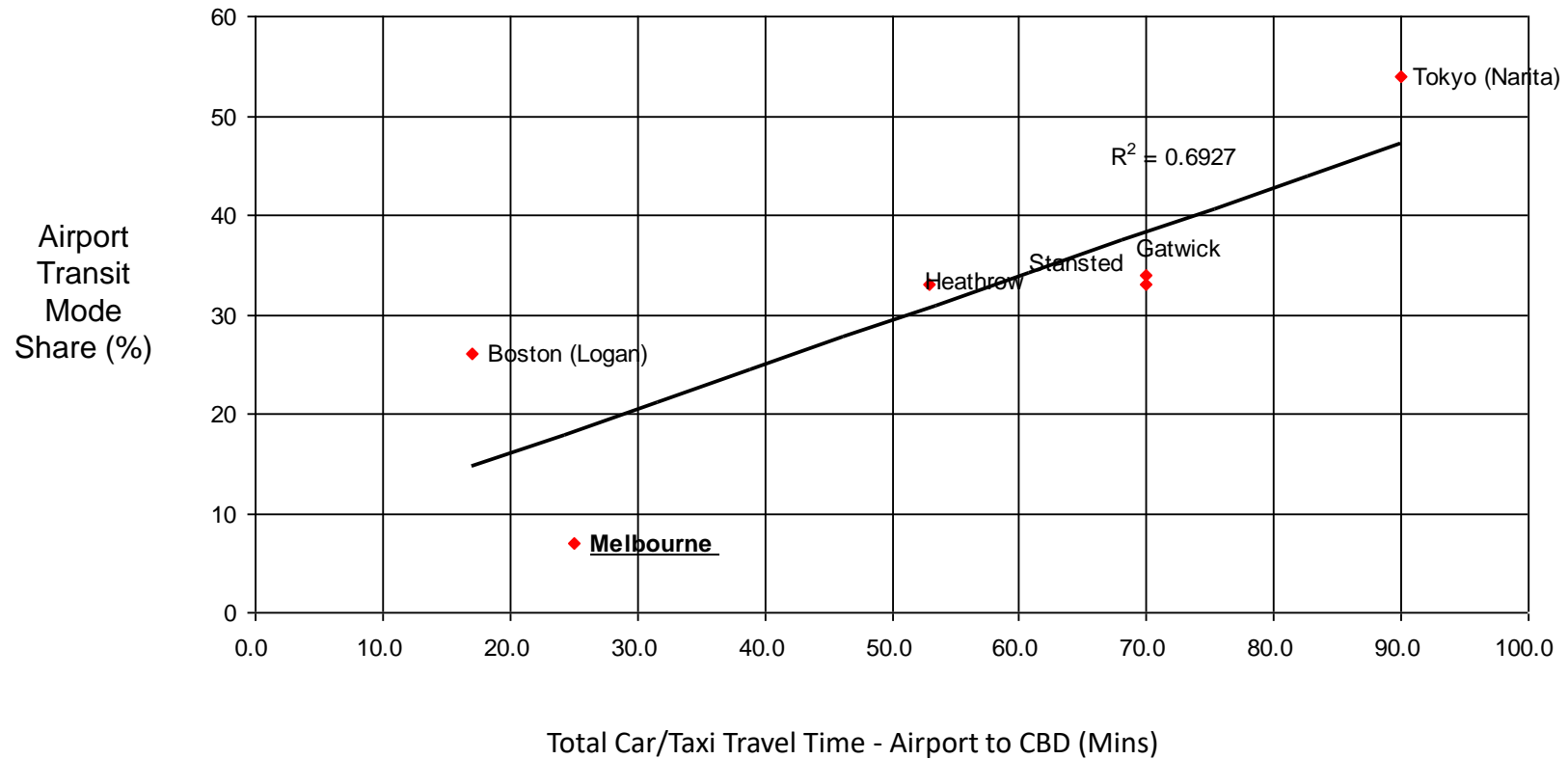
Airport Transit Mode Share and Daily Parking Costs



(1) Year 2001; Melbourne parking cost based on 50% long term parking at \$Aust 8/day and 50% short term parking at \$Aust 25/ day
 Source: Authors analysis of prevailing transport prices and mode share data sourced from an internet and literature search

Travel distance suggests a low share too

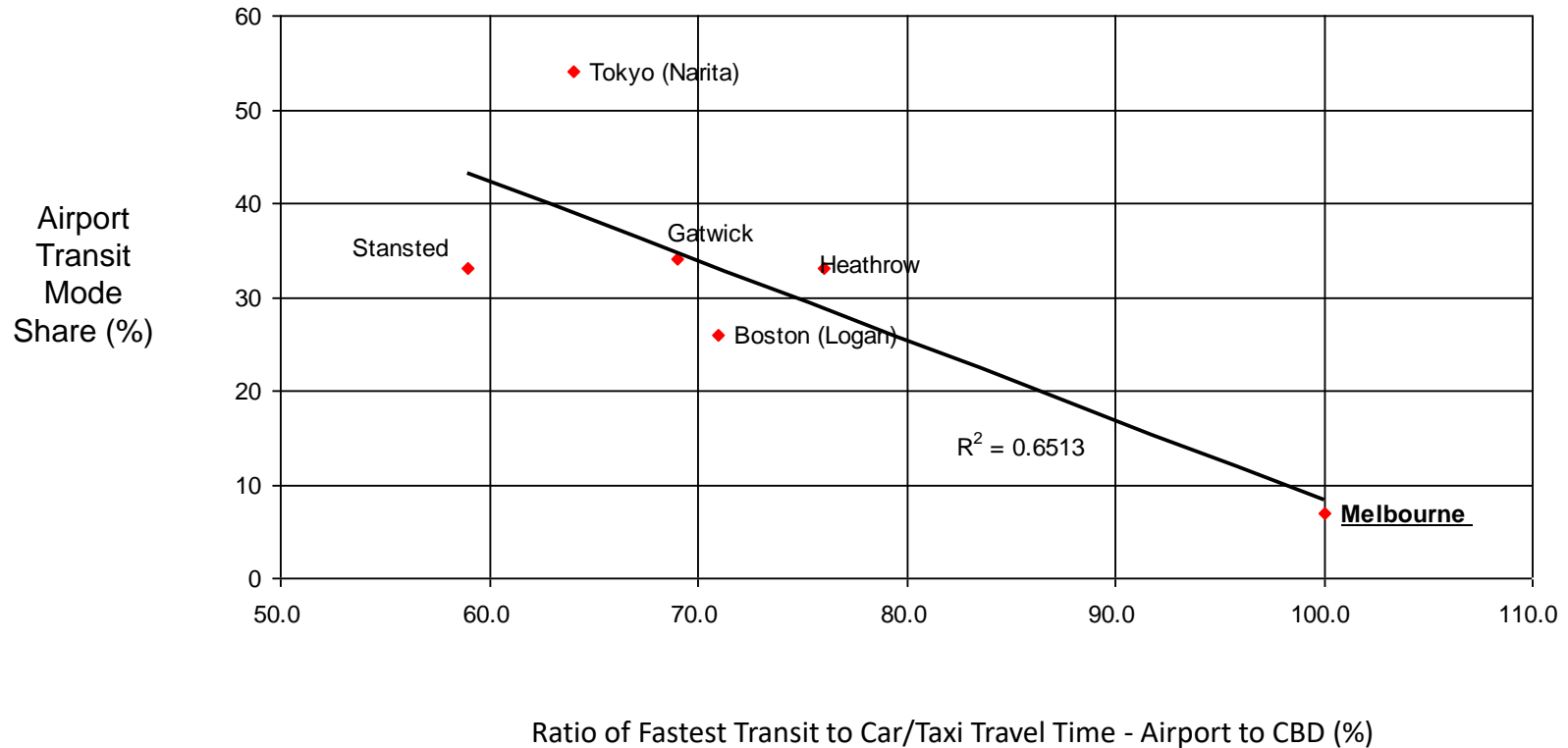
Airport Transit Mode Share and Car/ Taxi Travel Times Airport to CBD



Source: Authors 2001 analysis of prevailing transport prices and mode share data sourced from an internet and literature search

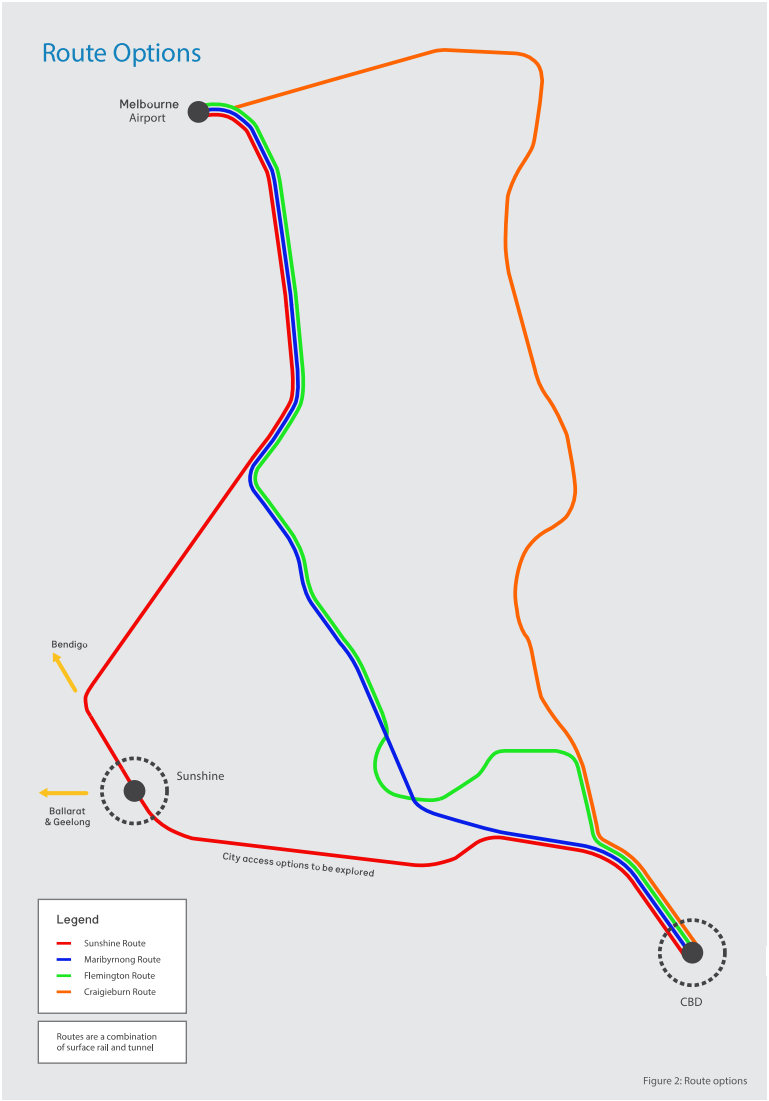
The relative competitiveness of transit vs car is critical to transit share...

Airport Transit Mode Share and Ratio of Transit to Car/ Taxi Travel Times Airport to CBD



Source: Authors 2001 analysis of prevailing transport prices and mode share data sourced from an internet and literature search

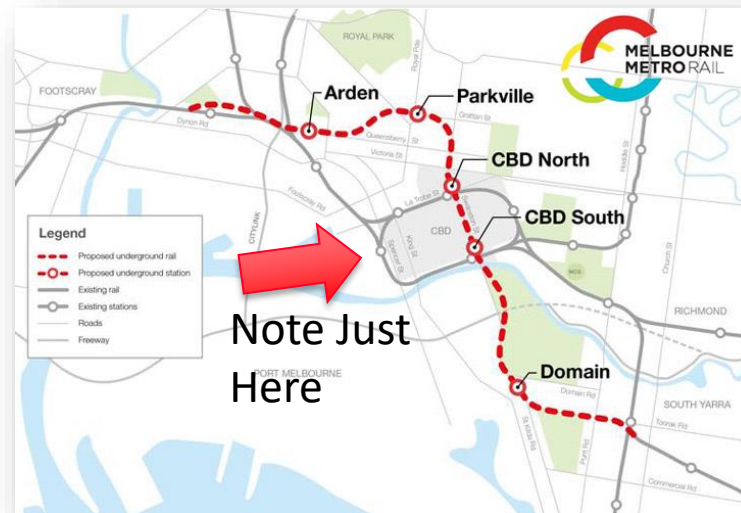
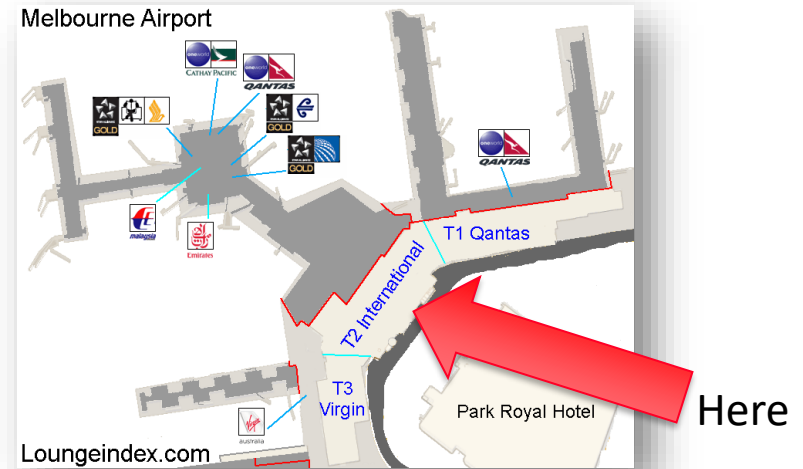
...yet most rail link options explored are dog leg alignments; which will tend to be uncompetitive



The other key issue is direct access – terminal and city

Key Factors to Achieve High Mode Share for Transit Links - Research Literature

Key Success Factor	Discussion of Issues
<ul style="list-style-type: none"> ▶ Relative Accessibility 	<ul style="list-style-type: none"> ▶ Good transit modes should provide door to door access covering a full range of destinations or catchments



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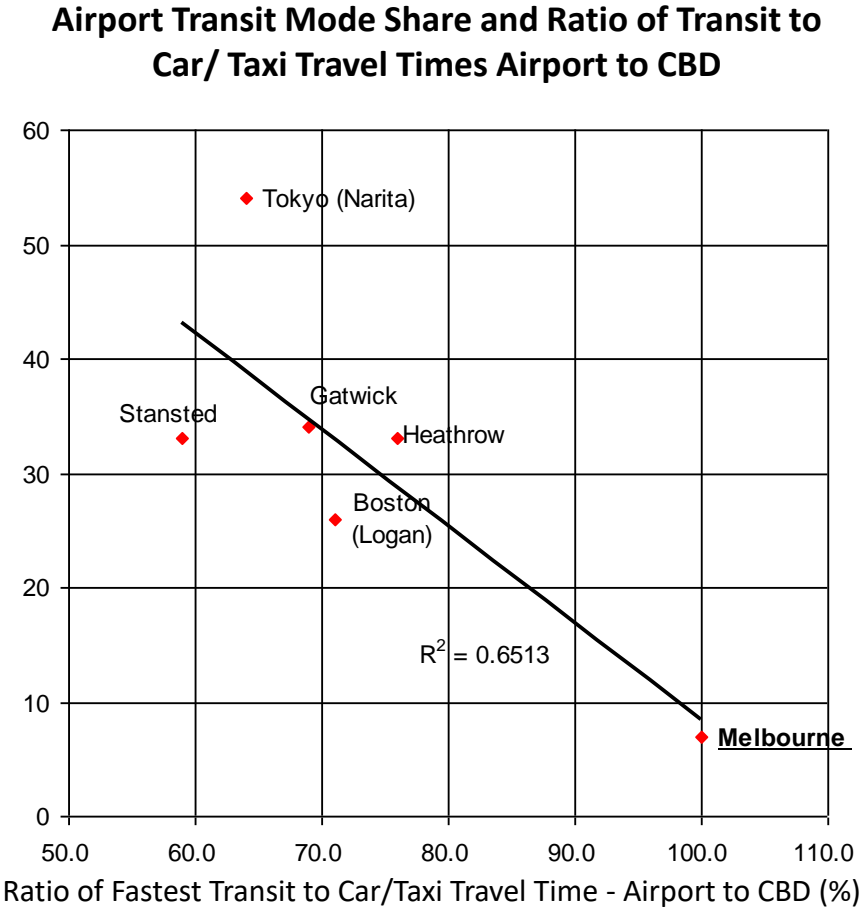
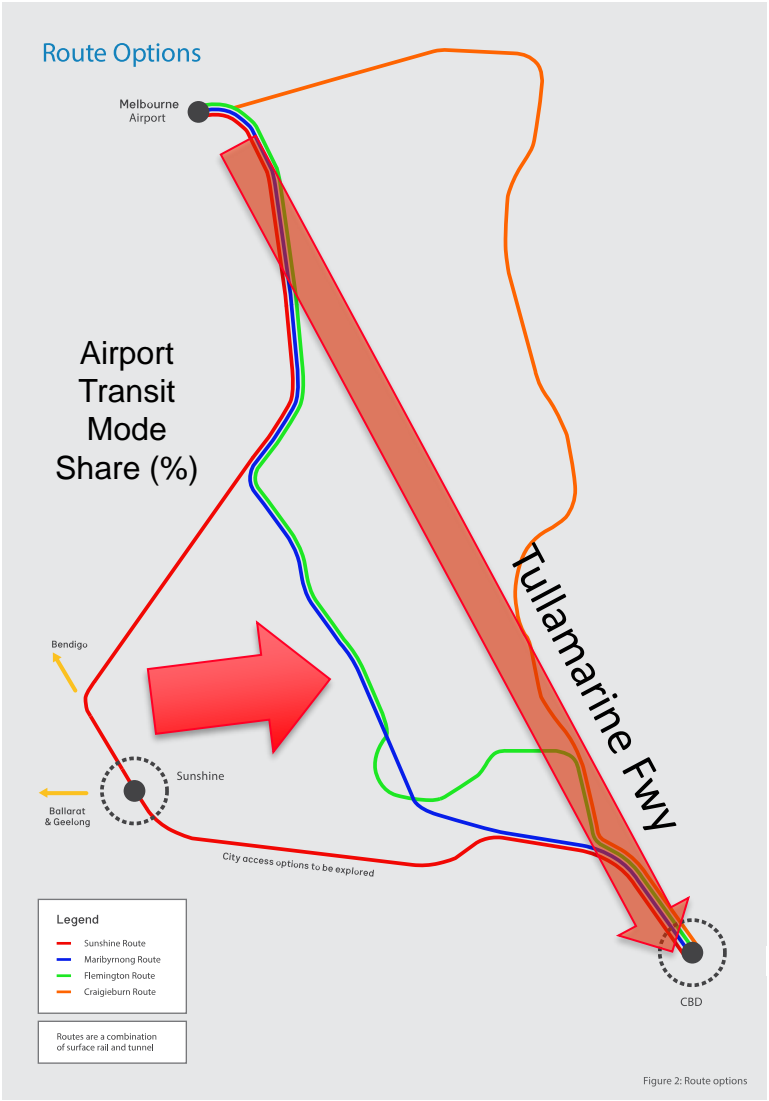
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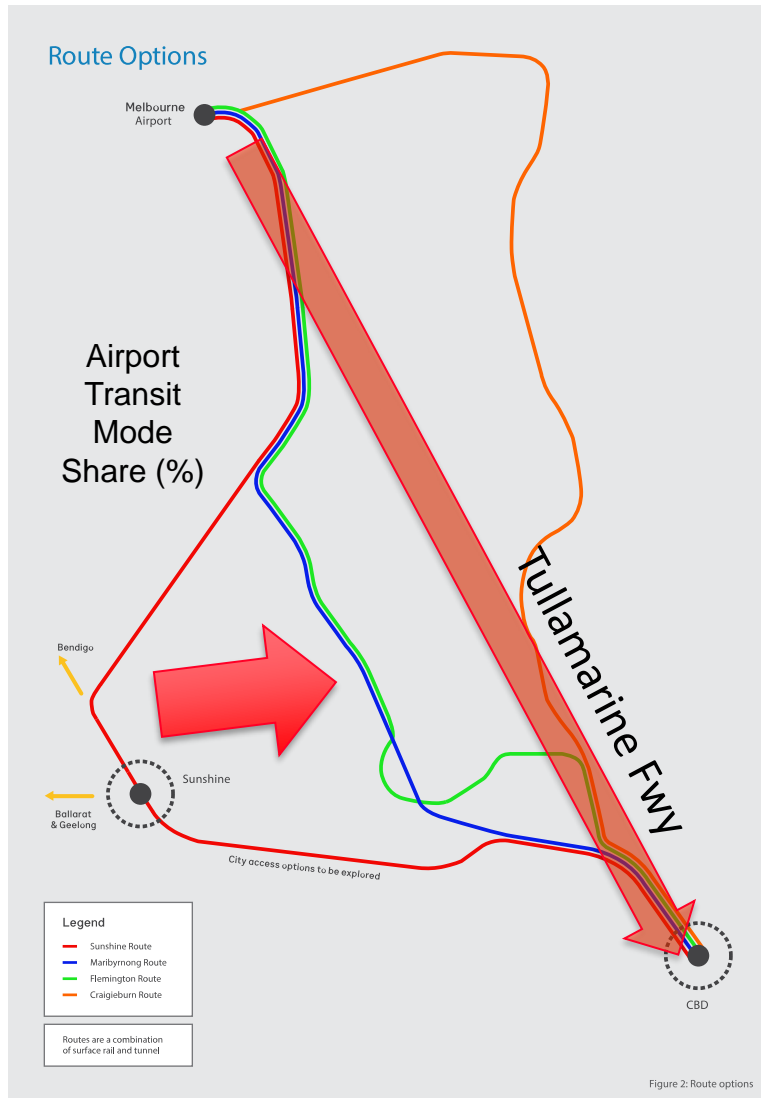
Options



The direct link options provide a more competitive travel time to the city and will enhance transit mode share...



...the direct link options also reduce rail operating resources, track and has operational benefits for existing lines – but expensive tunnelling may be needed



Wider benefits of a Direct Route

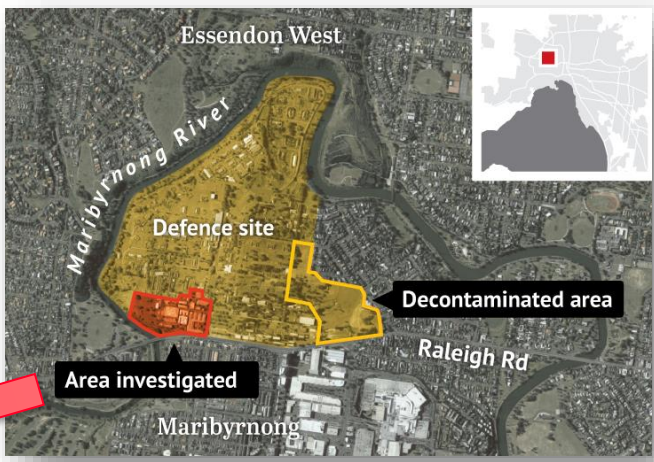
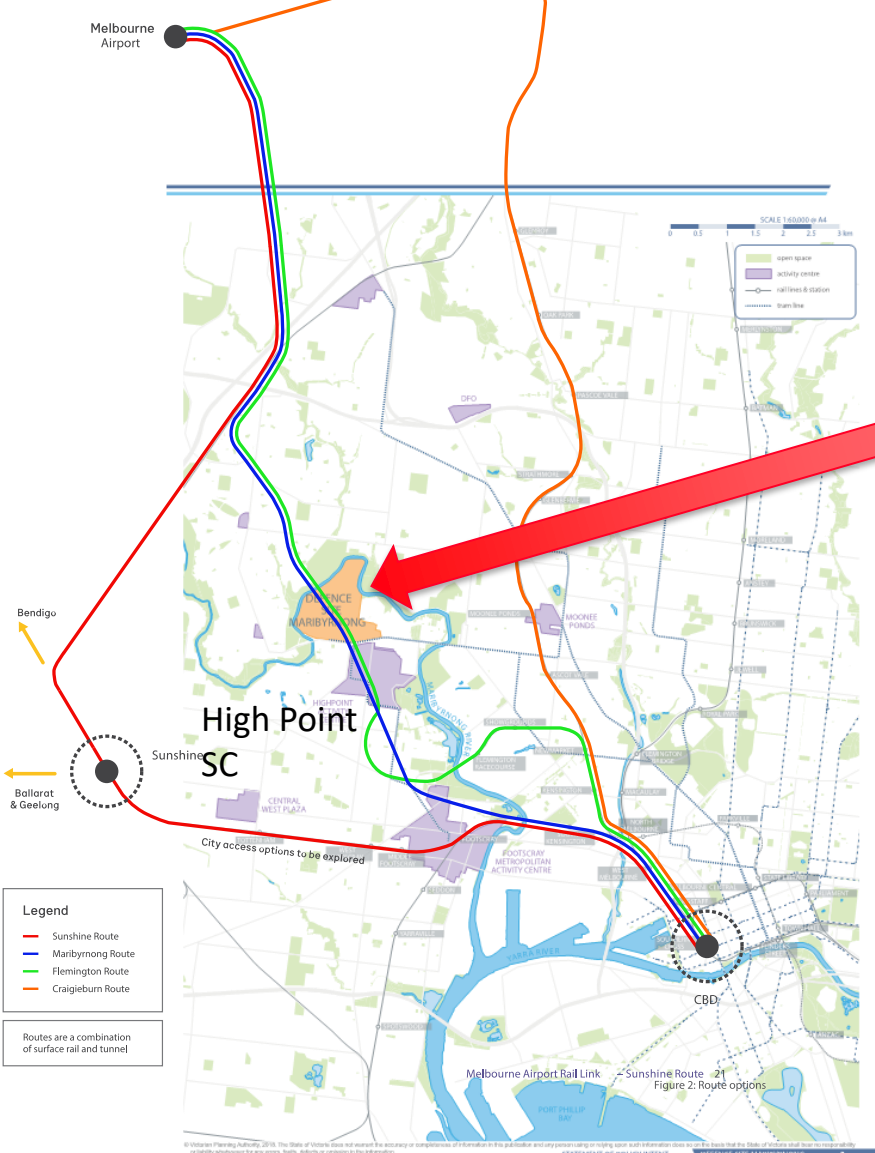
- More direct route decreases rail running time and requires less trains to operate
- Direct alignment takes up less new track reducing costs
- Directly alignment SEPARATES track from existing busy lines (in most areas)

Problems of a Direct Route

- High cost tunnelling is likely required to create the alignment

A major benefit of the Direct alignment is the potential to serve the Maribyrning Defence site development - & High Point SC

Route Options



Recall Sydney Airport Rail link had the Green Square development – a major opportunity to leverage the airport connection for city growth



Sydney Green Square Development

- One of Australia's largest urban renewal sites
- 278 hectares; \$13Bn construction; 30,500 new residential dwellings; 61,000 people to live there by 2030



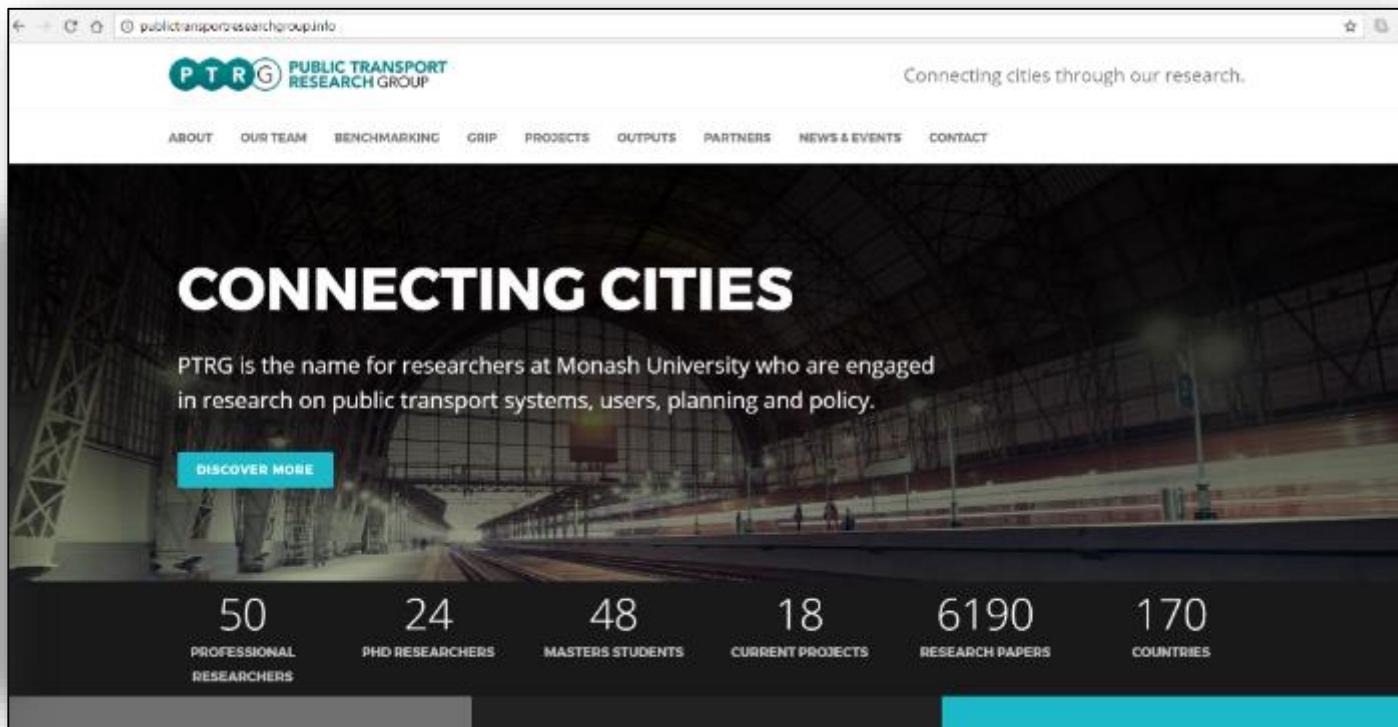
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