Infrastructure Victoria

Report on the Economic Assessment of Cycling Corridors

July 2025

Disclaimer

This report is prepared for the exclusive benefit and use of Infrastructure Victoria, and in accordance with their instructions. There are no third-party beneficiaries with respect to this report, and FTI Consulting does not accept any liability to any third party. While this report is made available for public reference by Infrastructure Victoria, any further use of or reliance on this report for any purpose by any third party, including but not limited to industry members, government departments and their respective stakeholders, are at their own risk. Any reproduction or publication, in whole or in part, of this report is not allowed by any party other than Infrastructure Victoria.

The information used to prepare the report was obtained from Infrastructure Victoria and other publicly available sources. Such information has not been audited nor independently confirmed by FTI Consulting, and therefore FTI Consulting does not express any opinion, and further does not provide any warranty or representation as to the accuracy, completeness and/or fairness of the presentation of such information in this report.

The opinions expressed in this report are valid only for the purpose stated herein and as of the date of this report. No obligation is assumed to revise this report to reflect changes, events or conditions, which occur subsequent to the date hereof.

FTI Consulting accepts no responsibility for, nor owes any duty to any person in respect of actual results or future events involving the use of or reliance on this report. Any investment or other financial decisions by any person must be based on appropriate investigation, due diligence and analysis, independent of, and without reliance on, or reference to, the contents of this report.

Table of Contents

1 Executive summary

1.1 Project purpose

Cycling, whether as a mode of transport for commuting or as a recreational or leisure activity, brings a range of benefits for the cyclist themselves as well as for the wider community. As a form of active travel, cycling promotes physical and mental health, provides a low-cost means of travel for short trips, and when infrastructure is well-designed, can be highly enjoyable. For the broader community, an increase in the number of people cycling can generate environmental benefits and reduce congestion on the road network.

Many short trips that would be suitable for cycling are made by Victorians every day – with nearly 60% of trips in Melbourne under five kilometres.[1] However, only 1.5% of these journeys are made by bicycle.[2] Currently, the gaps and inconsistencies in cycling infrastructure in Victoria discourage uptake of active transport. More broadly, the mode share of cycling in Victoria has not increased over the last two decades.[3] A range of factors have been identified that limit the uptake of cycling:

- **Perceptions of safety**: Cyclists are at higher risk of injury compared to other road users – one in every five hospitalisations from road crashes in Australia involves a cyclist, despite the relatively low mode share of cycling.[4] Additionally, women and gender-diverse people perceive these safety risks at a higher rate.[5] Narrow, poor quality and non-separated bike lanes contribute to higher safety risks.
- **Lack of integration with other transport modes**: Incorporating cycling infrastructure such as secure bicycle storage at public transport interchanges can also encourage uptake for 'first and last mile' travel – e.g. combining public transport use with cycling from an interchange to a person's home or workplace. The lack of integration with other transport modes can also hinder the overall performance of public transport systems, as it may lead to reduced passenger numbers and inefficient route planning, ultimately affecting the reliability and frequency of services. Without integrated planning across transport models, active travel mode share is further limited.
- **Lack of continuous connectivity**: Many cycle paths and bike lanes stop and start suddenly and do not provide a continuous connection between key destinations. Currently, only 13% of Victorians live within a two-minute ride of roads with a protected bike lane[6]. This forces cyclists to interact with other traffic and makes journey planning more difficult.

There is an opportunity to significantly increase the share of trips made by bicycle through strategic investment in cycle corridors across the state. Infrastructure Victoria are seeking to understand what strategies and interventions the Victorian Government can implement to increase the active transport share in Melbourne and regional centres.

Infrastructure Victoria (IV) has identified 18 priority cycling corridors – 12 in Melbourne, and six across regional Victoria – for an economic assessment. These corridors share common characteristics that are

[1] DataVic, *VISTA data 2023-24*

[2] Ibid.

[3] Austroads, *Prioritising Active Transport – Research Report*

[4] Australian Institute of Health and Welfare, Pedal cyclist injury deaths and hospitalisations 1999-00 to 2015-16

[5] Pearson L; Reeder, S; Gabbe, B; and Beck, B, *What a girl wants: A mixed-methods study of gender differences in the barriers to and enablers of riding a bike in Australia*

[6] Infrastructure Victoria analysis of Melbourne Bike Lane Project, *On-road protected bike lane*

associated with a higher propensity to cycle, leading to a higher potential uptake of cycling and in turn to an array of economic benefits.

1.2 Key findings and implications

Demand modelling and an economic appraisal have been undertaken to evaluate the performance of each cycling corridor. For each corridor assessed, the forecast economic costs and benefits are considered against a Base Case under which only currently funded and committed infrastructure is delivered. The economic appraisal takes the form of a Cost Benefit Analysis (CBA), with two key economic viability metrics: the Net Present Value (NPV) and the Benefit Cost Ratio (BCR).

High-level results of the demand assessment and economic appraisal for each corridor are summarised below in Table 1. This table shows the projected increase in annual cycling kilometres along each corridor, as well as the NPV and BCR for each corridor. A BCR range is also presented, which uses ‘high’ and ‘low’ demand forecasts as bookends to reflect the level of uncertainty inherent within the results.

Combined network results for Melbourne, regional Victoria and the state as a whole are also shown. These reflect the combined benefits and costs of all corridors under the core demand scenario, as well as an additional ‘network effect’ uplift within Melbourne where delivery of all the corridors creates additional city-wide connections (particularly to the CBD) that are expected to enable additional trips.

Table 1 Summarised modelling and CBA results ($m FY25, real, discounted at 7%)

Corridor	Increase, on-corridor cycling demand (annual ‘000 km, 2031)	NPV	BCR	BCR range (Low to High demand)
Melbourne corridors				
B1 – Northcote to Moonee Ponds	1,900	89.6	5.6	4.5 - 6.8
B2 – Essendon to La Trobe University	500	7.2	1.2	1.0 - 1.4
B3 – Alfred Hospital to Clayton	4,450	199.4	7.7	6.3 - 9.3
B4 – Box Hill to Docklands	6,750	241.1	5.8	4.7 - 7.1
B5 – Werribee to West Footscray	1,250	47.6	1.9	1.7 - 2.2
B6 – Abbotsford to Anzac Station	3,400	86.4	7.5	6.2 - 9.0
B7 – Anzac Station to Sandringham	2,700	89.3	2.9	2.4 - 3.5
B8 – St Albans to Docklands	1,850	107.8	3.8	3.3 - 4.4
B9 – Highpoint to Footscray	3,250	175.9	5.4	4.3 - 6.8
B10 – Essendon to Southbank	1,100	21.1	1.6	1.3 - 1.8
B17 – Caulfield to Auburn	250	4.5	1.3	1.1 - 1.5
B18 – Murrumbeena to Southland	650	24.0	1.8	1.5 - 2.1
Combined Melbourne network result		**1,233.3**	**4.0**	**3.0 - 4.4**
Regional Victoria corridors				
B11 – Wodonga	50	-11.5	0.5	0.5 - 0.5
B12 – Wangaratta	150	-5.1	0.8	0.7 - 0.8

Corridor	Increase, on-corridor cycling demand (annual '000 km, 2031)	NPV	BCR	BCR range (Low to High demand)
B13 – Bendigo	400	-10.4	0.8	0.7 - 0.9
B14 – Castlemaine	50	-3.8	0.5	0.4 - 0.5
B15 – Ballarat	850	-0.7	1.0	0.8 - 1.2
B16 – Geelong	1,300	38.1	2.2	1.9 - 2.6
Combined regional Victoria network result		**6.6**	**1.0**	**0.9 - 1.2**
Combined network result		**1,239.9**	**3.1**	**2.4 - 3.4**

Source: FTI Consulting, 2025

All corridors see an uplift in the number of cyclists travelling along the corridor being upgraded. The increased user numbers in the table relate to both new cyclists (i.e. those shifting from other travel modes such as car, public transport or walking) and existing cyclists who change their routes to take advantage of the upgraded infrastructure along the routes.

Most of the corridors generate positive NPVs and BCRs greater than 1, suggesting that there are significant economic benefits from investment in the cycle corridors. Generally, the corridors that perform best are those with high existing user numbers and/or high population density, which contributes to the comparatively worse performance on corridors in regional areas.

The combined network assessments show that the program performs strongly across Melbourne with a BCR of 4.0 and over $1.2 billion in net economic value. The combined performance of the regional corridors delivers a slightly positive NPV, contributing to total economic value of just under $7m.

There are also other benefits from cycling that have not been included in the CBA as there is either no accepted methodology for quantifying them or the extent of the benefit is not certain, such as land use impacts and option value. The above results should be interpreted in the context of such potential benefits.

Multiple sensitivities have been used to assess the robustness of the CBA and the impact on the NPV and BCR of each project option. They show that most corridors return a net economic benefit under most assumptions tested. The sensitivities also demonstrate that the majority of benefits for each corridor are driven by mode shift (i.e. new cyclists) rather than existing users, who benefit albeit to a lesser extent.

It is important to note that benefits from the corridor upgrades may affect some user groups more than others, which is not necessarily captured in the analysis. Factors that might impact different users' level of benefit from the upgrades could include:

- **Gender:** Some safety and infrastructure quality improvements such as improved lighting may encourage female riders to use the corridors. Furthermore, an increase in the volume of cyclists using a route might also lead to an uptake in female riders using the corridors due to improved perceptions of safety.
- **Level of rider experience:** For inexperienced riders, poor quality infrastructure presents a significant barrier to cycling uptake. Improving the quality of infrastructure along the corridors could encourage first-time cyclists (often described as the 'interested but concerned' group) to make the switch from other travel modes.

- **Recreational riders:** Many cyclists ride for enjoyment, not just for utilitarian purposes such as commuting. Better infrastructure provides more options for people to exercise and to move around their suburbs or towns and visit community facilities, shops or education centres.

2 Background and introduction

2.1 Document purpose

FTI Consulting was engaged by Infrastructure Victoria to assist with a research project investigating the merits of investing in priority cycling corridors in Melbourne and parts of regional Victoria, inclusive of an economic assessment for each priority cycling corridor. This report presents the methodology used to conduct this economic assessment and details the results of the analysis for each option considered.

FTI Consulting has carried out this economic assessment using a Cost Benefit Analysis (CBA) framework from the perspective of the Victorian Government. The CBA methodology was designed following the *Victorian Department of Treasury and Finance Technical Guidelines on Economic Evaluation*[7] and the Victorian Government's broader economic, social and environmental objectives. It is furthermore aligned with the *ATAP guidelines on active travel (M4)*[8] and the *NSW Government's active transport health model.*[9]

2.2 Limitations

The economic assessment presented in this report is limited by the following factors:

- **Strategic level assessment**: The analysis is a strategic level assessment of the proposed corridors that focuses on comparing their relative performance and high-level economic performance. The assessment is not a detailed appraisal suitable for investment decision making on individual corridors.
- **Agreed methodology**: The methodology used for the economic assessment, including underlying assumptions, were agreed upon through extensive consultations with Infrastructure Victoria.
- **External inputs**: No further analysis was undertaken by FTI Consulting to verify external inputs other than a sense check of the relative order of magnitude of the economic costs and benefits. The results yielded are based on inputs provided to FTI Consulting from Infrastructure Victoria, as well as additional historical data and economic statistics.
- **Data limitations**: The analysis depends on the quality of data available, particularly with regard to cycle counts and estimates of the existing user base. For regional corridors in particular, there is a smaller sample size of existing users and there may be more uncertainty in CBA results as a consequence.
- **Cost projections**: The economic assessment relied on capital cost inputs as well as assumptions regarding delivery timelines, operating and maintenance costs and asset lifespans, which were provided by IV and its cost consultants, Trafficworks.
- **Assumptions of future behaviours**: Various assumptions about future behaviours and market interactions have been made as part of this economic assessment, some of which may turn out differently. This could result in discrepancies between projected and actual outcomes.

---

[7] Department of Jobs, Skills, Industry and Regions, *Guidance on undertaking economic assessment*

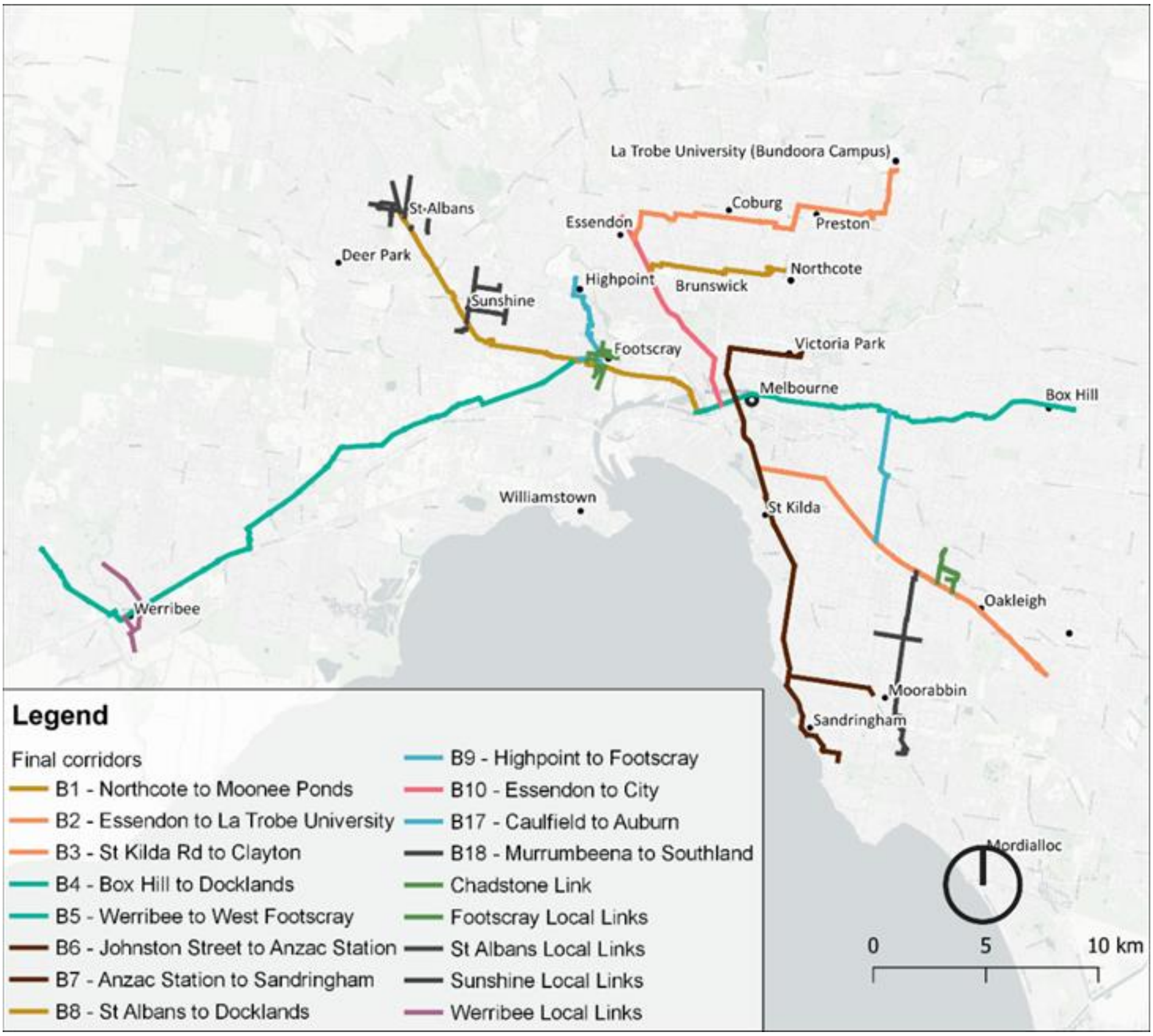
[8] Infrastructure and Transport Ministers, *Australian Transport Assessment and Planning Guidelines – M4 Active Travel*

[9] NSW Health, *NSW Active Transport Health Model Reference Outcome Values*

2.3 Project overview

Infrastructure Victoria has chosen to prioritise investigating 12 new or upgraded cycle corridors from the Strategic Cycling Corridor network across Melbourne, and six cycle corridors in regional cities. These corridors will add separated bike lanes, wayfinding, lighting and protected bike infrastructure. Figure 1 shows the 18 priority corridors.

Figure 1 Priority corridors in Melbourne and regional Victoria



B11 – Wodonga B12 – Wangaratta B13 – Bendigo

B14 – Castlemaine B15 – Ballarat B16 – Geelong

Source: Infrastructure Victoria, 2025

The main objective of the project is to understand the merit of the 18 cycling corridor upgrades so that Infrastructure Victoria can advise the Victorian Government of priority cycling corridor infrastructure. These investments would encourage an increase in the uptake of cycling as part of daily activities, by improving the quality of cycling infrastructure along all the identified corridors.

Such an uptake would generate a range of positive economic outcomes – from improved health and journey amenity benefits for cyclists themselves, to a variety of indirect benefits for the wider community, including less road network congestion and reduced emissions and other environmental externalities.

The quality of cycling infrastructure along a corridor is an important driver of cycling demand. Providing separated bike lanes with good lighting, safe intersection crossings and clear wayfinding will encourage more people to cycle as part of their daily activities than if cyclists have to share general traffic lanes with motorists.

2.4 Corridors assessed

The appraisal considers 18 corridors, with 12 in Melbourne and six in regional centres across Victoria. Benefits and costs for the Project Case for each corridor are compared to a Base Case to estimate the net economic benefit for each corridor. The Base Case and Project Case are defined as follows:

- **Base Case:** A 'do minimum' scenario where no additional investment is made in cycling infrastructure beyond what is already committed and funded. Existing infrastructure is maintained to a serviceable level over the appraisal period.

- **Project Case:** Cycling infrastructure is improved along each corridor in accordance with the specifications provided by IV. Each corridor sees an improvement in overall quality of cycling infrastructure, attracting more people to cycle as opposed to using other transport modes.

The relative quality of infrastructure along each corridor can be measured by comparing the share of different infrastructure types as a proportion of overall route length. ShapeTransport was engaged by FTI Consulting to support the analysis with demand modelling for the corridors, and developed a weighted quality score for each corridor termed the Relative Attractiveness Score (RAS), which differs by infrastructure type. On a per-kilometre basis, the RAS ranges from 1.0 for a shared lane with general traffic, to over 3.5 for a bicycle path designated solely for the use of cyclists. More information on the RAS methodology is contained in Appendix C.

The improvement in quality of the infrastructure on each corridor is measured by the RAS with and without the upgrades, which in turn drives cycling uptake. Details of each corridor, including improvements in RAS, are shown below in Table 2.

Table 2 Key corridor characteristics

Corridor	Route length (km)	Weighted RAS – Base Case	Weighted RAS – Project Case	% increase
Melbourne corridors				
B1 – Northcote to Moonee Ponds	7.0	1.6	2.8	75%
B2 – Essendon to La Trobe University	16.4	1.6	2.5	62%
B3 – Alfred Hospital to Clayton	20.9	1.4	1.9	38%
B4 – Box Hill to Docklands	18.3	1.3	2.2	64%
B5 – Werribee to West Footscray	35.6	1.5	1.9	23%
B6 – Abbotsford to Anzac Station	7.5	2.1	3.0	42%
B7 – Anzac Station to Sandringham	20.1	2.0	3.0	48%
B8 – St Albans to Docklands	33.7	1.5	2.0	36%
B9 – Highpoint to Footscray	10.0	1.6	2.5	55%
B10 – Essendon to Southbank	9.8	2.1	3.1	45%
B17 – Caulfield to Auburn	6.0	1.8	3.0	63%
B18 – Murrumbeena to Southland	11.3	1.2	2.4	93%
Regional Victoria corridors				
B11 – Wodonga	6.1	1.8	2.0	10%
B12 – Wangaratta	8.9	1.6	2.1	32%
B13 – Bendigo	19.4	1.6	1.8	14%
B14 – Castlemaine	2.5	1.0	1.6	61%
B15 – Ballarat	13.6	1.4	1.8	31%
B16 – Geelong	16.1	1.6	2.2	35%

Source: FTI Consulting, 2025

All corridors see an increase in RAS due to the investment. The corridors with the largest RAS improvements include Northcote to Moonee Ponds, Box Hill to Docklands, and Essendon to La Trobe University. This is largely attributable to the relative low quality of the existing infrastructure that is proposed to be converted to protected bike lanes.

2.5 Key inputs

The economic assessment relies on a number of inputs, including data provided by Infrastructure Victoria. These inputs are listed in Table 3 below:

Table 3 Economic assessment key inputs

Input	Source
Corridor specifications	Infrastructure Victoria
Projected cycling volumes	ShapeTransport
Share of total cycling kilometres on corridor versus off corridor	FTI Consulting analysis, based on Strava Metro data
Capital costs and ongoing maintenance costs by corridor	Trafficworks, based on inputs provided by Infrastructure Victoria
Timing of corridor construction and opening	Infrastructure Victoria
Economic appraisal parameters	Various – see Appendix A

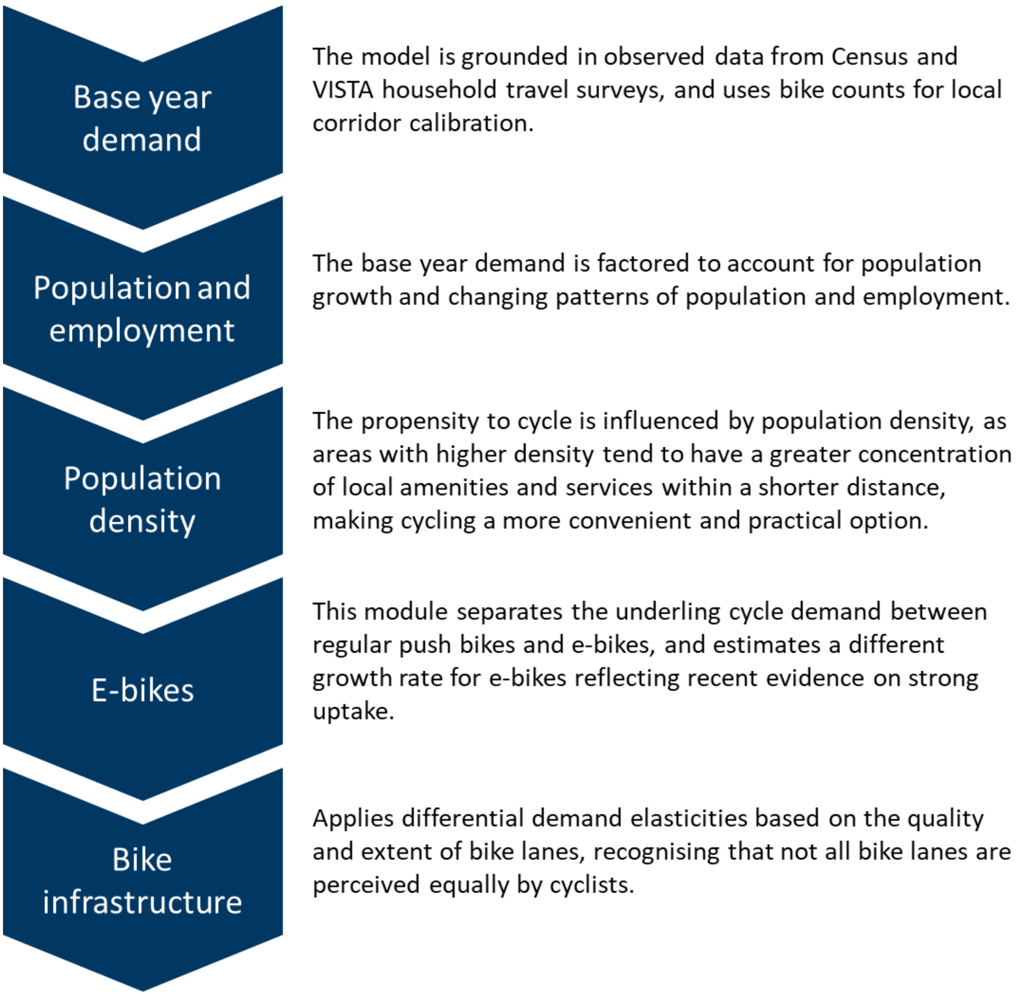
Source: FTI Consulting, 2025

3 Economic appraisal approach

3.1 Demand modelling approach

Cycling demand with and without infrastructure upgrades was forecasted using ShapeTransport's Cycle Demand Model (CDM). The model is used to forecast cycle demand and distance travelled, as well as mode shift from car, public transport and walk. The CDM is structured around five discrete components – base year demand, population and employment growth, population density, e-bike uptake and bike infrastructure.

Figure 2 CDM components



Source: FTI Consulting, 2025, based on inputs from ShapeTransport

The CDM offers a range of distinct advantages that make it well-suited to the analysis of the cycling corridors. It models the full demand response, including mode shift, in a comprehensive way that accounts for baseline cycle demand, population growth, population density and e-bike take-up. The response to new or upgraded cycleways uses evidence on demand elasticities and attractiveness scores for different types of infrastructure.

The CDM forecasts demand in terms of number of weekday trips and distance travelled for each corridor for a base year of 2024, and a Base Case and Project Case for both 2031 and 2036. The demand outputs are broken down by trip purpose (commute and other) and mode (bike, e-bike, car, public transport and walking). The outputs are then annualised using relevant day to year expansion factors, with different factors used as required to reflect the nature of travel patterns to different destinations.

CDM outputs were generated for three scenarios, referred to throughout this report as ‘Low’, ‘Core’ and ‘High’. The three scenarios reflect different elasticity assumptions regarding the response in user numbers generated as a result of changes in infrastructure quality. More information on the assumptions underpinning the demand model are provided in Appendix C.

The CDM outputs were then used in the CBA to quantify and monetise economic benefits under the Low, Core and High demand scenarios.

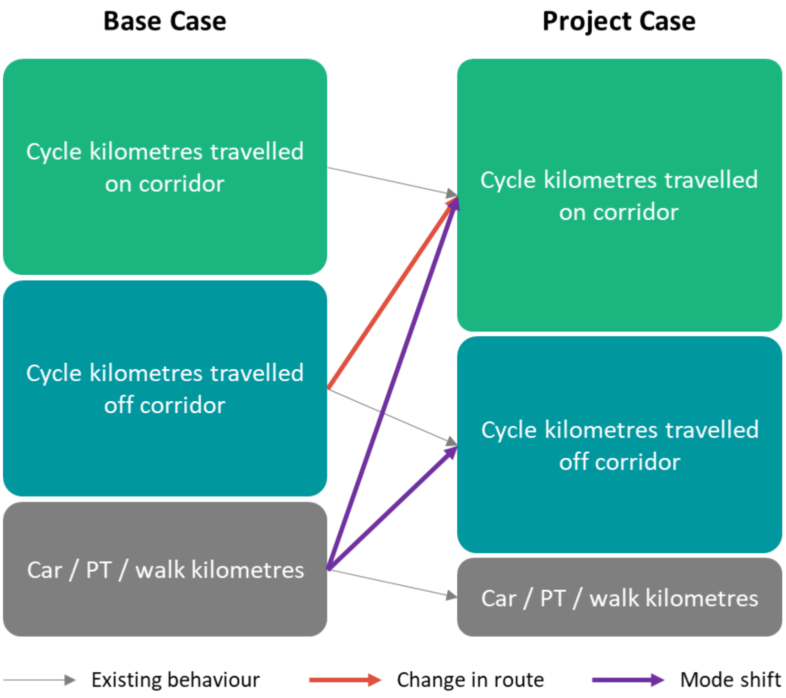
3.1.1 User groups and trip types

The economic assessment considers benefits for a range of different user groups and trip types. These are:

- **Existing users**: People who already cycle in the Base Case, and already travel along the routes that the corridors follow. These users benefit from upgrades to the infrastructure in the Project Case, making their journeys safer, faster and more enjoyable.
- **Users changing route**: People who already cycle in the Base Case, but do not currently travel along the routes that the corridors follow. A share of these users are assumed to change their routes to take advantage of the improved infrastructure in the Project Case, again resulting in safety, travel time and amenity benefits.
- **New users (mode shift)**: People who do not cycle in the Base Case but decide to switch travel modes in the Project Case as a result of the improved infrastructure delivered along the corridors. These users generate a range of ‘mode shift’ related benefits such as health benefits and reduced congestion costs and environmental impacts.

The benefits quantified in the economic appraisal apply differently for each of the above groups, and how user behaviour changes, between the Base Case and Project Case. The figure below demonstrates the key changes in behaviour that are modelled.

Figure 3 User groups and changes in behaviour[10]



Source: FTI Consulting, 2025

The size of the mode shift from car, PT and walking to cycling (purple arrows in the diagram above) is determined through the CDM modelling process.

However, since cycling demand outputs from the CDM for each corridor are presented for all users across a spatial area consisting of a set of SA2 regions centred around the route itself, further analysis is needed to determine the share of kilometres on and off the corridor, and how this changes between the Base Case and Project Case (the orange arrow in the diagram above). This has been done based on analysis of Strava Metro cycling travel data. In the Base Case, the share of Strava Metro cycling kilometres that are travelled along the route itself is used to estimate the share of CDM demand using the corridor infrastructure. In the Project Case, we assume that existing cyclists travelling within 200m of the route shift their travel to the corridor due to the improvements in infrastructure quality.

It is important to note that the assumptions on the route choice of cyclists are dependent on the quality of data available. While Strava Metro data is plentiful in the Melbourne context, the sample size of trips and kilometres travelled is smaller in regional areas. However, sense testing of our modelling shows that the overall CBA results are not highly sensitive to changes in the assumptions regarding existing user behaviour, as mode shift (and not route choice) is the dominant driver of benefits.

3.2 Economic appraisal methodology

The economic appraisal follows a structured CBA framework to estimate the economic costs and benefits of the cycling corridors.

The CBA methodology was designed to align with the *Victorian Department of Treasury and Finance Guidance on undertaking economic assessment* and the Victorian Government's broader economic, social

[10] Not to scale.

and environmental objectives. It is furthermore aligned with the *ATAP guidelines on active travel (M4)* and the *NSW Government's active transport health model.*

The CBA considers the impact of the Project Cases relative to a Base Case Scenario, being a 'do minimum' scenario that incorporates currently funded and committed projects only. The methodology captures the direct and indirect financial, economic, environmental and social costs and benefits by monetising them into standard units of measurement.

Some key assumptions of the economic appraisal are set out below in Table 4. Further detail on assumptions is provided in the appendices to this report.

Table 4 Economic appraisal assumptions

Assumption	Value	Source
Demand model years	2031, 2036	Cycle Demand Model
Discount base year	2024	Standard assumption
Discount rate	7%	DTF guidelines
Construction period	FY27 to FY36	Trafficworks capital cost cashflows (note each corridor starts and ends construction during this period, with cashflows staggered across the program)
First year of benefits	Varies by corridor	First year after end of capital costs
Appraisal period	Construction period plus 30 years	Standard assumption
Benefit growth after final demand model year	In line with population growth	Assumption – sensitivity tests with higher growth and zero growth tested

Source: FTI Consulting, 2025

3.3 Interpreting economic results

When interpreting the results of the CBA, it should be noted that the approach is limited in that not all potential benefits and costs of the cycling corridors upgrades can be monetised. Therefore, the CBA should not be considered in isolation as a measure of the project's economic viability. Instead, it should be considered alongside other strategic, economic, financial and other factors relevant to decision makers.

The intention of the CBA is to explore whether each cycling corridor yields a positive economic return. The key metrics used to explore economic viability include:

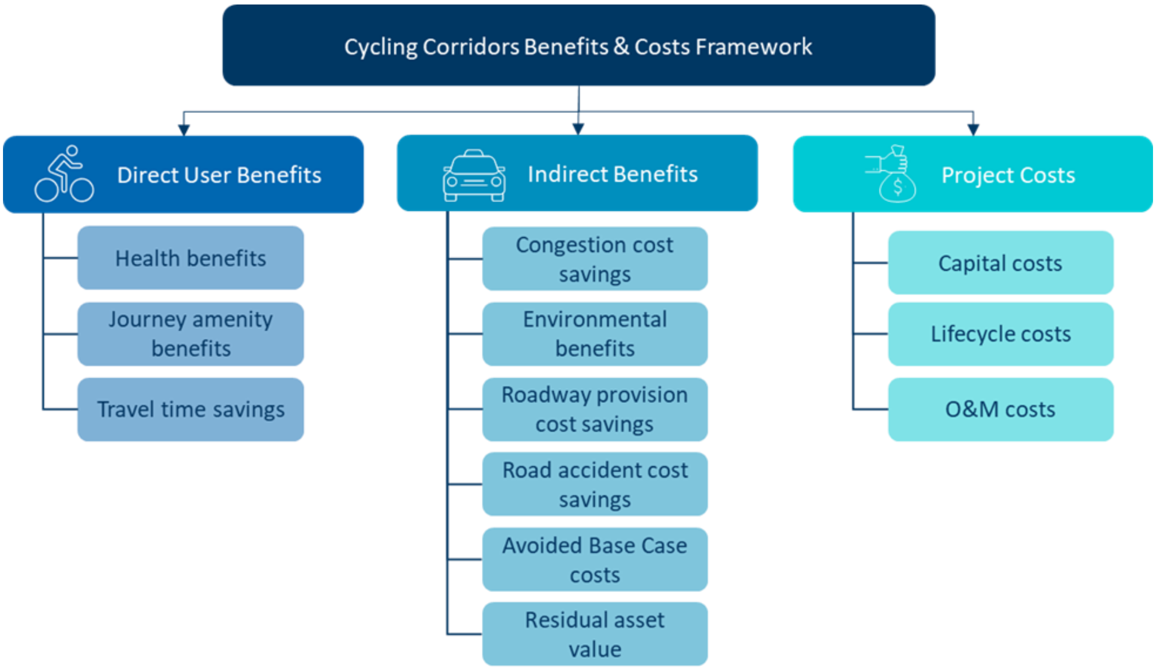
- NPV, which is the Present Value (PV) of economic benefits delivered by the project option, less the PV of economic costs incurred
- BCR, which is the ratio of the PV of economic benefits to the PV of economic costs

A cycling corridor with a positive NPV, and a BCR greater than 1.0, indicates a positive economic outcome. However, a BCR greater than 1.0 does not guarantee net economic returns, nor does a BCR less than 1.0 necessarily mean that a project should not go ahead. Economic metrics must be considered within a broader context of uncaptured economic costs and benefits, potential project risks and government objectives.

4 Project benefits and costs

The cycling corridors will deliver a range of benefits that can be categorised into direct user benefits and indirect benefits. Figure 4 provides an overview of the direct user and indirect benefits.

Figure 4 Benefits framework



Source: FTI Consulting, 2025

The economic assessment considers benefits for each of the user groups and trip types identified in section 3.1.1. The following sections describe each of the above benefits in more detail and present results for each of the corridors for the Core demand scenario. Results for the Low and High scenarios are tested through the sensitivity analysis in section 5.4.

4.1 Direct user benefits

4.1.1 Health benefits

Increased physical activity from more cycling is associated with better health and wellbeing, reduces morbidity and mortality and improves mental health. This benefit takes into account physical activity displacement, i.e. people compensating for an increase in active transport by reducing other physical activity. E-bike users receive a relatively smaller benefit per kilometre given the expected lower physical effort as compared to pushbikes. However, given that e-bike trips tend to be more frequent and longer than push bikes, on aggregate the health benefit for e-bike users, on a per-trip basis, may be comparable to push bike users.

4.1.2 Journey amenity benefits

Journey amenity refers to the quality and comfort of the travel experience, beyond just the time or monetary cost of a journey. It includes all the factors that make a user's journey more pleasant or unpleasant. In relation to cycling, these factors include perceived levels of safety, level of separation from other road traffic and pedestrians, road or path surface quality, wayfinding and lighting. Improved cycling infrastructure along the corridors increases journey amenity, leading to benefits for both new and existing users.

4.1.3 Travel time savings

As riding on separated cycleways is faster than riding on a road shared with traffic, improved cycling infrastructure decreases journey times. This time saving is measured as a benefit for commute trips only, as recreational cyclists are not likely to value a time saving as beneficial in the same way as a commuter. There are also greater travel time savings for e-bikes given their travel at higher average speeds.

There is a further time saving benefit for new users who switch to cycling as their main form of exercise, reducing the time spent on alternative forms of activity. This benefit is only applied to the share of new commute trips which are expected to displace other forms of exercise undertaken by an individual.

4.1.4 Summary of direct user benefits

Direct user benefits for each corridor are summarised in Table 5 below.

Table 5 Core demand scenario: direct user benefits ($m FY25, real, discounted at 7%)

Corridor	Health	Journey amenity	Travel time savings	Total
Melbourne corridors				
B1 – Northcote to Moonee Ponds	73.5	0.7	6.2	80.4
B2 – Essendon to La Trobe University	22.8	0.4	1.7	24.8
B3 – Alfred Hospital to Clayton	178.4	4.2	13.6	196.2
B4 – Box Hill to Docklands	256.1	3.5	18.1	277.8
B5 – Werribee to West Footscray	49.4	1.5	3.6	54.5
B6 – Abbotsford to Anzac Station	58.4	1.1	10.1	69.6
B7 – Anzac Station to Sandringham	100.7	0.5	6.7	107.9
B8 – St Albans to Docklands	63.3	6.5	10.2	80.1
B9 – Highpoint to Footscray	116.8	2.0	10.6	129.4
B10 – Essendon to Southbank	42.5	0.4	3.1	46.0
B17 – Caulfield to Auburn	8.2	0.1	0.7	8.9
B18 – Murrumbeena to Southland	30.9	0.7	2.4	33.9
Regional Victoria corridors				
B11 – Wodonga	2.8	0.1	0.2	3.1
B12 – Wangaratta	5.3	<0.1	0.3	5.7
B13 – Bendigo	13.7	0.5	1.0	15.2
B14 – Castlemaine	2.1	0.1	0.2	2.4
B15 – Ballarat	33.1	0.9	2.4	36.4
B16 – Geelong	49.5	0.9	3.3	53.7

Source: FTI Consulting, 2025

Alfred Hospital to Clayton, and Box Hill to Docklands produce the largest direct user benefits. This is because in absolute terms, these corridors have both the largest number of existing users and the largest number of new users.

The health benefit is the largest benefit across all corridors, representing on average around 90% of the total direct user benefits. The health benefits from Abbotsford to Anzac Station are comparatively low as a share of total direct benefits. This is because of a substantial mode shift away from walking, rather than PT and car travel, which represents a smaller than average incremental benefit.

4.2 Indirect benefits

4.2.1 Congestion cost savings

Mode shift from car to cycling reduces the number of private vehicles using the road network. This reduction in traffic volumes will benefit other motorists who continue to use the road and consequently face less traffic congestion.

4.2.2 Environmental benefits

Cycling produces far less environmental externalities on a per-kilometre basis than non-active forms of travel including car and public transport. Mode shift away from cars and PT results in reduced environmental impacts, including air pollution, greenhouse gas emissions and noise.

4.2.3 Roadway provision cost savings

Avoided car travel through mode shift to cycling reduces wear and tear on roads. This benefit is measured on a per kilometre of active travel basis.

4.2.4 Road accident cost savings

There are two offsetting impacts in relation to road accident costs, which are both captured in the analysis:

- For **existing users**, improvements in the quality of cycling infrastructure and reduced conflicts with other road users and pedestrians means that the risk of accidents is reduced, driving a decrease in resulting road accident costs. The better the infrastructure along a route, the larger the size of the benefit to existing users. This also includes improvements to intersections, which is addressed in the sub-section below.
- For **users changing their route**, they now travel on roads and paths with higher quality infrastructure than they did under the Base Case, so also experience a reduction in safety risk.
- **New users** switching modes from car or public transport to cycling generally become exposed to higher accident costs due to the higher risk of accidents for cyclists compared to cars or public transport. This means that there is a significant safety disbenefit resulting from new cyclists starting to use the corridors. This is somewhat offset by constructing high-quality infrastructure for which the crash risk for users is lower.

Also included in this benefit is a ‘safety in numbers’ effect, where average safety risks per user reduce with higher numbers of cyclists using a particular route. This is partially caused by changes in driver behaviour when cycling becomes more commonplace.

This benefit may be particularly important for women as female riders in particular can feel unsafe on quiet streets at night[11] – while this aspect of perceived safety is not quantified, it is an important consideration in the overall impact of the project.

Worked example: road accident cost savings

The following worked example shows how different road accident cost impacts are estimated for existing users and new users, and how the two effects interact in the estimate of overall benefits. This example uses parameters that apply for the Abbotsford to Anzac Station corridor, but is a simplified example for illustrative purposes.

Table 6 Worked example: road accident cost savings

Travel choice in the Base Case	Cycled on the corridor	Cycled off the corridor	Car	PT	Walk
Base Case	$1.08	$1.28	$0.31	$0.06	$2.11
Project Case	$0.84	$0.84	$0.84	$0.84	$0.84
Benefit per km	**$0.24**	**$0.44**	**-$0.53**	**-$0.78**	**$1.27**

Source: FTI Consulting, 2025

This example shows that existing users who are either already using the corridor or who change their route to use the corridor experience a benefit per kilometre travelled. People who walk in the Base Case but choose to cycle in the Project Case also receive a benefit, due to the lower accident risk for cyclists than pedestrians. However, those who shift their mode from car or PT travel to cycling are faced with higher accident costs, with a resulting disbenefit.

The interaction between these different effects is different for each corridor, and the overall level of benefit or disbenefit therefore depends on the relative volumes of users in each group.

Intersection accident cost savings

In addition to the impacts on overall road safety discussed above, improvements in infrastructure at intersections also reduce the level of accident risk for cyclists. Since 56% of cycling accidents occur at intersections[12], this benefit has been modelled separately to account for its significance as a share of overall accident cost savings generated by the project.

4.2.5 Avoided Base Case costs

As the existing infrastructure along each of the cycling corridors are upgraded, costs required to maintain any existing cycling infrastructure will be avoided. This includes ongoing maintenance costs as well as lifecycle costs to replace infrastructure at the end of its useful life.

4.2.6 Residual asset value

Some components of the upgraded cycling corridors delivered will have a useful life that extends beyond the 30-year appraisal period in this analysis. The residual asset value captures the value of the remaining life of net additional government-owned assets at the end of the appraisal period.

[11] Legislative Assembly Economy and Infrastructure Committee, *Inquiry into the impact of road safety behaviours on vulnerable road users*

[12] Road Safety, Fact sheet: Vulnerable road users

4.2.7 Summary of indirect benefits

Indirect benefits for each corridor are summarised in Table 7.

Table 7 Core demand scenario: indirect benefits ($m FY25, real, discounted at 7%)

Corridor	Congestion cost savings	Environmental benefits	Roadway provision cost savings	Road accident cost savings	Avoided Base Case costs	Residual asset value	Total
Melbourne corridors							
B1 – Northcote to Moonee Ponds	24.1	0.7	2.0	-5.0	4.8	2.3	28.8
B2 – Essendon to La Trobe University	7.2	0.2	0.6	-1.2	11.6	3.6	22.0
B3 – Alfred Hospital to Clayton	27.9	1.0	4.4	-18.6	14.6	3.5	32.8
B4 – Box Hill to Docklands	25.0	1.1	6.3	-39.0	11.7	8.0	13.2
B5 – Werribee to West Footscray	9.2	0.3	1.1	-3.9	36.7	2.1	45.5
B6 – Abbotsford to Anzac Station	9.9	0.5	2.6	11.7	4.6	0.9	30.0
B7 – Anzac Station to Sandringham	12.3	0.5	2.4	-13.6	21.9	4.6	28.2
B8 – St Albans to Docklands	20.9	0.6	1.6	16.3	25.2	1.8	66.3
B9 – Highpoint to Footscray	65.8	1.9	3.3	3.2	7.6	4.5	86.2
B10 – Essendon to Southbank	4.3	0.2	1.0	-6.2	9.6	3.7	12.5
B17 – Caulfield to Auburn	2.7	0.1	0.2	0.1	5.5	1.3	9.9
B18 – Murrumbeena to Southland	10.1	0.3	0.7	-2.3	8.8	2.5	20.1
Regional Victoria corridors							
B11 – Wodonga	0.2	<0.10	0.1	-<0.1	5.7	2.3	8.3
B12 – Wangaratta	0.3	<0.10	0.1	-0.4	9.2	1.4	10.6
B13 – Bendigo	0.8	0.1	0.3	-<0.1	17.3	5.6	24.1
B14 – Castlemaine	0.1	<0.1	<0.1	-0.2	<0.1	0.8	0.8

Corridor	Congestion cost savings	Environmental benefits	Roadway provision cost savings	Road accident cost savings	Avoided Base Case costs	Residual asset value	Total
B15 – Ballarat	1.9	0.3	0.8	-2.9	6.4	4.0	10.4
B16 – Geelong	2.8	0.4	1.2	-4.2	14.8	1.5	16.5

Source: FTI Consulting, 2025

Congestion cost savings are the largest contributor to indirect benefits, reflecting the benefits of mode shift reducing the number of private vehicles on the road network. Avoided Base Case costs and residual asset value are also large drivers of indirect benefits across all corridors. Road accident cost savings represent a disbenefit across most corridors, which is driven by the increase in safety risk as more people choose to cycle over other transport modes, despite the benefit to existing users. Box Hill to Docklands has a particularly high road accident cost savings disbenefit. This is because there is a large degree of mode shift towards new users cycling which represents a disbenefit, and shift away from PT which is comparatively safer than other modes.

4.3 Unquantified benefits

Unquantified benefits refer to benefits from the cycling corridors that have not been monetised, due to complexities in measurement or lack of sufficient evidence. These benefits should be acknowledged when considering the cycling corridors' broader value, and include:

- **Higher value land use:** The potential for increased productive use of land along upgraded cycling corridors. There may be further additional value to the surrounding areas along the corridors if the upgrades increase the attractiveness and desirability of these areas by providing additional transport options that can alleviate a transport constraint in the area. There is also potential for improved place outcomes if the infrastructure is designed in a way that enhances local amenity.
- **Option value:** The benefit of having a choice to cycle as an alternative mode of transport, particularly situations where other modes of transport are unavailable or unreliable. For example, if a commuter wakes up in the morning and finds that their train is not running, there is value in the option to cycle instead.
- **Cycle commerce benefits**: The benefit to businesses that upgraded cycling corridors enable safer and more efficient cycling for last mile deliveries, as well as the benefit to consumers that there are faster and more reliable delivery options available.
- **Negative impacts**: There can also be negative impacts of improving cycling infrastructure that have not been quantified. These can include disruption during construction and accessibility impacts for pedestrians.

4.4 Project costs

Costs associated with the cycling corridors primarily relate to construction capital costs, including cycling infrastructure, intersection upgrades, lighting upgrades, wayfinding upgrades and land acquisition. Lifecycle and replacement costs have been estimated based on the assumed asset lives of various components of the infrastructure, and reflect additional costs required to replace parts of the asset during the 30-year appraisal period. Ongoing operational and maintenance costs are also required to maintain the infrastructure along the cycling corridors over the appraisal period.

The project costs are summarised below in Table 8.

Table 8 Project costs ($m FY25, real, discounted at 7%)

Corridor	Capital costs	Lifecycle and replacement costs	O&M costs	Total
Melbourne corridors				
B1 – Northcote to Moonee Ponds	13.8	4.6	1.1	19.6
B2 – Essendon to La Trobe University	26.8	9.9	3.0	39.7
B3 – Alfred Hospital to Clayton	18.6	7.9	3.1	29.6
B4 – Box Hill to Docklands	40.7	5.8	3.5	50.0
B5 – Werribee to West Footscray	31.8	12.2	8.3	52.3
B6 – Abbotsford to Anzac Station	8.9	3.6	0.7	13.2

Corridor	Capital costs	Lifecyle and replacement costs	O&M costs	Total
B7 – Anzac Station to Sandringham	32.6	11.4	2.7	46.7
B8 – St Albans to Docklands	24.7	9.1	4.7	38.5
B9 – Highpoint to Footscray	25.9	11.6	2.2	39.7
B10 – Essendon to Southbank	26.1	9.6	1.7	37.4
B17 – Caulfield to Auburn	9.9	3.6	0.8	14.3
B18 – Murrumbeena to Southland	20.2	7.8	2.1	30.0
Regional Victoria corridors				
B11 – Wodonga	15.3	5.4	2.2	22.9
B12 – Wangaratta	13.9	4.9	2.6	21.4
B13 – Bendigo	30.7	13.1	5.9	49.7
B14 – Castlemaine	4.4	1.5	1.2	7.0
B15 – Ballarat	31.2	12.0	4.3	47.5
B16 – Geelong	21.1	8.1	2.7	32.0

Source: FTI Consulting, 2025, based on inputs provided by Trafficworks

The corridors that have the higher cost per kilometre are those with higher complexity components require significant civil works, such as bridges, complex intersection upgrades or protected roundabouts. These include Northcote to Moonee Ponds, Box Hill to Docklands, Essendon to Southbank and Wodonga On the other hand, St Albans to Docklands, Werribee to West Footscray and Wangaratta are relatively less expensive per kilometre, as they are less complex and the existing infrastructure only requires minimal upgrades.

5 Results

This section presents and interprets the results of the CBA, including core results, sensitivity analysis and distributional analysis.

5.1 Demand modelling results

Table 9 shows the change in annual cycle kilometres travelled along the specific routes that are upgraded within each corridor. The results are based on CDM outputs with additional analysis undertaken by FTI Consulting (as described in section 3.1.1) to estimate the number of kilometres travelled on the routes themselves, as opposed to across the set of SA2 zones for each corridor.

Generally, cycling demand in absolute terms is highest on radial routes in Melbourne, with orbital routes (Northcote to Moonee Ponds, Essendon to La Trobe University, Caulfield to Auburn, and Murrumbeena to Southland) and regional routes having lower user numbers. However, there are high rates of growth on some orbital routes and regional routes.

Table 9 Core demand scenario: annual cycle kilometres on corridor (2031 total)

Corridor	Base Case ('000)	Project Case ('000)	% increase
Melbourne corridors			
B1 – Northcote to Moonee Ponds	405	2,300	470%
B2 – Essendon to La Trobe University	210	700	240%
B3 – Alfred Hospital to Clayton	1,770	6,200	250%
B4 – Box Hill to Docklands	1,345	8,100	505%
B5 – Werribee to West Footscray	1,525	2,800	85%
B6 – Abbotsford to Anzac Station	2,125	5,500	160%
B7 – Anzac Station to Sandringham	3,965	6,700	70%
B8 – St Albans to Docklands	3,680	5,500	50%
B9 – Highpoint to Footscray	555	3,800	590%
B10 – Essendon to Southbank	1,340	2,400	80%
B17 – Caulfield to Auburn	195	400	120%
B18 – Murrumbeena to Southland	150	800	425%
Regional Victoria corridors			
B11 – Wodonga	15	100	425%
B12 – Wangaratta	25	200	505%
B13 – Bendigo	255	600	155%
B14 – Castlemaine	5	100	825%
B15 – Ballarat	75	900	1,125%
B16 – Geelong	520	1,800	250%

Source: FTI Consulting, 2025

5.2 Economic appraisal results

The results of the economic appraisal are presented in Table 10. The best performing corridors are Alfred Hospital to Clayton, Box Hill to Docklands and Abbotsford to Anzac Station. The regional Victoria corridors have relatively weaker performance due to lower demand, whilst still maintaining relatively similar costs per kilometre as the metro corridors. The following section discusses drivers of these results in more detail.

Table 10 Core demand scenario: economic appraisal results ($m FY25, real, discounted at 7%)

Corridor	Total benefits ($m PV)	Total costs ($m PV)	NPV	BCR
Melbourne corridors				
B1 – Northcote to Moonee Ponds	109.2	19.6	89.6	5.6
B2 – Essendon to La Trobe University	46.9	39.7	7.2	1.2
B3 – Alfred Hospital to Clayton	229.0	29.6	199.4	7.7
B4 – Box Hill to Docklands	291.0	50.0	241.1	5.8
B5 – Werribee to West Footscray	100.0	52.3	47.6	1.9
B6 – Abbotsford to Anzac Station	99.6	13.2	86.4	7.5
B7 – Anzac Station to Sandringham	136.1	46.7	89.3	2.9
B8 – St Albans to Docklands	146.4	38.5	107.8	3.8
B9 – Highpoint to Footscray	215.6	39.7	175.9	5.4
B10 – Essendon to Southbank	58.5	37.4	21.1	1.6
B17 – Caulfield to Auburn	18.8	14.3	4.5	1.3
B18 – Murrumbeena to Southland	54.0	30.0	24.0	1.8
Regional Victoria corridors				
B11 – Wodonga	11.4	22.9	-11.5	0.5
B12 – Wangaratta	16.3	21.4	-5.1	0.8
B13 – Bendigo	39.3	49.7	-10.4	0.8
B14 – Castlemaine	3.2	7.0	-3.8	0.5
B15 – Ballarat	46.8	47.5	-0.7	1.0
B16 – Geelong	70.1	32.0	38.1	2.2

Source: FTI Consulting, 2025

5.3 Drivers of differences in economic results

The differences in results between corridors are primarily driven by:

- **The existing cycling user base**: Corridors with a higher number of existing users, such as Alfred Hospital to Clayton, and Box Hill to Docklands, perform well, whereas those with a low user base achieve lower benefits. This is driven by the benefits to existing users including travel time savings and improved safety due to upgraded infrastructure.
- **Improvement in quality and demand response**: Corridors that experience significant infrastructure upgrades have the largest increases the number of trips and kilometres travelled. In contrast to the existing user base, an uptake of cycling by new users is linked to a range of mode shift related benefits including health benefits and reductions in road network congestion and environmental externalities.
- **Geography**: Metro corridors perform better than regional corridors due to significantly higher user numbers. Within Melbourne, radial corridors tend to outperform orbital ones, but this is primarily due to user numbers.
- **Costs**: High costs can have a significant influence on results. For example, Essendon to Southbank and Wodonga face relatively high costs per kilometre and have lower BCRs than other metro and regional corridors respectively.
- **Corridor length**: Longer corridors tend to outperform shorter, but the relationship is relatively weak.

The difference in corridors' relative performance for each of the above components are shown below in Table 11.

Table 11 Drivers of economic appraisal results

Corridor	BCR	Existing user base	RAS	Cost / km	Length
Melbourne corridors					
B1 – Northcote to Moonee Ponds	🟢	🟡	🟢	🟢	🟢
B2 – Essendon to La Trobe University	🔴	🔴	🟢	🟡	🔴
B3 – Alfred Hospital to Clayton	🟢	🟢	🟡	🔴	🟢
B4 – Box Hill to Docklands	🟢	🟢	🟢	🟡	🟢
B5 – Werribee to West Footscray	🟡	🟢	🔴	🔴	🔴
B6 – Abbotsford to Anzac Station	🟢	🟢	🟡	🔴	🟢
B7 – Anzac Station to Sandringham	🟡	🟢	🟡	🔴	🟢
B8 – St Albans to Docklands	🟢	🟡	🟡	🔴	🟡
B9 – Highpoint to Footscray	🟢	🟢	🟡	🟢	🟢
B10 – Essendon to Southbank	🟡	🟡	🟡	🟢	🟡
B17 – Caulfield to Auburn	🟡	🔴	🟢	🟡	🟡
B18 – Murrumbeena to Southland	🟡	🔴	🟢	🟡	🟡
Regional Victoria corridors					
B11 – Wodonga	🔴	🔴	🔴	🟢	🔴

Corridor	BCR	Existing user base	RAS	Cost / km	Length
B12 – Wangaratta	🔴	🔴	🔴	🟡	🔴
B13 – Bendigo	🔴	🟡	🔴	🟡	🔴
B14 – Castlemaine	🔴	🔴	🟢	🟢	🔴
B15 – Ballarat	🔴	🟡	🔴	🟢	🟡
B16 – Geelong	🟡	🟡	🔴	🔴	🟡

🟢 Comparatively good performance (top third)

🟡 Average performance (middle third)

🔴 Comparatively low performance (bottom third)

Source: FTI Consulting, 2025

5.4 Sensitivity analysis

The sensitivity analysis tests the impact on the economic viability of each project option when certain inputs are adjusted, providing insight into the robustness of the CBA results to changes in key assumptions.

The following sensitivities have been tested:

- 4% and 10% discount rates (as required by DTF guidelines)
- Low and high demand scenarios
- P90 capital costs
- Total cost and benefit sensitivities (+/- 20%)
- Growth in benefits after last modelled year (zero and above population growth)

Detailed results for the sensitivity analysis are presented in Appendix B. At a high level, the sensitivity analysis shows that:

- There are very few circumstances where sensitivities result in NPVs changing from positive to negative. This only occurs for the Essendon to La Trobe University corridor under the 10% discount rate, P90 cost, benefits -20% and costs +20% sensitivities
- Using a 4% discount rate increases NPV significantly, while a 10% discount rate results in an NPV of around 60% of the core result, on average
- The ‘low’ demand scenario generates around 15% less benefits on average, while the ‘high’ scenario leads to an average 15% uplift in total benefits
- Using P90 capital costs generally has little impact on overall results, as does changing the rate of benefit growth following the last modelled period

5.5 Distributional analysis

The benefits quantified in the CBA accrue to a range of different stakeholder groups, from users of the new infrastructure to the wider community. The distributional analysis disaggregates the overall impacts of each corridor in the CBA and identifies how costs and benefits are distributed across groups. Key stakeholder groups are:

- Users, including:
  - New users (those shifting modes)
  - Existing users changing route
  - Continuing users on the corridors
- Victorian State Government
- Wider community

Each benefit is allocated to the stakeholder group that is the direct beneficiary. For example, given that the Victorian State Government is responsible for roadway provision costs, the benefit of roadway provision cost savings from increased active travel directly benefits the Victorian State Government. The accrual of benefits to key stakeholder groups is shown in the Table 12 below.

Table 12 Distributional analysis – benefits accrual

Benefit	Accrual
Health benefits	Split between users and government
Journey amenity benefits	Users
Travel time savings	Users
Congestion cost savings	Wider community
Environmental benefits	Wider community
Roadway provision cost savings	Government
Road accident cost savings	Split between users and government
Avoided Base Case Costs	Government
Residual asset value	Government

Source: FTI Consulting, 2025

The results of the distributional analysis are shown below.

Table 13 Core Scenario distributional analysis results ($m FY25, real, discounted at 7%)

Corridor	Government	Wider community	New users	Users changing route	Continuing users	Total benefits
Melbourne corridors						
B1 – Northcote to Moonee Ponds	43.3	24.8	39.9	0.1	1.1	109.2
B2 – Essendon to La Trobe University	26.6	7.4	11.7	0.1	1.0	46.9
B3 – Alfred Hospital to Clayton	102.4	28.9	90.3	0.4	7.0	229.0
B4 – Box Hill to Docklands	134.6	26.2	125.4	0.4	4.4	291.0

Corridor	Government	Wider community	New users	Users changing route	Continuing users	Total benefits
B5 – Werribee to West Footscray	62.6	9.5	24.3	0.2	3.4	100.0
B6 – Abbotsford to Anzac Station	43.0	10.3	42.0	0.5	3.7	99.6
B7 – Anzac Station to Sandringham	72.5	12.8	48.1	0.8	1.8	136.1
B8 – St Albans to Docklands	68.3	21.5	34.6	2.7	19.2	146.4
B9 – Highpoint to Footscray	75.4	67.6	70.7	<0.1	1.9	215.6
B10 – Essendon to Southbank	32.4	4.5	20.3	0.2	1.2	58.5
B17 – Caulfield to Auburn	11.1	2.8	4.4	0.1	0.3	18.8
B18 – Murrumbeena to Southland	26.3	10.4	16.3	0.1	0.9	54.0
Regional Victoria corridors						
B11 – Wodonga	9.5	0.2	1.5	<0.1	0.2	11.4
B12 – Wangaratta	13.1	0.4	2.6	<0.1	0.2	16.3
B13 – Bendigo	30.1	0.9	7.1	0.1	1.1	39.3
B14 – Castlemaine	1.8	0.1	1.2	<0.1	0.1	3.2
B15 – Ballarat	26.3	2.2	17.6	<0.1	0.8	46.8
B16 – Geelong	40.1	3.2	25.1	0.2	1.5	70.1

Source: FTI Consulting, 2025

While the analysis shows that the most significant benefit recipient for almost all corridors is government, this in reality reflects the fact that government service provision costs (primarily healthcare) are lower. This is effectively a benefit to taxpayers and the community through improving population health and reducing the burden of road upkeep and other avoided costs. Community benefits for the Melbourne corridors are relatively larger than the regional corridors. Between the three groups of users, new users experience the largest share of benefits due to the significant increase in users on most corridors. Community and cyclist benefits are very minimal for regional corridors due to low user numbers.

Trip purposes

The analysis measures benefits for commuters as well as 'other' trip types – which includes recreational cycling as well as journeys for shopping, education or other purposes. Both categories of trip are important for the project in terms of overall demand and economic benefits, with an average of 65% of total benefits linked to commute trips, and 35% flowing from other trip types. Some benefits, such as cycle travel time savings, are exclusively related to commute trips. Increased accident costs for new users are also more significant for commuters, as these trips are more likely to stem from mode shift away from car or PT travel.

Appendix A Methodology and assumptions

This appendix outlines the methodology, inputs and assumptions used to monetise the set of benefits described in this Report.

General assumptions

There are a range of assumptions that are applied throughout the economic appraisal that impact the quantification of various benefits.

Table 14 Assumptions: Expansion and annualisation

Assumption	Value	Source
Appraisal period length	30 years	DTF guidelines
Discount base year	2025	Assumption
Discount rate	7%	DTF guidelines
Weekday to year expansion – trips to/ from Melbourne LGA	285	ShapeTransport based on analysis of VISTA data
Weekday to year expansion – trips destined for all other destinations	336	
Cycling speed – on road (door to door)	16 km / hr	Infrastructure and Transport Ministers (2023): *Australian Transport Assessment and Planning Guidelines – M4 Active travel*, Page 24
Cycling speed – cycleway	25 km / hr	
E-bike additional cycling speed	2 km / hr	

Source: FTI Consulting, 2025

Direct user benefits

Health benefits

Measures the value of increased health and wellbeing, and reduced morbidity and mortality through increasing total physical activity across the population. This benefit takes into account physical activity displacement. E-bike users receive a relatively smaller benefit given the expected lower physical effort as compared to pushbikes.

Table 15 Assumptions: Health benefits

Assumption	Value	Source
Health benefit per kilometre cycled (on road)	$3.00	NSW Health (2024): *Active Transport Health Model Reference Outcome Values*, Page 5
Health benefit per kilometre cycled (off road)	$3.02	
Health benefit per kilometre walked	$5.33	
Displacement factor for physical activity	12.45%	
Health benefit factor for e-bikes	70%	Infrastructure and Transport Ministers (2023): *Australian Transport Assessment and Planning Guidelines – M4 Active Travel*, Page 31

Source: FTI Consulting, 2025. All values escalated to $FY2025

Journey amenity benefits

Measures the increase in the quality and comfort of the travel experience, beyond just the time or monetary cost of a journey. In relation to cycling, these factors include perceived levels of safety, level of separation from other road traffic and pedestrians, road or path surface quality, wayfinding and lighting.

Table 16 Assumptions: Journey amenity benefits

Assumption	Value	Source
Journey amenity benefit per minute cycled (off road segregated cycle track)	$0.26	UK Department for Transport (2017): *The Transport Analysis Guidance Data Book*, Sheet A4 1.6 Converted to $AUD based on RBA historical exchange rates
Journey amenity benefit per minute cycled (on road segregated cycle lane)	$0.09	

Source: FTI Consulting, 2025. All values escalated to $FY2025

Travel time savings

Measures the time saving benefit for commuters as improved cycling infrastructure enables faster speeds and decreased journey times. There is a greater travel time savings benefit for e-bike users given their travel at higher speed.

There is a further time saving benefit for new users who switch commuting modes to cycling, and then save time through reducing other forms of physical activity as the commute becomes their main form of exercise. This benefit is only applied to the share of new trips which are expected to displace other forms of exercise undertaken by an individual.

Table 17 Assumptions: Travel time savings

Assumption	Value	Source
Value of time per hour (hedonic trips)	$0	TfNSW (2025): *Economic Parameter Values*, Page 51
Value of time per hour (utilitarian trips)	$20.99	TfNSW (2025): *Economic Parameter Values*, Page 12
Displacement factor for physical activity	12.45%	NSW Health (2024): *Active Transport Health Model Reference Outcome Values*, Page 5

Source: FTI Consulting, 2025. All values escalated to $FY2025

Indirect benefits

Congestion cost savings

Measures the reduction in congestion costs for other motorists who continue to use the road and consequently face less traffic congestion, following the mode shift from car travel to active travel. The Melbourne corridors use a blended value of CBD streets and inner arterial roads. The regional corridors use the outer arterial roads value.

Table 18 Assumptions: Congestion cost savings

Assumption	Value	Source
Congestion cost saving benefit per vehicle kilometres travelled (CBD streets)	$1.31	TfNSW (2025): *Economic Parameter Values*, Page 35

Assumption	Value	Source
Congestion cost saving benefit per vehicle kilometres travelled (inner arterial roads)	$0.44	
Congestion cost saving benefit per vehicle kilometres travelled (outer arterial roads)	$0.15	

Source: FTI Consulting, 2025. All values escalated to $FY2025

Environmental benefits

Measures the reduced environmental impacts, including air pollution, greenhouse gas emissions and noise, which arise from the shift away from car and PT travel and towards active travel. The PT environmental benefit is a blended value of the bus, light rail and rail values.

Table 19 Assumptions: Environmental benefits

Assumption	Value	Source
Environmental externality cost per kilometre (urban car)	2.24 cents	TfNSW (2025): *Economic Parameter Values*, Page 45
Environmental externality cost per kilometre (urban bus)	1.10 cents	
Environmental externality cost per kilometre (urban light rail)	0.17 cents	
Environmental externality cost per kilometre (urban rail)	0.68 cents	

Source: FTI Consulting, 2025. All values escalated to $FY2025

Roadway provision cost savings

Measures the reduction in wear and tear on the roads following the mode shift from car travel to active travel. This benefit is measured on a per kilometre of active travel basis as per parameters available from TfNSW.

Table 20 Assumptions: Roadway provision cost savings

Assumption	Value	Source
Roadway provision cost savings per kilometre of active travel	6.03 cents	TfNSW (2025): *Economic Parameter Values*, Page 40

Source: FTI Consulting, 2025. All values escalated to $FY2025

Road accident cost savings

Measures the improvements in the quality of cycling infrastructure and reduced conflicts with other road users that lead to decreased road accident costs for existing cyclists. This is monetised using crash cost parameters that are factored to account for different risk levels associated with different types of cycling infrastructure. Additionally, this benefit measures the disbenefit for new cyclists that switch modes from car or PT to cycling given the higher risk of accidents for cyclists. This is monetised using the crash cost per kilometre for each transport mode.

This benefit accounts for the safety in numbers effect, whereby an increase in the number of cyclists decreases the average risk factor per user and results in lower accident costs.

Table 21 Assumptions: Road accident cost savings

Assumption	Value	Source
Crash cost per kilometre (car)	\$0.31	Infrastructure and Transport Ministers (2023): *Australian Transport Assessment and Planning Guidelines – M4 Active Travel – Background Report*, Page 44
Crash cost per kilometre (bus)	\$0.06	
Crash cost per kilometre (cycling)	\$1.39	
Crash cost per kilometre (walking)	\$2.11	
Crash cost factor (no infrastructure)	1.00	
Crash cost factor (painted lane)	0.67	
Crash cost factor (buffered lane)	0.67	
Crash cost factor (separated)	0.42	
Crash cost factor (bike boulevard)	0.25	
Safety in numbers – risk reduction per 1% increase in cycling volumes	0.3%	Infrastructure and Transport Ministers (2023): *Australian Transport Assessment and Planning Guidelines – M4 Active travel*, Page 20
Maximum risk reduction	30%	Assumption – capped at the level of risk reduction associated with a doubling in cycling volumes

Source: FTI Consulting, 2025. All values escalated to \$FY2025

Intersection safety

As part of the road accident cost savings benefit, the analysis also measures the reduction in crash risk at intersections which are upgraded along each corridor. Since a large share of accidents involving cyclists happen at intersections, improving intersections along each route will have a measurable impact on reducing accident rates for cyclists using the corridors.

Table 22 Assumptions: Intersection safety

Assumption	Value	Source
Share of total accident costs at intersections	56%	National Road Safety Strategy (2020): *Fact sheet: vulnerable road users*
Annual crash costs per intersection, Base Case	\$42,024	FTI Consulting calculation based on total demand, crash cost per kilometre and number of intersections along each corridor
Risk reduction at upgraded intersections	50%	FTI Consulting assumption
Number of intersections upgrade	varies	Intersections with ‘high’ or ‘very high’ complexity upgrades in Trafficworks cost estimates

Source: FTI Consulting, 2025. All values escalated to \$FY2025

Avoided Base Case costs

Measures the avoided costs under the Base Case to maintain any existing cycling infrastructure along each corridor, including end-of-life renewal costs that fall within the economic appraisal period. All existing infrastructure is assumed to have half its lifespan remaining, on average, at the start of the appraisal period.

Table 23 Assumptions: Avoided Base Case costs

Infrastructure type	Lifespan (years)	Maintenance cost ($ / km / p.a.)	Renewal cost ($ / km)
Painted lane	15	$9,000	$450,000
Protected on-road	25	$7,500	$500,000
Bike boulevard	15	$7,000	$350,000
Shared use path	30	$13,500	$900,000
Separated off-road	30	$12,000	$1,200,000

Source: Trafficworks, 2025. All values are real $FY2025

Residual asset value

Measures the value of the upgraded cycling corridors that have a useful life that extend beyond the 30-year appraisal period in this analysis.

Table 24 Assumptions: Residual asset value

<table>
<tr><th colspan="2">Asset type</th><th>Lifespan (years)</th></tr>
<tr><td rowspan="3">Cycling infrastructure</td><td>Protected on-road</td><td>25</td></tr>
<tr><td>Shared use path</td><td>30</td></tr>
<tr><td>Bike boulevard</td><td>15</td></tr>
<tr><td rowspan="3">Intersection upgrades</td><td>Signalised</td><td>15</td></tr>
<tr><td>Protected roundabout</td><td>25</td></tr>
<tr><td>Intersection upgrade</td><td>15</td></tr>
<tr><td rowspan="3">Crossing upgrades</td><td>Raised priority crossing</td><td>20</td></tr>
<tr><td>Pedestrian operated signals</td><td>15</td></tr>
<tr><td>Bridge</td><td>65</td></tr>
<tr><td rowspan="2">Lighting upgrades</td><td>Solar</td><td>10</td></tr>
<tr><td>Mains</td><td>20</td></tr>
<tr><td rowspan="2">Wayfinding upgrades</td><td>On-road</td><td>15</td></tr>
<tr><td>Off-road</td><td>20</td></tr>
<tr><td colspan="2">Land acquisition</td><td>unlimited</td></tr>
</table>

Source: Trafficworks, 2025

Appendix B Detailed corridor results

B1 – Northcote to Moonee Ponds

Table 25 Core demand economic results: B1 – Northcote to Moonee Ponds

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	301.2	73.5	67%	10.4	10.7
Journey amenity	2.7	0.7	1%	0.1	0.1
Cycle time savings	2.3	0.6	1%	0.1	0.1
Displaced activity time savings	23.0	5.6	5%	0.8	0.8
Congestion cost savings	98.9	24.1	22%	3.4	3.5
Environmental	2.7	0.7	1%	0.1	0.1
Roadway provision cost savings	8.3	2.0	2%	0.3	0.3
Accident cost savings – existing users	6.7	1.6	1%	0.2	0.2
Accident cost savings – new users	-27.3	-6.6	-6%	-0.9	-1.0
Avoided Base Case costs	15.5	4.8	4%	0.7	0.7
Residual asset value	28.0	2.3	2%	0.3	0.3
Total benefits	**461.9**	**109.2**	**100%**	**15.5**	**15.9**
Costs					
Capital costs	20.1	13.8	71%	2.0	2.0
Lifecycle and replacement costs	34.2	4.6	24%	0.7	0.7
O&M costs	3.8	1.1	5%	0.2	0.2
Total costs	**58.1**	**19.6**	**100%**	**2.8**	**2.9**
Economic results					
NPV		**89.6**			
BCR		**5.6**			

Source: FTI Consulting, 2025

Table 26 Sensitivity results: B1 – Northcote to Moonee Ponds

Sensitivity		NPV	BCR
Core results		**89.6**	**5.6**
Discount rate	4%	163.0	6.7
	10%	52.0	4.5
Demand results	Low	68.2	4.5

Sensitivity		NPV	BCR
Core results		**89.6**	**5.6**
	High	113.4	6.8
Benefits	+20%	111.4	6.7
	-20%	67.8	4.5
Costs	+20%	85.7	4.6
	-20%	93.5	7.0
	P90 costs	85.8	4.6
Cycling demand growth after last modelled year	0%	82.3	5.2
	Population growth +1%	98.1	6.0

Source: FTI Consulting, 2025

B2 – Essendon to La Trobe University

Table 27 Core demand economic results: B2 – Essendon to La Trobe University

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	93.3	22.8	49%	1.4	10.6
Journey amenity	1.6	0.4	1%	<0.1	0.2
Cycle time savings	1.4	0.3	1%	<0.1	0.2
Displaced activity time savings	5.5	1.3	3%	0.1	0.6
Congestion cost savings	29.7	7.2	15%	0.4	3.4
Environmental	0.8	0.2	<1%	<0.1	0.1
Roadway provision cost savings	2.3	0.6	1%	<0.1	0.3
Accident cost savings – existing users	6.1	1.5	3%	0.1	0.7
Accident cost savings – new users	-11.0	-2.7	-6%	-0.2	-1.3
Avoided Base Case costs	35.7	11.6	25%	0.7	5.4
Residual asset value	43.8	3.6	8%	0.2	1.7
Total benefits	**209.2**	**46.9**	**100%**	**2.9**	**21.9**
Costs					
Capital costs	37.3	26.8	68%	1.6	12.5
Lifecycle and replacement costs	60.8	9.9	25%	0.6	4.6
O&M costs	10.3	3.0	8%	0.2	1.4
Total costs	**108.3**	**39.7**	**100%**	**2.4**	**18.5**

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Economic results					
NPV		**7.2**			
BCR		**1.2**			

Source: FTI Consulting, 2025

Table 28 Sensitivity results: B2 – Essendon to La Trobe University

Sensitivity		NPV	BCR
Core results		**7.2**	**1.2**
Discount rate	4%	26.7	1.5
	10%	-1.6	0.9
Demand results	Low	0.9	1.0
	High	14.1	1.4
Benefits	+20%	16.6	1.4
	-20%	-2.2	0.9
Costs	+20%	-0.7	1.0
	-20%	15.1	1.5
	P90 costs	-0.7	1.0
Cycling demand growth after last modelled year	0%	5.0	1.1
	Population growth +1%	9.8	1.2

Source: FTI Consulting, 2025

B3 – Alfred Hospital to Clayton

Table 29 Core demand economic results: B3 – Alfred Hospital to Clayton

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	889.5	178.4	78%	8.5	5.7
Journey amenity	20.8	4.2	2%	0.2	0.1
Cycle time savings	19.2	3.8	2%	0.2	0.1
Displaced activity time savings	48.8	9.8	4%	0.5	0.3
Congestion cost savings	139.2	27.9	12%	1.3	0.9
Environmental	5.0	1.0	<1%	<0.1	<0.1
Roadway provision cost savings	21.7	4.4	2%	0.2	0.1
Accident cost savings – existing users	35.4	7.1	3%	0.3	0.2

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Accident cost savings – new users	-128.2	-25.7	-11%	-1.2	-0.8
Avoided O&M costs	49.8	14.6	6%	0.7	0.5
Residual asset value	52.3	3.5	2%	0.2	0.1
Total benefits	**1,153.6**	**229.0**	**100%**	**11.0**	**7.3**
Costs					
Capital costs	31.1	18.6	63%	0.9	0.6
Lifecycle and replacement costs	48.7	7.9	27%	0.4	0.3
O&M costs	11.5	3.1	10%	0.1	0.1
Total costs	**91.3**	**29.6**	**100%**	**1.4**	**0.9**
Economic results					
NPV		**199.4**			
BCR		**7.7**			

Source: FTI Consulting, 2025

Table 30 Sensitivity results: B3 – Alfred Hospital to Clayton

Sensitivity		NPV	BCR
Core results		**199.4**	**7.7**
Discount rate	4%	387.5	9.6
	10%	109.2	6.2
Demand results	Low	156.8	6.3
	High	246.8	9.3
Benefits	+20%	245.2	9.3
	-20%	153.6	6.2
Costs	+20%	193.5	6.4
	-20%	205.3	9.7
	P90 costs	193.9	6.4
Cycling demand growth after last modelled year	0%	179.5	7.1
	Population growth +1%	222.8	8.5

Source: FTI Consulting, 2025

B4 – Box Hill to Docklands

Table 31 Core demand economic results: B4 – Box Hill to Docklands

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	1,366.4	256.1	88%	14.0	8.1
Journey amenity	18.9	3.5	1%	0.2	0.1
Cycle time savings	18.6	3.5	1%	0.2	0.1
Displaced activity time savings	78.2	14.7	5%	0.8	0.5
Congestion cost savings	133.6	25.0	9%	1.4	0.8
Environmental	6.1	1.1	<1%	0.1	<0.1
Roadway provision cost savings	33.6	6.3	2%	0.3	0.2
Accident cost savings – existing users	28.3	5.3	2%	0.3	0.2
Accident cost savings – new users	-236.3	-44.3	-15%	-2.4	-1.4
Avoided O&M costs	48.6	11.7	4%	0.6	0.4
Residual asset value	128.4	8.0	3%	0.4	0.3
Total benefits	**1,624.2**	**291.0**	**100%**	**15.9**	**9.3**
Costs					
Capital costs	68.2	40.7	81%	2.2	1.3
Lifecycle and replacement costs	82.2	5.8	12%	0.3	0.2
O&M costs	14.5	3.5	7%	0.2	0.1
Total costs	**164.9**	**50.0**	**100%**	**2.7**	**1.6**
Economic results					
NPV		**241.1**			
BCR		**5.8**			

Source: FTI Consulting, 2025

Table 32 Sensitivity results: B4 – Box Hill to Docklands

Sensitivity		NPV	BCR
Core results		**241.1**	**5.8**
Discount rate	4%	498.7	7.7
	10%	122.1	4.3
Demand results	Low	184.9	4.7
	High	303.1	7.1
Benefits	+20%	299.3	7.0

Sensitivity		NPV	BCR
Core results		**241.1**	**5.8**
	-20%	182.9	4.7
Costs	+20%	231.1	4.9
	-20%	251.0	7.3
	P90 costs	232.0	4.8
Cycling demand growth after last modelled year	0%	213.1	5.3
	Population growth +1%	274.2	6.5

Source: FTI Consulting, 2025

B5 – Werribee to West Footscray

Table 33 Core demand economic results: B5 – Werribee to West Footscray

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	263.3	49.4	49%	1.4	2.1
Journey amenity	8.1	1.5	2%	<0.1	0.1
Cycle time savings	6.4	1.2	1%	<0.1	<0.1
Displaced activity time savings	12.9	2.4	2%	0.1	0.1
Congestion cost savings	49.0	9.2	9%	0.3	0.4
Environmental	1.6	0.3	<1%	<0.1	<0.1
Roadway provision cost savings	6.1	1.1	1%	<0.1	<0.1
Accident cost savings – existing users	16.8	3.2	3%	0.1	0.1
Accident cost savings – new users	-37.6	-7.0	-7%	-0.2	-0.3
Avoided Base Case costs	128.8	36.7	37%	1.0	1.5
Residual asset value	33.0	2.1	2%	0.1	0.1
Total benefits	**488.4**	**100.0**	**100%**	**2.8**	**4.2**
Costs					
Capital costs	49.3	31.8	61%	0.9	1.3
Lifecycle and replacement costs	78.5	12.2	23%	0.3	0.5
O&M costs	32.2	8.3	16%	0.2	0.3
Total costs	**160.0**	**52.3**	**100%**	**1.5**	**2.2**
Economic results					
NPV		**47.6**			
BCR		**1.9**			

Source: FTI Consulting, 2025

Table 34 Sensitivity results: B5 – Werribee to West Footscray

Sensitivity		NPV	BCR
Core results		**47.6**	**1.9**
Discount rate	4%	106.8	2.4
	10%	20.1	1.5
Demand results	Low	35.5	1.7
	High	61.2	2.2
Benefits	+20%	67.6	2.3
	-20%	27.6	1.5
Costs	+20%	37.2	1.6
	-20%	58.1	2.4
	P90 costs	37.7	1.6
Cycling demand growth after last modelled year	0%	41.3	1.8
	Population growth +1%	55.1	2.1

Source: FTI Consulting, 2025

B6 – Abbotsford to Anzac Station

Table 35 Core demand economic results: B6 – Abbotsford to Anzac Station

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	238.5	58.4	59%	7.7	2.1
Journey amenity	4.5	1.1	1%	0.1	<0.1
Cycle time savings	4.8	1.2	1%	0.2	<0.1
Displaced activity time savings	36.6	8.9	9%	1.2	0.3
Congestion cost savings	40.4	9.9	10%	1.3	0.4
Environmental	1.9	0.5	<1%	0.1	<0.1
Roadway provision cost savings	10.5	2.6	3%	0.3	0.1
Accident cost savings – existing users	23.4	5.7	6%	0.8	0.2
Accident cost savings – new users	24.3	5.9	6%	0.8	0.2
Avoided Base Case costs	14.4	4.6	5%	0.6	0.2
Residual asset value	10.7	0.9	1%	0.1	<0.1
Total benefits	**409.9**	**99.6**	**100%**	**13.2**	**3.6**
Costs					
Capital costs	12.9	8.9	67%	1.2	0.3

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Lifecycle and replacement costs	20.1	3.6	27%	0.5	0.1
O&M costs	2.7	0.7	6%	0.1	<0.10
Total costs	**35.7**	**13.2**	**100%**	**1.8**	**0.5**
Economic results					
NPV		**86.4**			
BCR		**7.5**			

Source: FTI Consulting, 2025

Table 36 Sensitivity results: B6 – Abbotsford to Anzac Station

Sensitivity		NPV	BCR
Core results		**86.4**	**7.5**
Discount rate	4%	154.2	9.1
	10%	51.3	6.2
Demand results	Low	68.8	6.2
	High	105.8	9.0
Benefits	+20%	106.3	9.0
	-20%	66.5	6.0
Costs	+20%	83.8	6.3
	-20%	89.0	9.4
	P90 costs	83.6	6.1
Cycling demand growth after last modelled year	0%	79.7	7.0
	Population growth +1%	94.2	8.1

Source: FTI Consulting, 2025

B7 – Anzac Station to Sandringham

Table 37 Core demand economic results: B7 – Anzac Station to Sandringham

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	411.5	100.7	74%	5.0	3.8
Journey amenity	2.0	0.5	<1%	<0.1	<0.1
Cycle time savings	2.1	0.5	<1%	<0.1	<0.1
Displaced activity time savings	25.2	6.2	5%	0.3	0.2
Congestion cost savings	50.5	12.3	9%	0.6	0.5
Environmental	2.0	0.5	<1%	<0.1	<0.1

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Roadway provision cost savings	10.0	2.4	2%	0.1	0.1
Accident cost savings – existing users	14.9	3.7	3%	0.2	0.1
Accident cost savings – new users	-70.9	-17.3	-13%	-0.9	-0.7
Avoided Base Case costs	66.6	21.9	16%	1.1	0.8
Residual asset value	56.8	4.6	3%	0.2	0.2
Total benefits	**570.7**	**136.1**	**100%**	**6.8**	**5.2**
Costs					
Capital costs	45.3	32.6	70%	1.6	1.2
Lifecycle and replacement costs	75.4	11.4	24%	0.6	0.4
O&M costs	9.4	2.7	6%	0.1	0.1
Total costs	**130.1**	**46.7**	**100%**	**2.3**	**1.8**
Economic results					
NPV		**89.3**			
BCR		**2.9**			

Source: FTI Consulting, 2025

Table 38 Sensitivity results: B7 – Anzac Station to Sandringham

Sensitivity		NPV	BCR
Core results		**89.3**	**2.9**
Discount rate	4%	170.3	3.5
	10%	48.3	2.4
Demand results	Low	66.4	2.4
	High	114.9	3.5
Benefits	+20%	116.6	3.5
	-20%	62.1	2.3
Costs	+20%	80.0	2.4
	-20%	98.7	3.6
	P90 costs	80.0	2.4
Cycling demand growth after last modelled year	0%	81.6	2.7
	Population growth +1%	98.4	3.1

Source: FTI Consulting, 2025

B8 – St Albans to Docklands

Table 39 Core demand economic results: B8 – St Albans to Docklands

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	244.1	63.3	43%	1.9	3.0
Journey amenity	25.1	6.5	4%	0.2	0.3
Cycle time savings	25.7	6.7	5%	0.2	0.3
Displaced activity time savings	13.8	3.6	2%	0.1	0.2
Congestion cost savings	80.5	20.9	14%	0.6	1.0
Environmental	2.4	0.6	<1%	<0.1	<0.1
Roadway provision cost savings	6.1	1.6	1%	<0.1	0.1
Accident cost savings – existing users	79.4	20.6	14%	0.6	1.0
Accident cost savings – new users	-16.7	-4.3	-3%	-0.1	-0.2
Avoided O&M costs	77.3	25.2	17%	0.7	1.2
Residual asset value	20.0	1.8	1%	0.1	0.1
Total benefits	**557.5**	**146.4**	**100%**	**4.3**	**7.0**
Costs					
Capital costs	32.9	24.7	64%	0.7	1.2
Lifecycle and replacement costs	53.6	9.1	24%	0.3	0.4
O&M costs	15.7	4.7	12%	0.1	0.2
Total costs	**102.2**	**38.5**	**100%**	**1.1**	**1.8**
Economic results					
NPV		**107.8**			
BCR		**3.8**			

Source: FTI Consulting, 2025

Table 40 Sensitivity results: B8 – St Albans to Docklands

Sensitivity		NPV	BCR
Core results		**107.8**	**3.8**
Discount rate	4%	192.3	4.5
	10%	62.8	3.1
Demand results	Low	88.6	3.3
	High	129.4	4.4
Benefits	+20%	137.1	4.6
	-20%	78.6	3.0

Sensitivity		NPV	BCR
Core results		**107.8**	**3.8**
Costs	+20%	100.1	3.2
	-20%	115.5	4.7
	P90 costs	100.3	3.1
Cycling demand growth after last modelled year	0%	100.0	3.6
	Population growth +1%	116.9	4.0

Source: FTI Consulting, 2025

B9 – Highpoint to Footscray

Table 41 Core demand economic results: B9 – Highpoint to Footscray

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	623.3	116.8	54%	11.7	5.4
Journey amenity	10.4	2.0	1%	0.2	0.1
Cycle time savings	9.7	1.8	1%	0.2	0.1
Displaced activity time savings	46.7	8.8	4%	0.9	0.4
Congestion cost savings	350.9	65.8	30%	6.6	3.0
Environmental	9.9	1.9	1%	0.2	0.1
Roadway provision cost savings	17.5	3.3	2%	0.3	0.2
Accident cost savings – existing users	10.6	2.0	1%	0.2	0.1
Accident cost savings – new users	6.5	1.2	1%	0.1	0.1
Avoided O&M costs	32.3	7.6	4%	0.8	0.4
Residual asset value	71.6	4.5	2%	0.4	0.2
Total benefits	**1,189.7**	**215.6**	**100%**	**21.5**	**10.0**
Costs					
Capital costs	37.4	25.9	65%	2.6	1.2
Lifecycle and replacement costs	67.5	11.6	29%	1.2	0.5
O&M costs	8.6	2.2	6%	0.2	0.1
Total costs	**113.5**	**39.7**	**100%**	**4.0**	**1.8**
Economic results					
NPV		**175.9**			
BCR		**5.4**			

Source: FTI Consulting, 2025

Table 42 Sensitivity results: B9 – Highpoint to Footscray

Sensitivity		NPV	BCR
Core results		**175.9**	**5.4**
Discount rate	4%	364.8	7.3
	10%	88.9	4.0
Demand results	Low	129.9	4.3
	High	228.8	6.8
Benefits	+20%	219.1	6.5
	-20%	132.8	4.3
Costs	+20%	168.0	4.5
	-20%	183.9	6.8
	P90 costs	168.2	4.5
Cycling demand growth after last modelled year	0%	155.0	4.9
	Population growth +1%	200.8	6.1

Source: FTI Consulting, 2025

B10 – Essendon to Southbank

Table 43 Core demand economic results: B10 – Essendon to Southbank

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	211.9	42.5	73%	4.3	2.2
Journey amenity	2.2	0.4	1%	<0.1	<0.1
Cycle time savings	2.2	0.4	1%	<0.1	<0.1
Displaced activity time savings	13.1	2.6	4%	0.3	0.1
Congestion cost savings	21.3	4.3	7%	0.4	0.2
Environmental	0.9	0.2	<1%	<0.1	<0.1
Roadway provision cost savings	5.1	1.0	2%	0.1	0.1
Accident cost savings – existing users	7.0	1.4	2%	0.1	0.1
Accident cost savings – new users	-38.1	-7.6	-13%	-0.8	-0.4
Avoided O&M costs	33.6	9.6	16%	1.0	0.5
Residual asset value	54.7	3.7	6%	0.4	0.2
Total benefits	**313.8**	**58.5**	**100%**	**6.0**	**3.0**
Costs					
Capital costs	42.7	26.1	70%	2.7	1.3

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Lifecycle and replacement costs	69.5	9.6	26%	1.0	0.5
O&M costs	6.9	1.7	5%	0.2	0.1
Total costs	**119.1**	**37.4**	**100%**	**3.8**	**1.9**
Economic results					
NPV		**21.1**			
BCR		**1.6**			

Source: FTI Consulting, 2025

Table 44 Sensitivity results: B10 – Essendon to Southbank

Sensitivity		NPV	BCR
Core results		**21.1**	**1.6**
Discount rate	4%	55.5	2.0
	10%	6.2	1.2
Demand results	Low	11.6	1.3
	High	31.7	1.8
Benefits	+20%	32.8	1.9
	-20%	9.4	1.3
Costs	+20%	13.6	1.3
	-20%	28.6	2.0
	P90 costs	13.5	1.3
Cycling demand growth after last modelled year	0%	16.9	1.5
	Population growth +1%	26.1	1.7

Source: FTI Consulting, 2025

B11 – Wodonga

Table 45 Core demand economic results: B11 – Wodonga

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	13.0	2.8	24%	0.5	3.1
Journey amenity	0.4	0.1	1%	<0.1	0.1
Cycle time savings	0.3	0.1	1%	<0.1	0.1
Displaced activity time savings	0.7	0.2	1%	<0.1	0.2
Congestion cost savings	0.8	0.2	1%	<0.1	0.2
Environmental	0.1	<0.1	<1%	<0.1	<0.1

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Roadway provision cost savings	0.3	0.1	1%	<0.1	0.1
Accident cost savings – existing users	1.6	0.4	3%	0.1	0.4
Accident cost savings – new users	-1.7	-0.4	-3%	-0.1	-0.4
Avoided O&M costs	19.0	5.7	50%	0.9	6.3
Residual asset value	32.7	2.3	21%	0.4	2.6
Total benefits	**67.1**	**11.4**	**100%**	**1.9**	**12.5**
Costs					
Capital costs	23.9	15.3	67%	2.5	16.8
Lifecycle and replacement costs	39.8	5.4	23%	0.9	5.9
O&M costs	8.4	2.2	10%	0.4	2.4
Total costs	**72.1**	**22.9**	**100%**	**3.8**	**25.1**
Economic results					
NPV		**-11.5**			
BCR		**0.5**			

Source: FTI Consulting, 2025

Table 46 Sensitivity results: B11 – Wodonga

Sensitivity		NPV	BCR
Core results		**-11.5**	**0.5**
Discount rate	4%	-12.3	0.6
	10%	-10.1	0.4
Demand results	Low	-12.1	0.5
	High	-10.8	0.5
Benefits	+20%	-9.2	0.6
	-20%	-13.8	0.4
Costs	+20%	-16.1	0.4
	-20%	-6.9	0.6
	P90 costs	-15.9	0.4
Cycling demand growth after last modelled year	0%	-11.8	0.5
	Population growth +1%	-11.2	0.5

Source: FTI Consulting, 2025

B12 – Wangaratta

Table 47 Core demand economic results: B12 – Wangaratta

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	24.7	5.3	32%	0.6	5.5
Journey amenity	0.2	<0.1	<1%	<0.1	0.1
Cycle time savings	0.2	<0.1	<1%	<0.1	<0.1
Displaced activity time savings	1.3	0.3	2%	<0.1	0.3
Congestion cost savings	1.4	0.3	2%	<0.1	0.3
Environmental	0.2	<0.1	<1%	<0.1	<0.1
Roadway provision cost savings	0.6	0.1	1%	<0.1	0.1
Accident cost savings – existing users	1.6	0.4	2%	<0.1	0.4
Accident cost savings – new users	-3.3	-0.7	-4%	-0.1	-0.7
Avoided O&M costs	32.7	9.2	56%	1.0	9.5
Residual asset value	19.1	1.4	8%	0.2	1.4
Total benefits	**78.7**	**16.3**	**100%**	**1.8**	**17.0**
Costs					
Capital costs	18.9	13.9	65%	1.6	14.5
Lifecycle and replacement costs	31.5	4.9	23%	0.5	5.1
O&M costs	9.5	2.6	12%	0.3	2.7
Total costs	**59.9**	**21.4**	**100%**	**2.4**	**22.3**
Economic results					
NPV		**-5.1**			
BCR		**0.8**			

Source: FTI Consulting, 2025

Table 48 Sensitivity results: B12 – Wangaratta

Sensitivity		NPV	BCR
Core results		**-5.1**	**0.8**
Discount rate	4%	-1.0	1.0
	10%	-6.6	0.6
Demand results	Low	-6.2	0.7
	High	-3.8	0.8
Benefits	+20%	-1.8	0.9
	-20%	-8.4	0.6

Sensitivity		NPV	BCR
Core results		**-5.1**	**0.8**
Costs	+20%	-9.4	0.6
	-20%	-0.8	1.0
	P90 costs	-9.4	0.6
Cycling demand growth after last modelled year	0%	-5.6	0.7
	Population growth +1%	-4.5	0.8

Source: FTI Consulting, 2025

B13 – Bendigo

Table 49 Core demand economic results: B13 – Bendigo

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	68.1	13.7	35%	0.7	5.6
Journey amenity	2.5	0.5	1%	<0.1	0.2
Cycle time savings	1.6	0.3	1%	<0.1	0.1
Displaced activity time savings	3.5	0.7	2%	<0.1	0.3
Congestion cost savings	3.9	0.8	2%	<0.1	0.3
Environmental	0.6	0.1	<1%	<0.1	<0.1
Roadway provision cost savings	1.6	0.3	1%	<0.1	0.1
Accident cost savings – existing users	6.6	1.3	3%	0.1	0.6
Accident cost savings – new users	-6.8	-1.4	-3%	-0.1	-0.6
Avoided O&M costs	59.3	17.3	44%	0.9	7.1
Residual asset value	84.3	5.6	14%	0.3	2.3
Total benefits	**225.1**	**39.3**	**100%**	**2.0**	**16.0**
Costs					
Capital costs	46.8	30.7	62%	1.6	12.5
Lifecycle and replacement costs	74.1	13.1	26%	0.7	5.4
O&M costs	22.1	5.9	12%	0.3	2.4
Total costs	**142.9**	**49.7**	**100%**	**2.6**	**20.3**
Economic results					
NPV		**-10.4**			
BCR		**0.8**			

Source: FTI Consulting, 2025

Table 50 Sensitivity results: B13 – Bendigo

Sensitivity		NPV	BCR
Core results		**-10.4**	**0.8**
Discount rate	4%	3.3	1.0
	10%	-14.2	0.6
Demand results	Low	-13.5	0.7
	High	-7.1	0.9
Benefits	+20%	-2.6	0.9
	-20%	-18.3	0.6
Costs	+20%	-20.4	0.7
	-20%	-0.5	1.0
	P90 costs	-19.8	0.7
Cycling demand growth after last modelled year	0%	-11.9	0.8
	Population growth +1%	-8.7	0.8

Source: FTI Consulting, 2025

B14 – Castlemaine

Table 51 Core demand economic results: B14 – Castlemaine

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	7.9	2.1	65%	0.8	3.6
Journey amenity	0.4	0.1	3%	<0.1	0.2
Cycle time savings	0.2	0.1	2%	<0.1	0.1
Displaced activity time savings	0.4	0.1	4%	<0.1	0.2
Congestion cost savings	0.5	0.1	4%	<0.1	0.2
Environmental	0.1	<0.1	1%	<0.1	<0.1
Roadway provision cost savings	0.2	<0.1	2%	<0.1	0.1
Accident cost savings – existing users	0.2	<0.1	2%	<0.1	0.1
Accident cost savings – new users	-0.9	-0.2	-7%	-0.2	-0.4
Avoided O&M costs	<0.1	<0.1	<1%	<0.1	<0.1
Residual asset value	9.2	0.8	25%	0.3	1.4
Total benefits	**18.2**	**3.2**	**100%**	**1.2**	**5.6**
Costs					
Capital costs	6.2	4.4	63%	1.8	7.7

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Lifecycle and replacement costs	10.5	1.5	21%	0.6	2.6
O&M costs	4.0	1.2	16%	0.5	2.0
Total costs	**20.7**	**7.0**	**100%**	**2.8**	**12.3**
Economic results					
NPV		**-3.8**			
BCR		**0.5**			

Source: FTI Consulting, 2025

Table 52 Sensitivity results: B14 – Castlemaine

Sensitivity		NPV	BCR
Core results		**-3.8**	**0.5**
Discount rate	4%	-4.0	0.6
	10%	-3.4	0.3
Demand results	Low	-4.3	0.4
	High	-3.3	0.5
Benefits	+20%	-3.2	0.5
	-20%	-4.5	0.4
Costs	+20%	-5.2	0.4
	-20%	-2.4	0.6
	P90 costs	-5.0	0.4
Cycling demand growth after last modelled year	0%	-4.0	0.4
	Population growth +1%	-3.7	0.5

Source: FTI Consulting, 2025

B15 – Ballarat

Table 53 Core demand economic results: B15 – Ballarat

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	165.0	33.1	71%	2.4	11.2
Journey amenity	4.6	0.9	2%	0.1	0.3
Cycle time savings	3.3	0.7	1%	<0.1	0.2
Displaced activity time savings	8.5	1.7	4%	0.1	0.6
Congestion cost savings	9.3	1.9	4%	0.1	0.6
Environmental	1.4	0.3	1%	<0.1	0.1

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Roadway provision cost savings	3.9	0.8	2%	0.1	0.3
Accident cost savings – existing users	5.1	1.1	2%	0.1	0.4
Accident cost savings – new users	-19.8	-4.0	-8%	-0.3	-1.3
Avoided O&M costs	22.8	6.4	14%	0.5	2.2
Residual asset value	60.4	4.0	9%	0.3	1.4
Total benefits	**264.5**	**46.8**	**100%**	**3.5**	**15.9**
Costs					
Capital costs	55.2	31.2	66%	2.3	10.6
Lifecycle and replacement costs	88.0	12.0	25%	0.9	4.1
O&M costs	17.4	4.3	9%	0.3	1.5
Total costs	**160.7**	**47.5**	**100%**	**3.5**	**16.1**
Economic results					
NPV		**-0.7**			
BCR		**1.0**			

Source: FTI Consulting, 2025

Table 54 Sensitivity results: B15 – Ballarat

Sensitivity		NPV	BCR
Core results		**-0.7**	**1.0**
Discount rate	4%	17.2	1.2
	10%	-6.8	0.8
Demand results	Low	-8.2	0.8
	High	7.6	1.2
Benefits	+20%	8.7	1.2
	-20%	-10.1	0.8
Costs	+20%	-10.2	0.8
	-20%	8.8	1.2
	P90 costs	-10.1	0.8
Cycling demand growth after last modelled year	0%	-4.1	0.9
	Population growth +1%	3.3	1.1

Source: FTI Consulting, 2025

B16 – Geelong

Table 55 Core demand economic results: B16 – Geelong

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	263.9	49.5	71%	3.1	7.7
Journey amenity	4.5	0.9	1%	0.1	0.1
Cycle time savings	3.7	0.7	1%	<0.1	0.1
Displaced activity time savings	14.2	2.7	4%	0.2	0.4
Congestion cost savings	14.7	2.8	4%	0.2	0.4
Environmental	2.3	0.4	1%	<0.1	0.1
Roadway provision cost savings	6.2	1.2	2%	0.1	0.2
Accident cost savings – existing users	10.0	1.9	3%	0.1	0.3
Accident cost savings – new users	-32.2	-6.0	-9%	-0.4	-0.9
Avoided O&M costs	57.3	14.8	21%	0.9	2.3
Residual asset value	24.3	1.5	2%	0.1	0.2
Total benefits	**368.9**	**70.1**	**100%**	**4.3**	**11.0**
Costs					
Capital costs	33.2	21.1	66%	1.3	3.3
Lifecycle and replacement costs	52.9	8.1	25%	0.5	1.3
O&M costs	10.5	2.7	8%	0.2	0.4
Total costs	**96.6**	**32.0**	**100%**	**2.0**	**5.0**
Economic results					
NPV		**38.1**			
BCR		**2.2**			

Source: FTI Consulting, 2025

Table 56 Sensitivity results: B16 – Geelong

Sensitivity		NPV	BCR
Core results		**38.1**	**2.2**
Discount rate	4%	86.4	2.8
	10%	16.3	1.7
Demand results	Low	27.4	1.9
	High	50.1	2.6
Benefits	+20%	52.2	2.6
	-20%	24.1	1.8

Sensitivity		NPV	BCR
Core results		**38.1**	**2.2**
Costs	+20%	31.8	1.8
	-20%	44.5	2.7
	P90 costs	31.6	1.8
Cycling demand growth after last modelled year	0%	32.6	2.0
	Population growth +1%	44.7	2.4

Source: FTI Consulting, 2025

B17 – Caulfield to Auburn

Table 57 Core demand economic results: B17 – Caulfield to Auburn

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	33.5	8.2	44%	1.4	6.5
Journey amenity	0.2	0.1	<1%	<0.1	<0.1
Cycle time savings	0.2	<0.1	<1%	<0.1	<0.1
Displaced activity time savings	2.5	0.6	3%	0.1	0.5
Congestion cost savings	11.2	2.7	15%	0.5	2.2
Environmental	0.3	0.1	<1%	<0.1	0.1
Roadway provision cost savings	0.9	0.2	1%	<0.1	0.2
Accident cost savings – existing users	2.7	0.7	4%	0.1	0.5
Accident cost savings – new users	-2.5	-0.6	-3%	-0.1	-0.5
Avoided O&M costs	18.9	5.5	29%	0.9	4.3
Residual asset value	15.7	1.3	7%	0.2	1.0
Total benefits	**83.6**	**18.8**	**100%**	**3.1**	**14.8**
Costs					
Capital costs	15.0	9.9	69%	1.6	7.8
Lifecycle and replacement costs	24.4	3.6	25%	0.6	2.9
O&M costs	2.8	0.8	5%	0.1	0.6
Total costs	**42.1**	**14.3**	**100%**	**2.4**	**11.3**
Economic results					
NPV		**4.5**			
BCR		**1.3**			

Source: FTI Consulting, 2025

Table 58 Sensitivity results: B17 – Caulfield to Auburn

Sensitivity		NPV	BCR
Core results		**4.5**	**1.3**
Discount rate	4%	12.3	1.6
	10%	0.9	1.1
Demand results	Low	2.1	1.1
	High	7.0	1.5
Benefits	+20%	8.2	1.6
	-20%	0.7	1.0
Costs	+20%	1.6	1.1
	-20%	7.3	1.6
	P90 costs	1.6	1.1
Cycling demand growth after last modelled year	0%	3.6	1.3
	Population growth +1%	5.4	1.4

Source: FTI Consulting, 2025

B18 – Murrumbeena to Southland

Table 59 Core demand economic results: B18 – Murrumbeena to Southland

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Benefits					
Health	118.3	30.9	57%	2.7	17.5
Journey amenity	2.5	0.7	1%	0.1	0.4
Cycle time savings	2.2	0.6	1%	0.1	0.3
Displaced activity time savings	6.9	1.8	3%	0.2	1.0
Congestion cost savings	38.7	10.1	19%	0.9	5.7
Environmental	1.0	0.3	<1%	<0.1	0.1
Roadway provision cost savings	2.9	0.7	1%	0.1	0.4
Accident cost savings – existing users	4.3	1.1	2%	0.1	0.6
Accident cost savings – new users	-13.0	-3.4	-6%	-0.3	-1.9
Avoided O&M costs	26.6	8.8	16%	0.8	5.0
Residual asset value	28.3	2.5	5%	0.2	1.4
Total benefits	**218.6**	**54.0**	**100%**	**4.8**	**30.6**
Costs					
Capital costs	27.3	20.2	67%	1.8	11.4

Item	$m real	$m PV	% of total PV	$m PV per km	$m PV per 1000 trips (2031)
Lifecycle and replacement costs	43.5	7.8	26%	0.7	4.4
O&M costs	7.0	2.1	7%	0.2	1.2
Total costs	**77.8**	**30.0**	**100%**	**2.7**	**17.0**
Economic results					
NPV		**24.0**			
BCR		**1.8**			

Source: FTI Consulting, 2025

Table 60 Sensitivity results: B18 – Murrumbeena to Southland

Sensitivity		NPV	BCR
Core results		**24.0**	**1.8**
Discount rate	4%	50.4	2.2
	10%	10.8	1.5
Demand results	Low	15.1	1.5
	High	33.7	2.1
Benefits	+20%	34.8	2.2
	-20%	13.2	1.4
Costs	+20%	18.0	1.5
	-20%	30.0	2.2
	P90 costs	17.9	1.5
Cycling demand growth after last modelled year	0%	21.2	1.7
	Population growth +1%	27.2	1.9

Source: FTI Consulting, 2025

Appendix C Local connections assessments

As part of the economic appraisal, four of the Melbourne corridors were evaluated with and without a set of 'local connections' – i.e. additional short sections of upgraded routes branching off from the main routes with the aim of encouraging additional cycling uptake by connecting activity centres to the main corridor. These corridors were:

- **B3 – St Kilda Rd to Clayton:** Tested with and without local connections in the Chadstone Shopping Centre area
- **B5 – Werribee to West Footscray:** With/without local connections in the Werribee area
- **B8 – St Albans to Docklands:** With/without local connections in the St Albans and Sunshine areas
- **B9 – Highpoint to Footscray:** With/without local connections in the Footscray area

The assessment included first testing cycling demand with and without the local connections using the CDM. Results of this assessment are included in Appendix D. The CDM outputs for the 'with' and 'without' local connections scenarios were then assessed using the same CBA framework used for all other corridors. Results of this assessment are presented below.

Table 61 Local connections assessments: economic appraisal results ($m FY25, real, discounted at 7%)

Corridor	Without local connections	With local connections	Incremental
B3 – St Kilda Rd to Clayton			
Total benefits	200.6	229.0	28.5
Total costs	21.0	29.6	8.7
NPV	**179.6**	**199.4**	**19.8**
BCR	**9.6**	**7.7**	**3.3**
B5 – Werribee to West Footscray			
Total benefits	91.6	100.0	8.3
Total costs	39.9	52.3	12.4
NPV	**51.7**	**47.6**	**-4.1**
BCR	**2.3**	**1.9**	**0.7**
B8 – St Albans to Docklands			
Total benefits	81.1	146.4	65.2
Total costs	12.8	38.5	25.7
NPV	**68.4**	**107.8**	**39.5**
BCR	**6.3**	**3.8**	**2.5**
B9 – Highpoint to Footscray			
Total benefits	71.8	215.6	143.8

Corridor	Without local connections	With local connections	Incremental
Total costs	12.2	39.7	27.5
NPV	**59.6**	**175.9**	**116.4**
BCR	**5.9**	**5.4**	**5.2**

Source: FTI Consulting, 2025

The results show that in all cases except for Werribee to West Footscray, the addition of the local connections improves economic performance. This is because the level of demand generated by the additional infrastructure outweighs the additional costs of providing it. In the case of Werribee to West Footscray, the proposed connections are in areas of low cycling mode share, so do not generate enough additional demand to drive benefits that outweigh the additional costs.

The results presented throughout this report for each of the four corridors above are inclusive of the local connections.

Appendix D Demand analysis methodology and detailed results

The following appendix, prepared by ShapeTransport, details the methodology used for the demand analysis and presents more detailed results by corridor. This appendix contains:

- A summary of the proposed investments that were assessed
- Key insights from the modelling and how demand is estimated
- Outcomes of sensitivity testing on local connections
- Detailed statistics including on network coverage and mode shares
- Corridor dashboards with detailed results for each corridor
- Technical background of the CDM

INFRASTRUCTURE VICTORIA

Cycling Corridors – Economic Assessment

Demand Analysis
DRAFT

June 2025

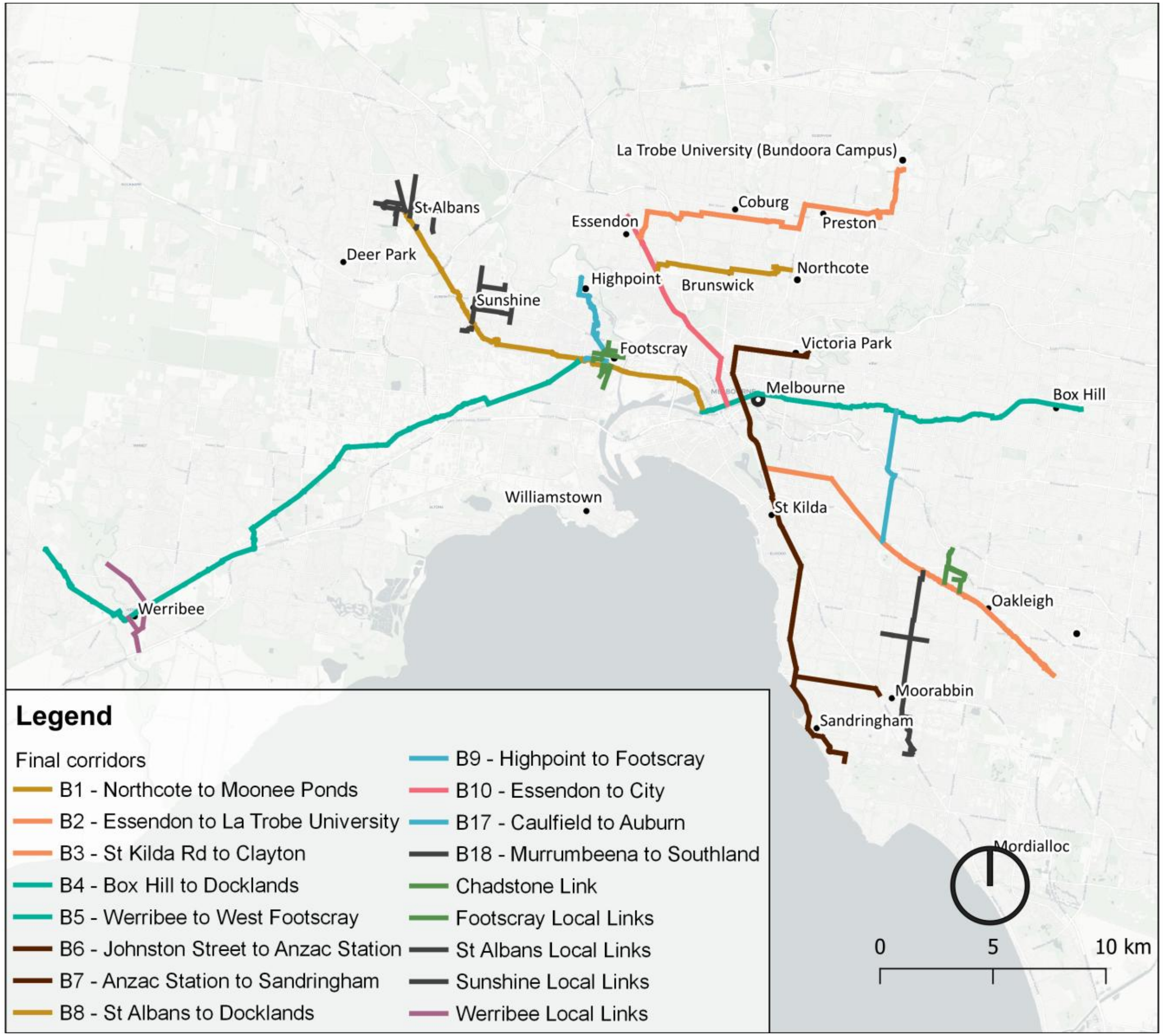
Analysis prepared by SHAPE TRANSPORT

Contents

1. The strategy

- Bike corridor map
- Proposed bike lane kilometres

Bike corridor map – Melbourne



Melbourne
B1 - Northcote to Moonee Ponds
B2 - Essendon to La Trobe University
B3 - Alfred Hospital to Clayton*
B4 - Box Hill to Docklands
B5 - Werribee to West Footscray*
B6 - Abbotsford to Anzac Station
B7 - Anzac Station to Sandringham
B8 - St Albans to Docklands*
B9 - Highpoint to Footscray*
B10 - Essendon to Southbank
B17 - Caulfield to Auburn
B18 - Murrumbeena to Southland

*Note: plus sensitivity tests with additional local connections on routes B3, B5, B8 and B9

Bike corridor map – Regional cities

Geelong

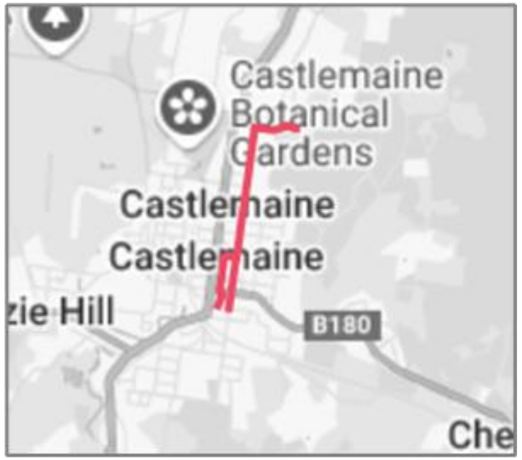
Ballarat

Wodonga

Bendigo

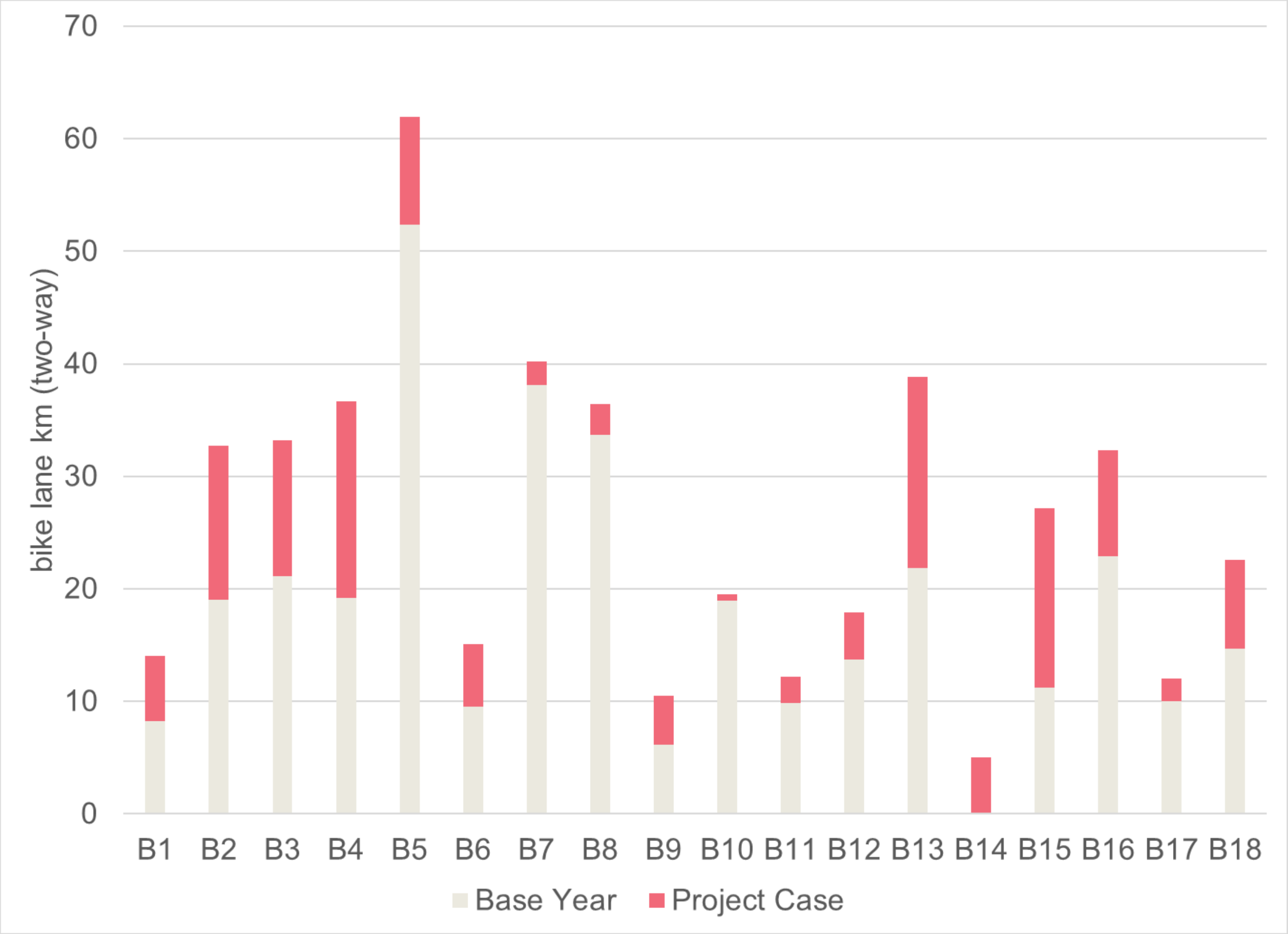
Wangaratta

Castlemaine



Regional cities
B11 - Wodonga
B12 - Wangaratta
B13 - Bendigo
B14 - Castlemaine
B15 - Ballarat
B16 - Geelong

Proposed bike lane kilometres*



Melbourne
B1 - Northcote to Moonee Ponds
B2 - Essendon to La Trobe University
B3 - Alfred Hospital to Clayton
B4 - Box Hill to Docklands
B5 - Werribee to West Footscray
B6 - Abbotsford to Anzac Station
B7 - Anzac Station to Sandringham
B8 - St Albans to Docklands
B9 - Highpoint to Footscray
B10 - Essendon to Southbank
B17 - Caulfield to Auburn
B18 - Murrumbeena to Southland

Regional cities
B11 - Wodonga
B12 - Wangaratta
B13 - Bendigo
B14 - Castlemaine
B15 - Ballarat
B16 - Geelong

*Note: Measured in both directions to capture instances of one-sided bike lane provision (e.g. uphill only).

2. Key insights

- Bike lane types
- Network coverage
- Recent trends
- Growth forecasts
- Bike mode share
- Components of demand
- Population and density
- E-bike take-up
- Impact of bike lanes
- Sensitivity test

Bike lane types

Attractiveness of bike lanes to cyclists relative to 'no bike infrastructure'

Bike lane ID	On/off-road	Bike lane type	Description	Interaction: Pedestrians	Interaction: Vehicles	RAS	Source	Existing bike lanes	Proposed bike lanes
BL 3.2	Off	Bicycle path	A path designated solely for the use of bicycles.	-	-	3.52	Wardman	4%	1%
BL 3.3	Off	Separated path	Cyclists and pedestrians are segregated by a painted line	LOW	-	3.34	Assumed ~5% below BL 3.2	4%	1%
BL 2.3	On	Protected bike lane (cycleway)	Separated from traffic by bollards, curbs, parking or other physical barriers	-	-	3.22	Wardman	1%	38%
BL 2.2.1	On	Painted bike lane: Exclusive	Separated from traffic by a solid line and only used by bicycles	-	LOW	2.11	Wardman	16%	0%
BL 2.2.3	On	Painted bike lane: Advisory	Permeable to traffic and delineated by a dashed line	-	LOW	2.00	Assumed ~5% below BL 2.2.1	1%	0%
BL 3.1	Off	Shared use path	Cyclists and pedestrians share the space (and occasionally traffic for driveway access)	MED	-	1.65	Hunt & Abraham (vs Wardman)	61%	50%
BL 2.6	On	Bike boulevard	Shared lane with general traffic and a 30kph (or lower) speed limit reinforced by physical traffic calming works	-	LOW	1.49	Assumed ~10% below BL 3.1	0%	10%
BL 2.2.2	On	Painted bike lane: Shared parking	Generally wider (but not always) roadside lanes that permit car parking but are also signed bike lanes	-	MED	1.32	Assumed ~20% below BL 3.1	7%	0%
BL 2.5	On	Bus lane	Shared lane with buses, taxis, motorbikes and emergency vehicles (but not other cars and trucks)	-	HIGH	1.10	Assumed ~10% above BL 2.1	0%	0%
BL 2.4	On	Shared lane (sharrows)	Painted "shared arrows" typically used to indicate that traffic and cyclists share the road	-	HIGH	1.05	Assumed ~5% above BL 2.1	5%	0%
BL 2.1	On	No bike infrastructure	Shared lane with general traffic	-	HIGH	1.00	Baseline	-	-
							Weighted RAS:	**1.83**	**2.27**

Source:
wiki.openstreetmap.org/wiki/Melbourne_Bike_Lane_Project
Wardman et al (2007) Factors influencing the propensity to cycle to work
Hunt & Abraham (2006) Influences on bike use

Proposed bike lanes are of a higher standard than existing bike lanes

Bike lane types

393 km of new bike lanes to form 468 km of continuous bike lane routes within 18 corridors*

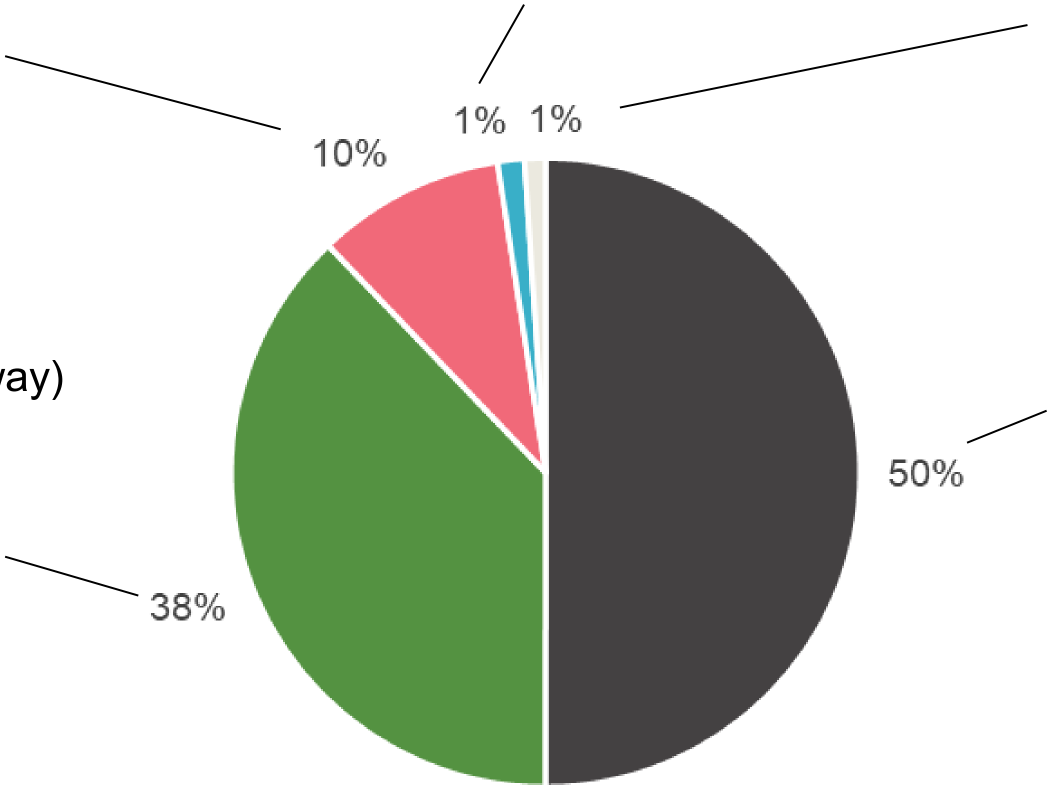
	Bike lane type											Total route length
	2.1 No bike infrastructure	2.2.1 Painted bike lane: Exclusive	2.2.2 Painted bike lane: Shared parking	2.2.3 Painted bike lane: Advisory	2.3 Protected bike lane (cycleway)	2.4 Shared lane (sharrows)	2.5 Bus lane	2.6 Bike boulevard	3.1 Shared use path	3.2 Bicycle path	3.3 Separated path	
Melbourne												
B1 - Northcote to Moonee Ponds	0.0	0.0	0.0	0.0	10.7	0.0	0.0	2.2	1.2	0.0	0.0	14.1
B2 - Essendon to La Trobe University	0.0	0.0	0.0	0.0	19.0	0.0	0.0	8.8	4.8	0.0	0.0	32.7
B3 - Alfred Hospital to Clayton	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	27.2	0.0	0.0	33.2
B4 - Box Hill to Docklands	0.0	0.0	0.0	0.0	13.2	0.0	0.0	7.2	16.0	0.0	0.3	36.7
B5 - Werribee to West Footscray	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	51.0	0.0	0.1	62.0
B6 - Abbotsford to Anzac Station	0.0	0.0	0.0	0.0	12.5	0.0	0.0	1.6	0.0	0.0	0.9	15.1
B7 - Anzac Station to Sandringham	0.0	0.0	0.0	0.0	33.7	0.0	0.0	0.3	6.2	0.0	0.1	40.2
B8 - St Albans to Docklands	0.0	0.0	0.0	0.0	2.5	0.0	0.0	1.8	23.3	5.1	3.8	36.4
B9 - Highpoint to Footscray	0.0	0.0	0.0	0.0	4.2	0.0	0.0	1.4	5.0	0.0	0.0	10.5
B10 - Essendon to Southbank	0.0	0.0	0.0	0.0	17.7	0.0	0.0	0.0	1.8	0.0	0.0	19.5
B17 - Caulfield to Auburn	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	1.8	0.0	0.0	12.0
B18 - Murrumbeena to Southland	0.0	0.0	0.0	0.0	11.2	0.0	0.0	9.2	2.2	0.0	0.0	22.6
Regional cities												
B11 - Wodonga	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.9	8.2	0.0	0.0	12.2
B12 - Wangaratta	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.9	11.7	0.0	0.0	17.9
B13 - Bendigo	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.8	34.9	0.0	0.9	38.9
B14 - Castlemaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.9	0.0	0.0	5.0
B15 - Ballarat	0.0	0.0	0.0	0.0	3.3	0.0	0.0	4.6	19.3	0.0	0.0	27.1
B16 - Geelong	0.0	0.0	0.0	0.0	11.4	0.0	0.0	4.6	15.8	0.0	0.5	32.3
Sensitivity test with additional local links												
B3a - Alfred Hospital to Clayton	0.0	0.0	0.0	0.0	7.0	0.0	0.0	6.5	28.3	0.0	0.0	41.8
B5a - Werribee to West Footscray	0.0	0.0	0.0	0.0	10.9	0.0	0.0	2.4	57.8	0.0	0.1	71.2
B8a - St Albans to Docklands	0.0	0.0	0.0	0.0	6.2	0.0	0.0	16.8	35.3	5.1	4.1	67.4
B9a - Highpoint to Footscray	0.0	0.0	0.0	0.0	11.2	0.0	0.0	1.9	6.9	0.0	0.0	20.0

*Note: Measured in both directions to capture instances of one-sided bike lane provision (e.g. uphill only).

Bike lane types

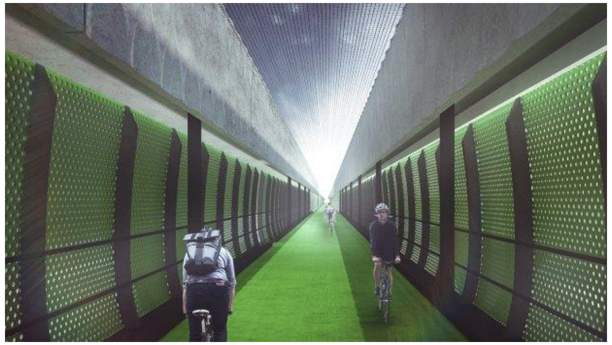
2.6 – Bike boulevard

2.3 – Protected bike lane (cycleway)



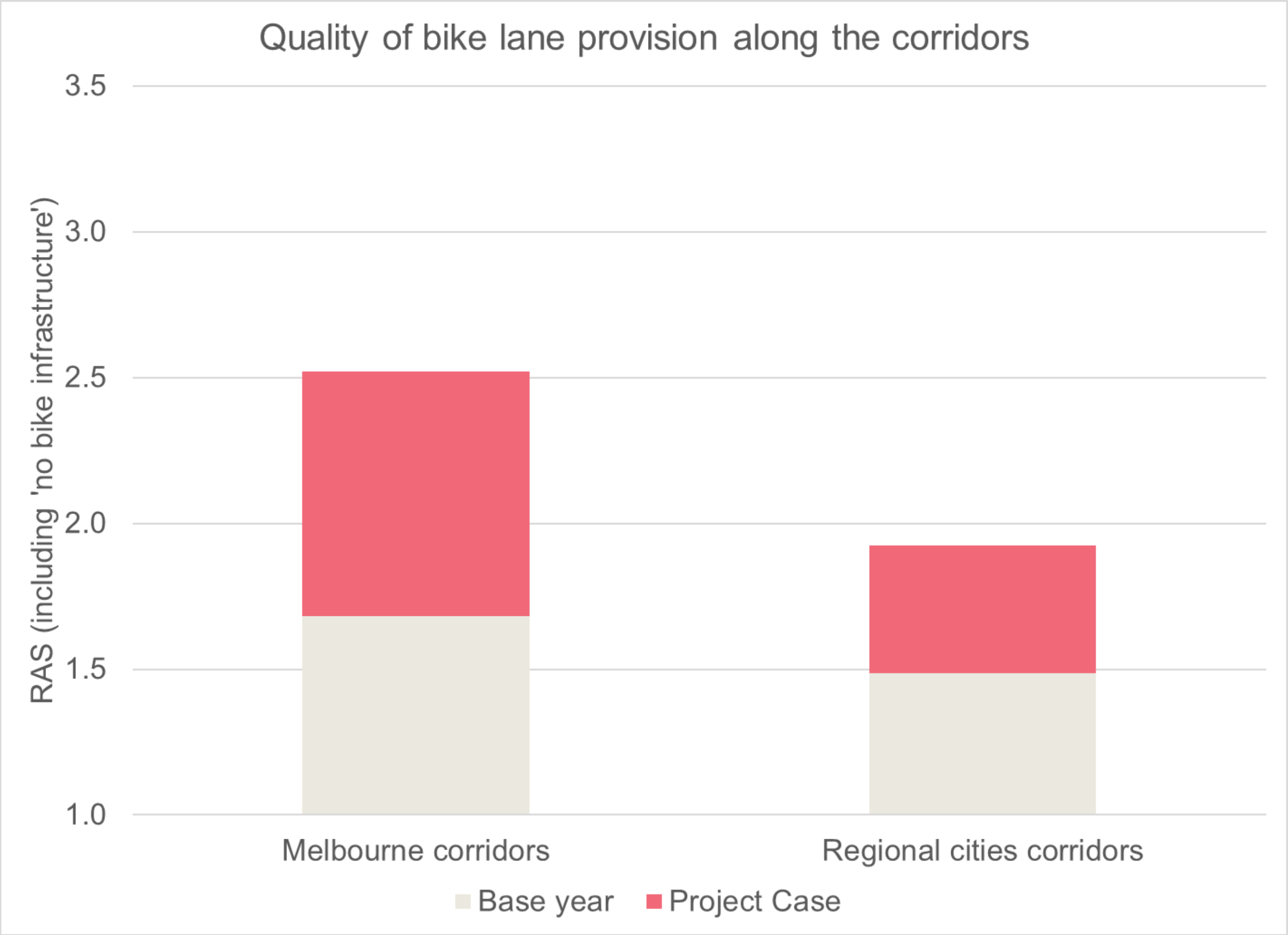
3.3 – Separated path

3.2 – Bicycle path



3.1 – Shared use path

Bike lane types



This graph shows the overall quality of bike lane provision along the Melbourne corridors versus regional cities corridors, as measured using the Relative Attractiveness Score (RAS).

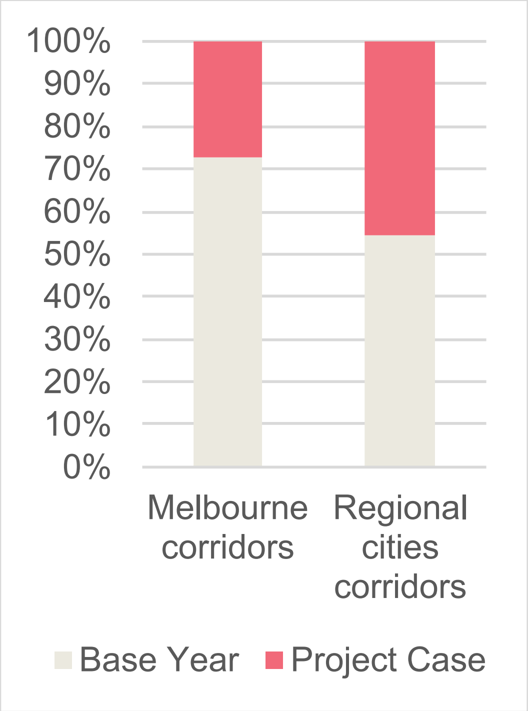
The RAS includes sections of the corridor with and without bike lanes. For reference, sections with ‘no bike infrastructure’ have a RAS of 1.0, whereas protected bike lanes (cycleway) have a RAS of 3.22.

The graph shows that the quality of bike lane provision on Melbourne corridors is higher than the regional cities.

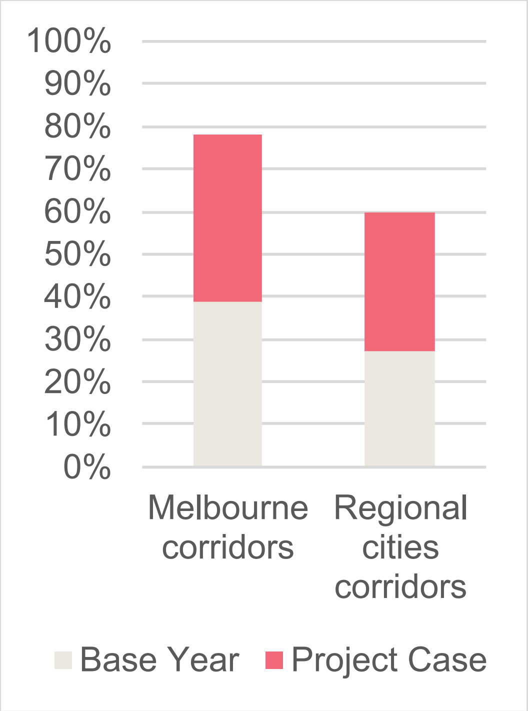
Network coverage

% road network with bike lanes

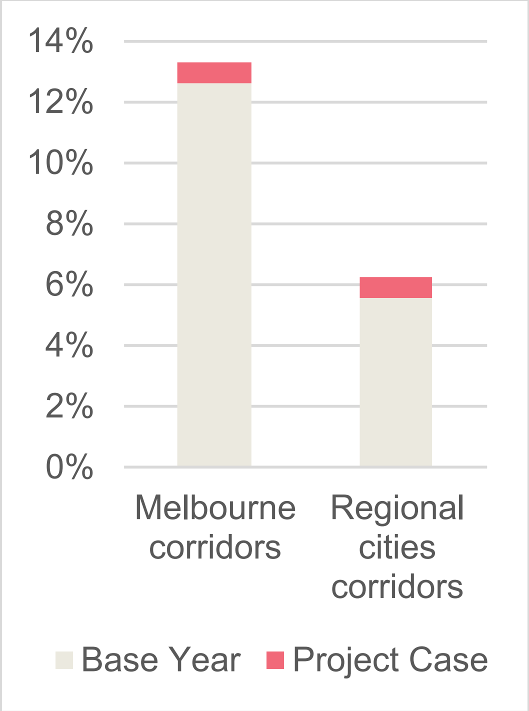
Route
(actual, as built)



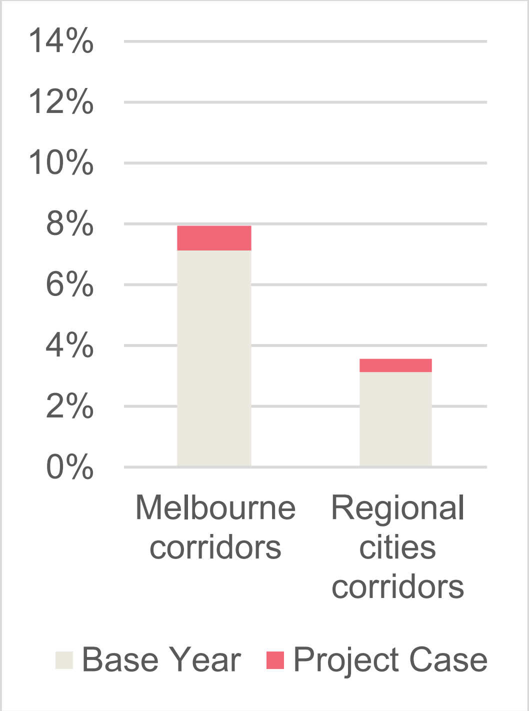
Route
(normalised to cycleway equivalents)



Corridor (area)
(actual, as built)



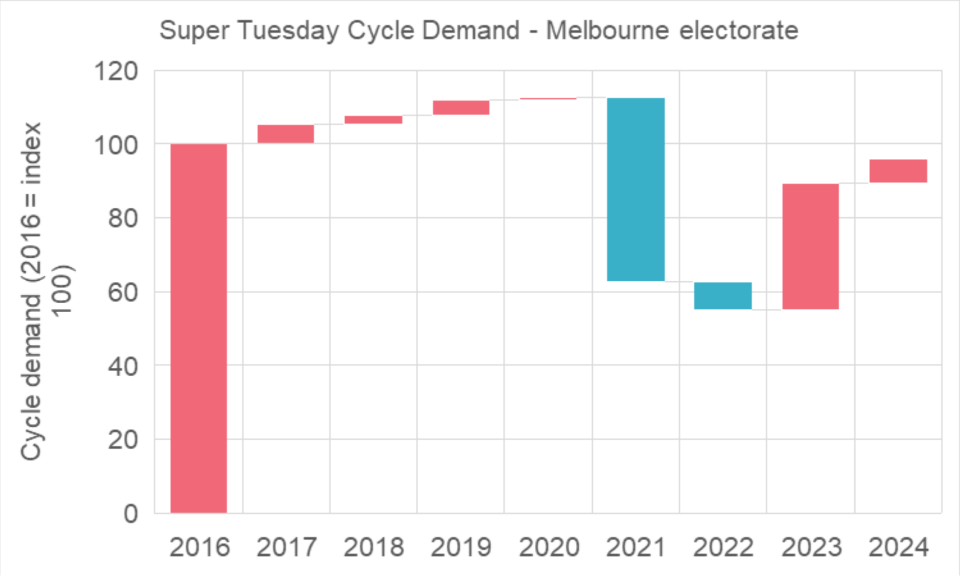
Corridor (area)
(normalised to cycleway equivalents)

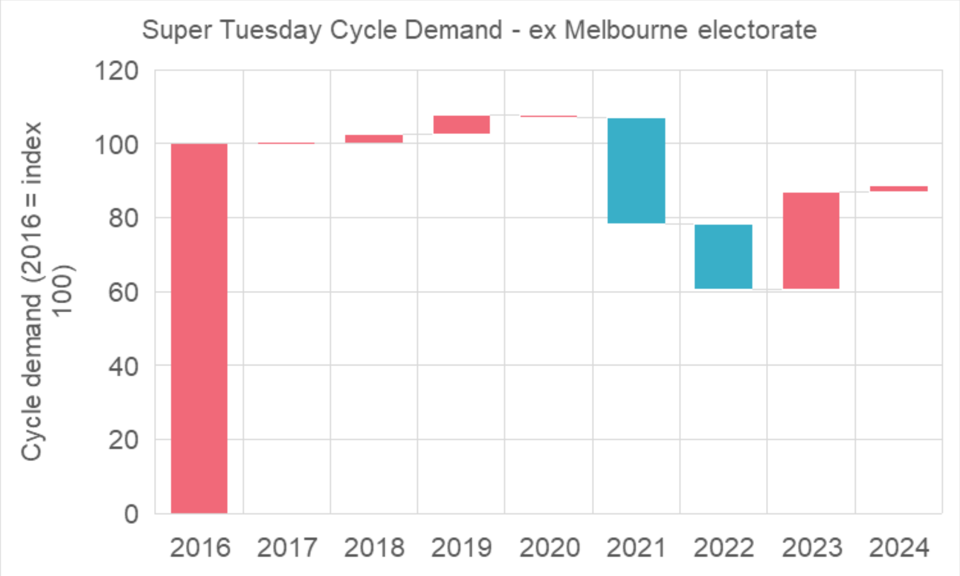


- Graph 1: Bike lane corridors in both Melbourne and the regional cities receive 100% bike lane coverage along the route. This is what the engineers deliver.
- Graph 2: Reweighted to account for different types of bike lanes and then normalised to a gold standard protected bike lane type (more commonly referred to as a 'cycleway'). This is how the route is perceived by cyclists. A percentage of 100% in this graph would mean the entire route is gold standard.
- Graph 3: The same data as Graph 1 but expressed on a corridor (area) basis, including all roads throughout the suburbs along the route.
- Graph 4: The same data as Graph 2 but expressed on a corridor (area) basis. This is how cyclists perceive the level of bike lane provision in suburbs along route.

Recent trends

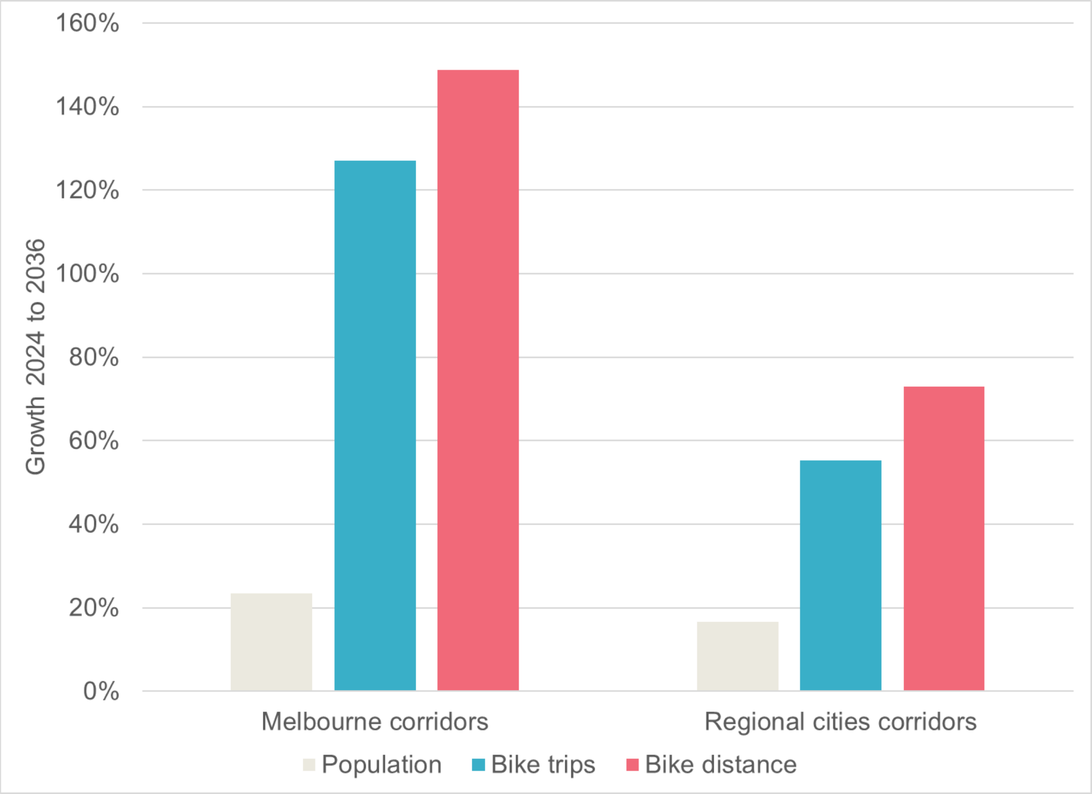
- These graphs show the annual average growth in cycling from 2016 to 2024.
- Strong growth pre-COVID:
    - 3.8% p.a. for Melbourne CBD
    - 2.5% p.a. for the rest of Greater Melbourne
- More pronounced COVID impact in Melbourne CBD.
- Rebound post-COVID, with 2024 being 96% of 2016 levels in Melbourne CBD and 89% elsewhere.





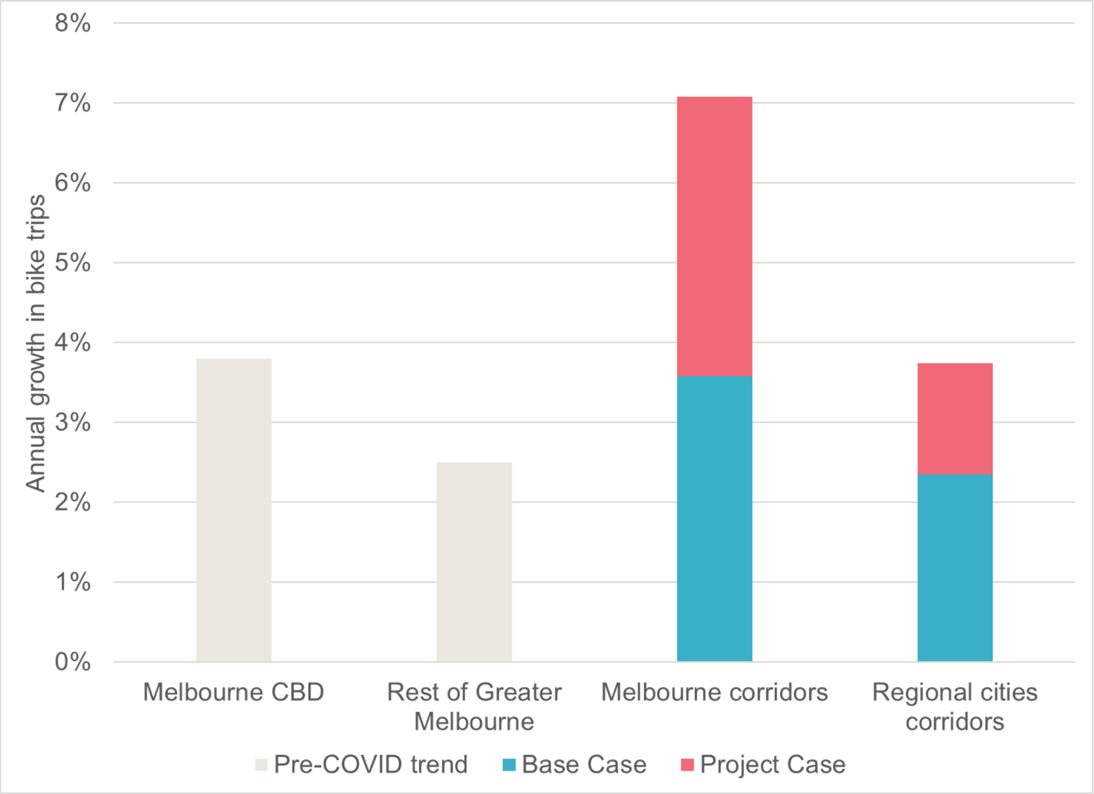
Growth forecasts

Growth



- These are averages – some corridors are higher and some lower
- Population growth is stronger in Melbourne than regional cities
- Cycling significantly exceeds population growth
- Continued e-bike take-up produces stronger trip length growth

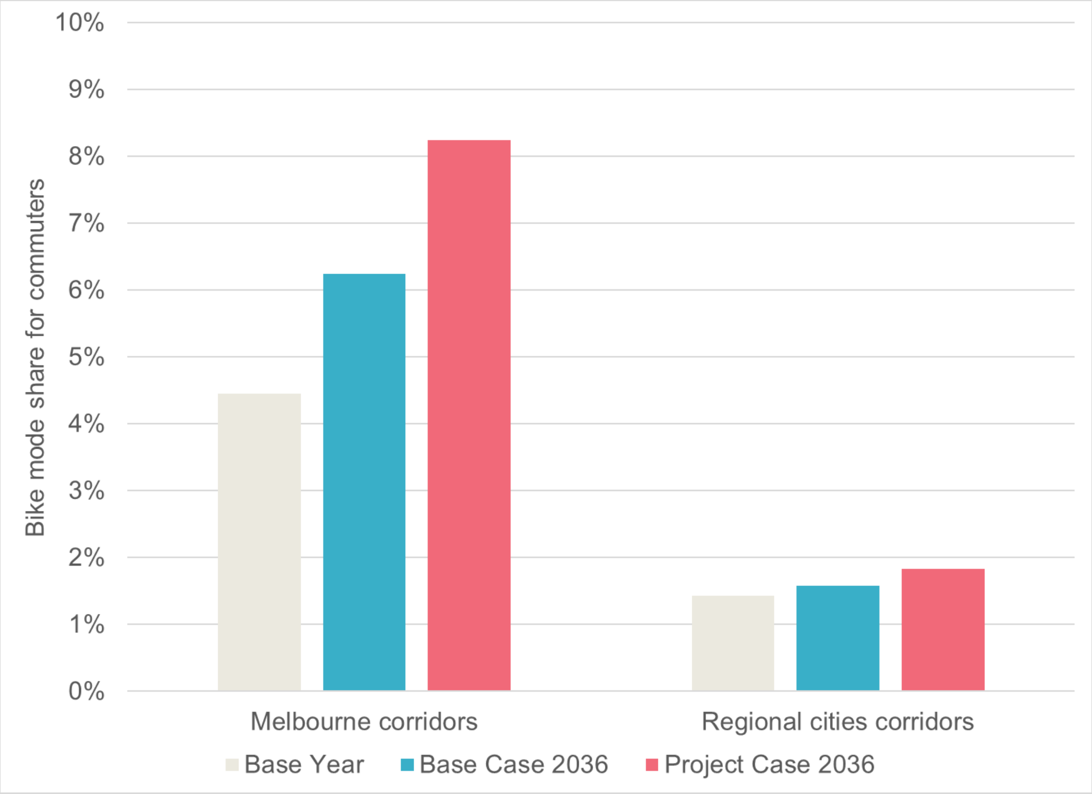
Growth benchmarking



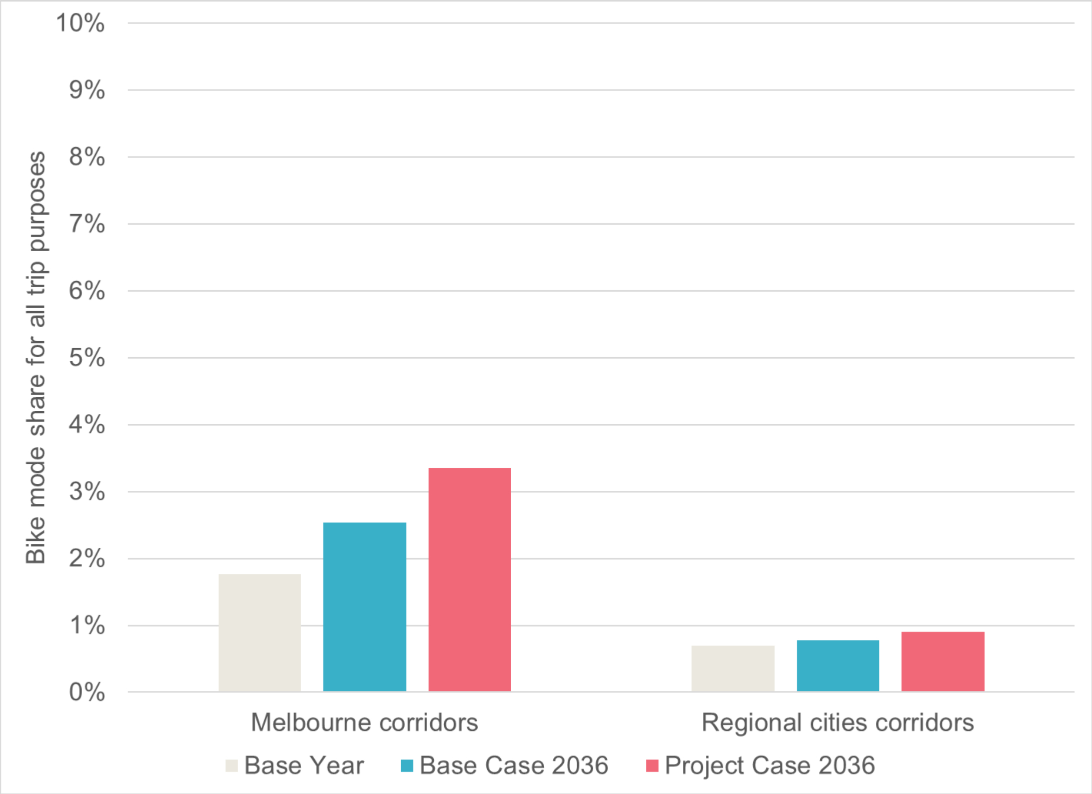
- Base case forecasts benchmark well against pre-COVID trends
- Base case growth is stronger in Melbourne due to increased population density
- Project case uplift is more pronounced in Melbourne due to greater bike lane provision

Bike mode share

Commuters



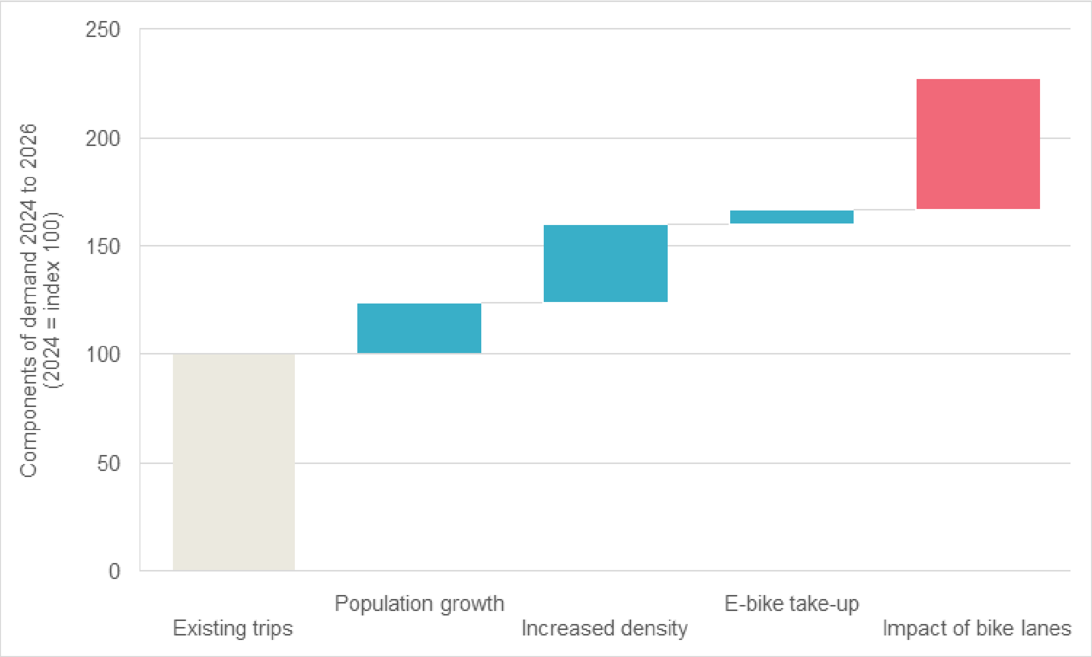
All trip purposes



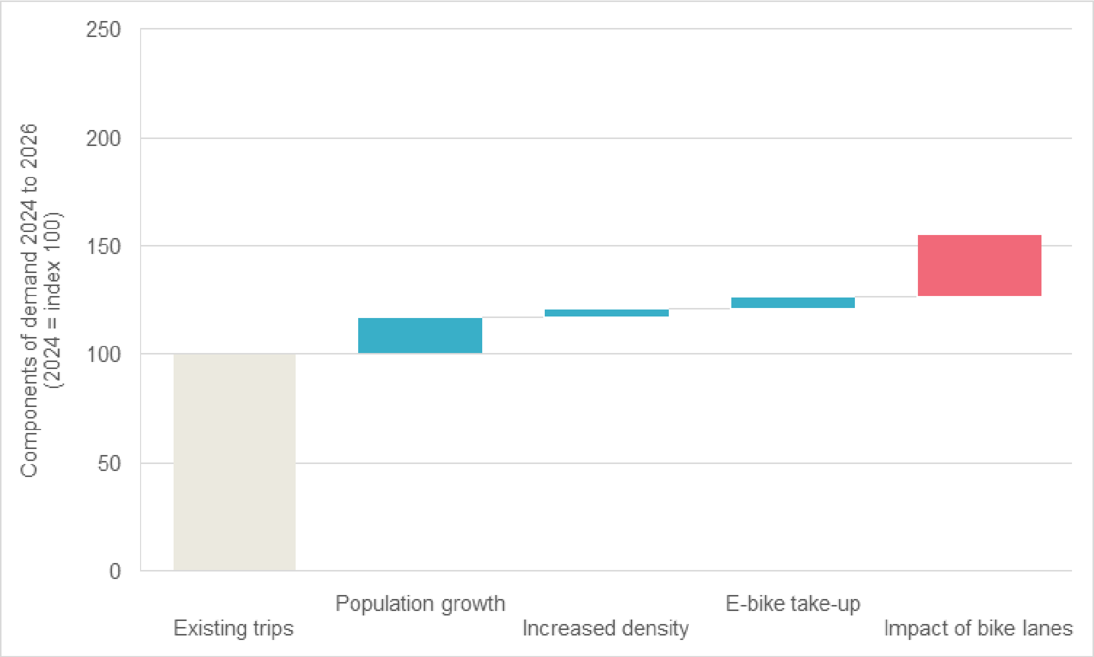
- These are averages – some corridors are higher and some lower
- Current bike mode shares on the Melbourne corridors are forecast to double under the project case; and increase by a third in regional cities
- The base case growth in bike mode share is due to increased population density and increased cycling associated with e-bike take-up
- For reference, bike modes in other cities around the world include Amsterdam 29%, Berlin 14%, Zurich 6% and London 3% (source: Goel, R. et al., 2022. Cycling behaviour in 17 countries across 6 continents: levels of cycling, who cycles, for what purpose, and how far?)

Components of demand

Melbourne corridors



Regional cities corridors



- These graphs compare the components of demand for the bike corridors in Melbourne versus regional cities – both are indexed to 100 for existing (2024) trips so the relative scale of the components of growth can be readily compared
- Growth is stronger on the Melbourne corridors, in part because of the additional impact that increased density has on the propensity to cycle – this in turn creates a larger base from which the impact of bike lanes is forecast
- The following slides explore these components of demand further

Population and density

These two graphs should be read together.

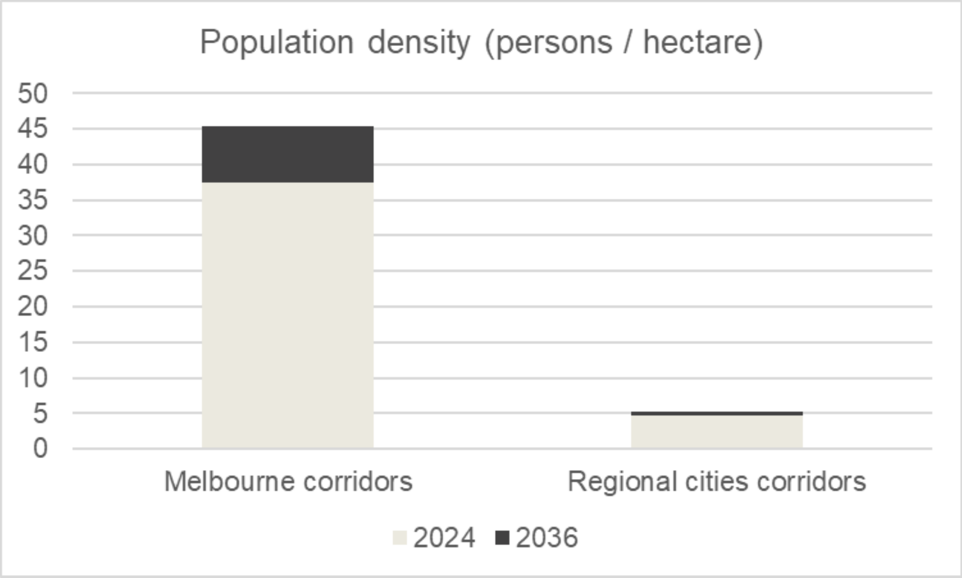
The top graph shows the current (2024) and forecast (2036) population density for the Melbourne bike corridors versus the regional cities bike corridors. As could be expected, population density is much higher in Melbourne.

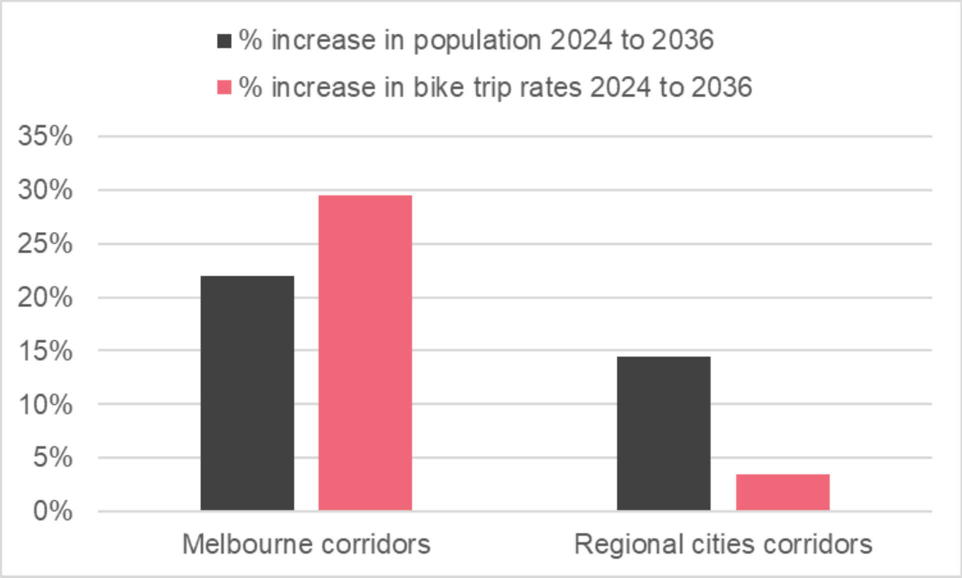
The bottom graph compares the percentage change in population versus bike trip rates (i.e. trips per capita) between 2024 to 2036. As could be expected, population density is forecast to increase by more in Melbourne than in the regional cities.

The interesting point to note is that the percentage change in bike trip rates is higher than the prevailing population increase in Melbourne, and lower than the population increase in regional cities. It is not a one-for-one match.

Read together, the two graphs show that bike trip rates are more pronounced when the percentage change occurs at higher levels of population density.

In summary, the underlying growth in population and population density are both material to future levels of bike use. The cycle demand forecasts incorporate both.





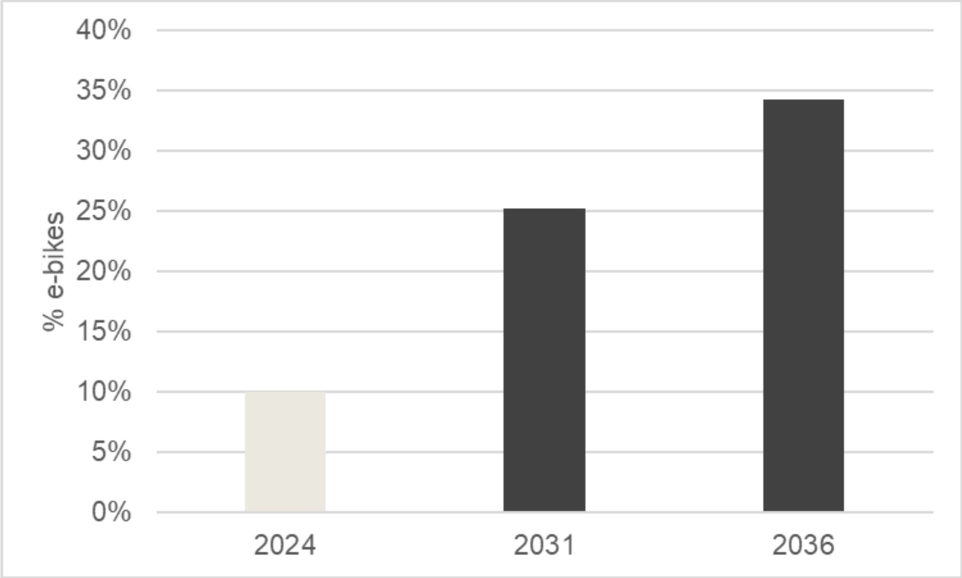
E-bike take-up

The forecasts includes an e-bike module to account for an increase in e-bike penetration (i.e. ownership) and use (i.e. trips and distance per trip).

At present about 10% of bicycle trips in Melbourne are on e-bikes (source: Cycling Super Tuesday counts). The forecast increase shown in the graph is underpinned by analysis of Australia's e-bike take-up rate versus the Netherlands. The analysis indicates that Australia is currently about 5-6 years behind the Netherlands in the adoption curve.

E-bike take-up is important in the context of forecasting overall cycle demand in Melbourne and regional cities because:

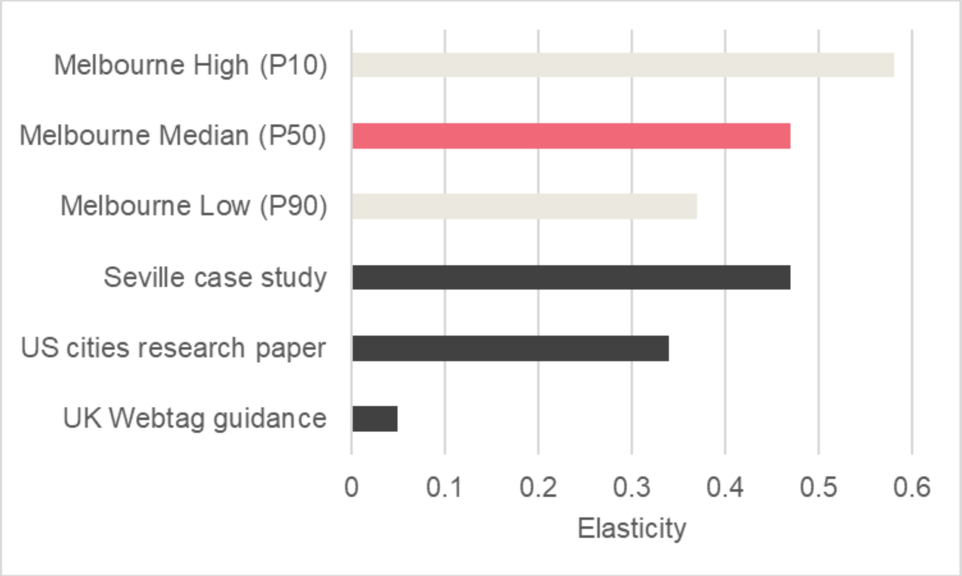
- E-bike riders use their bike more often; and
- E-bike riders travel further on average, which increases the potential to mode shift from cars.



Impact of bike lanes

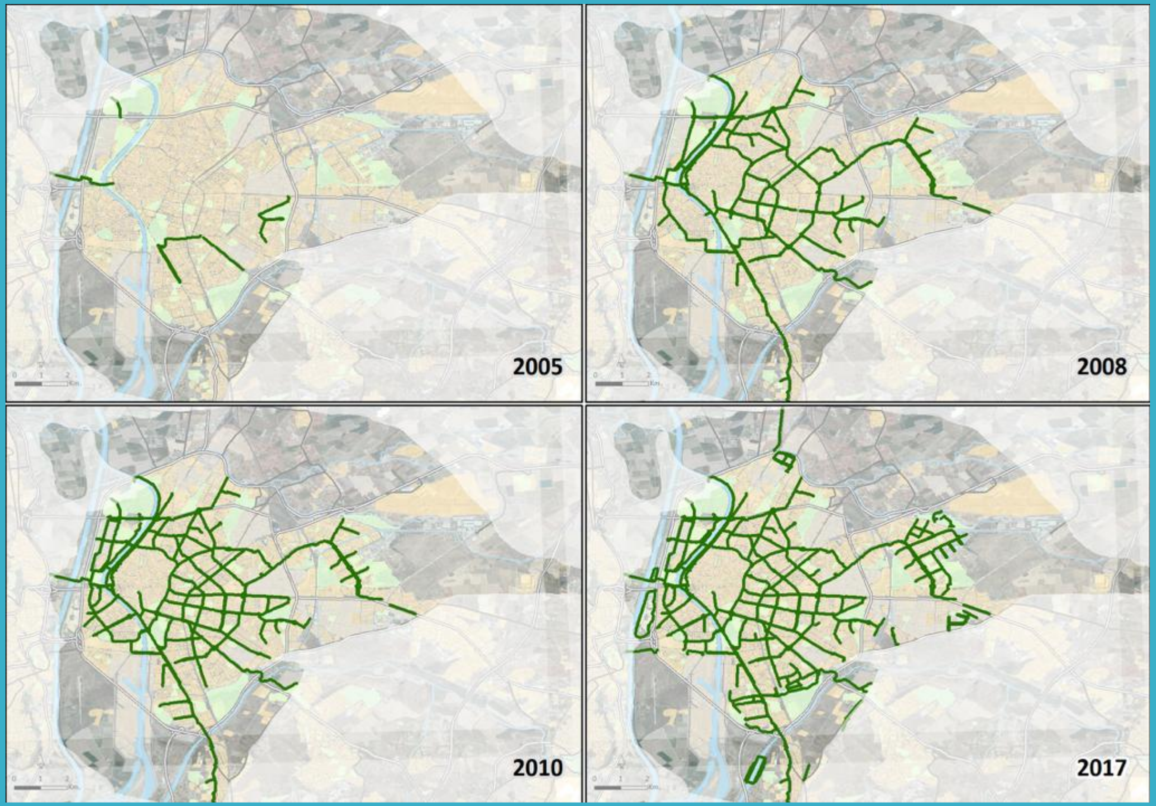
An elasticity of demand with respect to the change in bike lane provision* of 0.47 has been estimated for Melbourne; with a low and high range of 0.37 and 0.58, respectively.

This benchmarks well to the revealed elasticity for Seville, which implemented a similarly extensive and high-quality bike lane network 15-20 years ago.



* normalised to cycleway equivalents

Seville case study



From 2006 to 2010 Seville (Spain) had a 10-fold increase in bike lanes, resulting in an implied demand elasticity of 0.47.

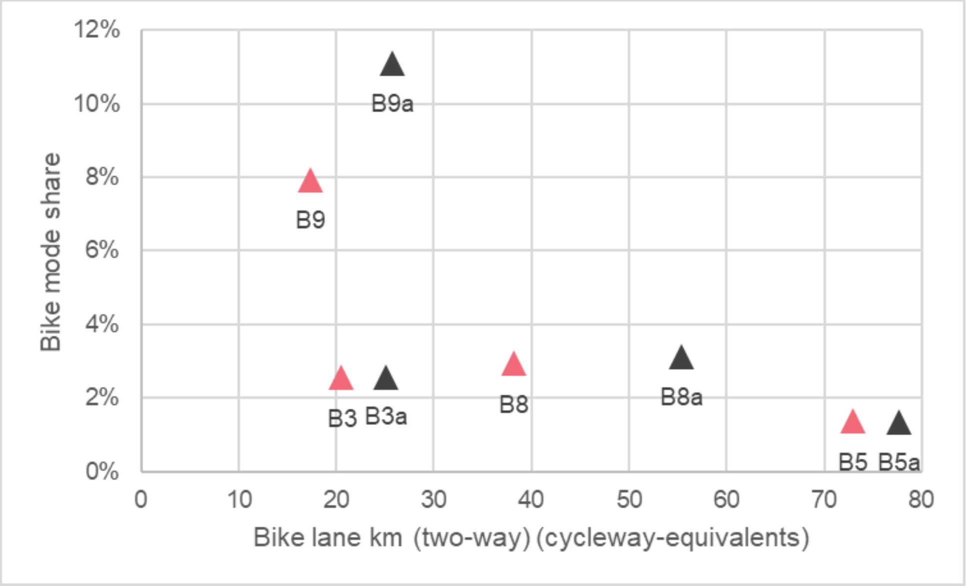
Year	Bike lane km	Daily bike trips
2006	12	13,062
2010	120	67,925
% change	900%	420%
Implied elasticity		0.47

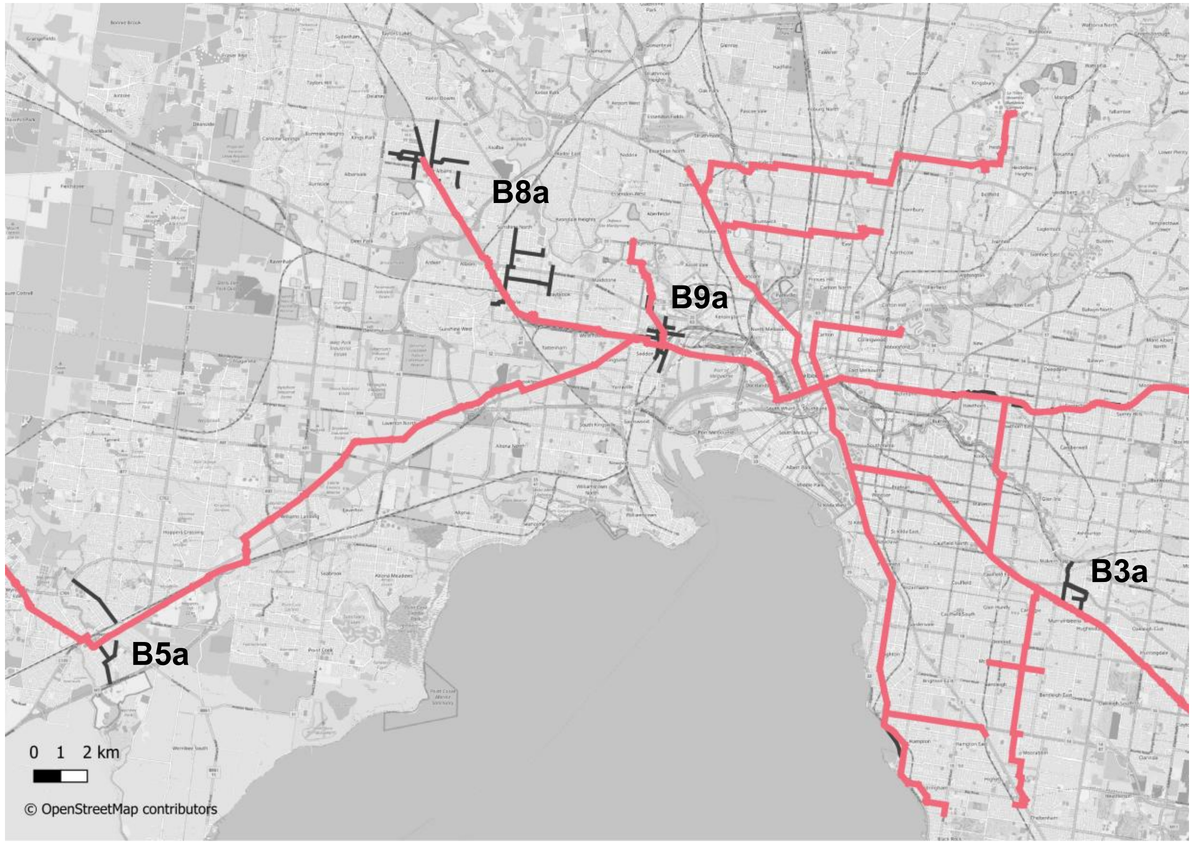
Sensitivity test – additional local links

This graph presents results of a sensitivity test with additional bike lanes on side roads, as shown on the map.

There is an imperceptible change in mode share for three of the routes – B3, B5 and B8. An expected outcome given the additional local links are in areas of low bike use (e.g. Werribee, 30km from Melbourne CBD).

The exception is B9, with a further 48% increase in bike lanes within Footscray, which already has a high bike mode share, and is forecast to have strong growth in population and density.





The conclusion from these sensitivity tests is that additional local links can have a significant impact on bike demand, depending on other underlying factors of the area.

3. Comparison of corridors

- Corridor comparison stats
- Network coverage
- Bike lane types
- Growth forecasts
- Population and density
- Bike mode share

Corridor comparison stats

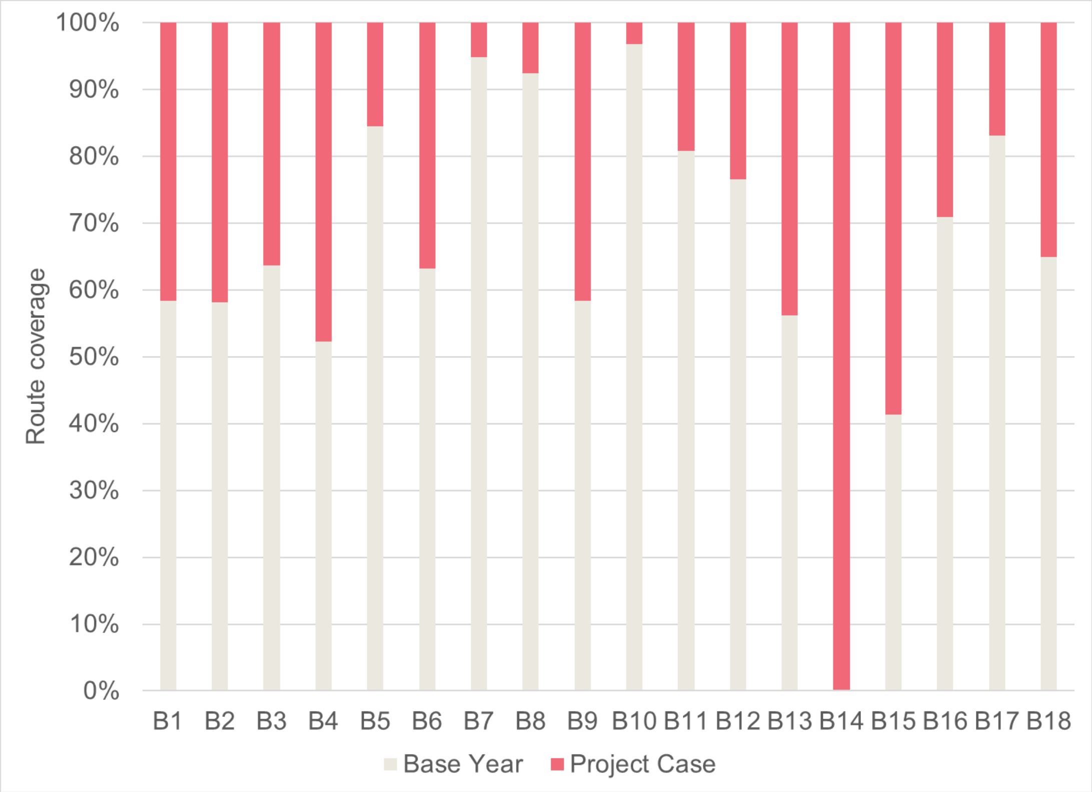
	Corridor	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18
Bike lane km	Base Year	8.2	19.0	21.2	19.2	52.3	9.5	38.1	33.7	6.1	18.9	9.8	13.7	21.8	0.0	11.2	22.9	10.0	14.7
	Project Case	14.1	32.7	33.2	36.7	62.0	15.1	40.2	36.4	10.5	19.5	12.2	17.9	38.9	5.0	27.1	32.3	12.0	22.6
	Difference	5.9	13.7	12.1	17.5	9.6	5.5	2.1	2.7	4.4	0.6	2.3	4.2	17.0	5.0	15.9	9.4	2.0	7.9
	% difference	71%	72%	57%	91%	18%	58%	5%	8%	71%	3%	24%	31%	78%	-	142%	41%	20%	54%
Weighted bike lane RAS (including 'no bike infrastructure')	Base year	1.6	1.6	1.4	1.3	1.6	2.1	2.0	1.7	1.6	2.1	1.8	1.6	1.5	1.0	1.4	1.6	1.8	1.2
	Project Case	2.8	2.5	1.9	2.2	1.9	3.0	3.0	2.2	2.3	3.1	2.0	2.1	1.8	1.6	1.8	2.2	3.0	2.4
	Difference	1.2	1.0	0.5	0.9	0.4	0.9	1.0	0.4	0.7	0.9	0.2	0.5	0.3	0.6	0.4	0.6	1.2	1.1
	% difference	75%	62%	33%	64%	23%	42%	48%	25%	41%	45%	10%	32%	22%	61%	31%	35%	63%	93%
Route coverage	Base Year	58%	58%	64%	52%	84%	63%	95%	92%	58%	97%	81%	77%	56%	0%	41%	71%	83%	65%
	Project Case	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Area coverage	Base Year	16%	10%	11%	12%	14%	23%	16%	9%	11%	10%	1%	4%	13%	3%	6%	7%	12%	6%
	Project Case	17%	11%	12%	14%	14%	25%	16%	9%	13%	10%	1%	5%	14%	4%	7%	7%	12%	6%
Route coverage: cycleway-equivalent	Base Year	29%	28%	29%	22%	41%	42%	59%	50%	29%	64%	46%	38%	25%	0%	18%	36%	47%	25%
	Project Case	87%	78%	60%	68%	60%	94%	92%	68%	70%	95%	63%	65%	55%	50%	56%	69%	93%	73%
Area coverage: cycleway-equivalent	Base Year	8%	6%	6%	6%	8%	15%	11%	5%	6%	5%	1%	2%	7%	2%	3%	4%	7%	3%
	Project Case	9%	7%	7%	7%	8%	17%	12%	5%	7%	5%	1%	3%	7%	2%	4%	4%	7%	4%
Growth 2024 to 2036	Population	22%	19%	21%	24%	32%	28%	20%	27%	33%	26%	19%	7%	14%	10%	21%	28%	15%	14%
	Bike trips	157%	116%	116%	176%	83%	116%	72%	107%	266%	110%	39%	37%	55%	33%	78%	89%	84%	123%
	Bike distance	172%	139%	139%	203%	103%	129%	91%	130%	298%	132%	55%	53%	73%	48%	99%	111%	104%	147%
Growth breakdown	Population	20%	23%	13%	7%	28%	13%	14%	15%	5%	10%	54%	30%	29%	46%	27%	36%	23%	15%
	Density	29%	34%	19%	12%	15%	13%	16%	28%	16%	18%	4%	5%	6%	3%	5%	19%	36%	20%
	E-bikes	5%	6%	4%	2%	6%	4%	6%	4%	1%	3%	18%	18%	12%	21%	9%	8%	8%	6%
	Bike lanes	46%	38%	65%	78%	51%	71%	65%	52%	78%	68%	25%	47%	53%	30%	59%	38%	33%	60%
Bike mode share: commute	Base Year	10.8%	2.4%	3.3%	4.0%	1.8%	9.8%	4.7%	3.2%	5.7%	4.2%	1.2%	1.5%	1.1%	2.3%	0.8%	1.6%	1.8%	1.7%
	Base Case 2036	15.2%	3.3%	4.4%	5.6%	2.1%	12.4%	5.8%	4.7%	11.0%	5.8%	1.3%	1.7%	1.1%	2.5%	0.9%	1.9%	2.4%	2.2%
	Project Case 2036	20.5%	4.1%	5.8%	9.1%	2.4%	16.4%	7.0%	5.3%	15.0%	7.1%	1.4%	1.9%	1.4%	2.7%	1.2%	2.4%	2.8%	3.3%
Bike mode share: all purpose	Base Year	3.3%	1.0%	1.4%	1.6%	1.0%	2.4%	2.2%	1.8%	3.0%	2.1%	0.6%	0.7%	0.6%	1.0%	0.5%	0.8%	0.6%	0.7%
	Base Case 2036	4.7%	1.4%	1.9%	2.3%	1.2%	3.2%	2.7%	2.6%	5.8%	3.0%	0.6%	0.8%	0.6%	1.1%	0.5%	1.0%	0.8%	0.9%
	Project Case 2036	6.6%	1.7%	2.5%	3.7%	1.4%	4.3%	3.3%	2.9%	7.9%	3.6%	0.7%	0.9%	0.7%	1.2%	0.7%	1.2%	0.9%	1.4%

Network coverage

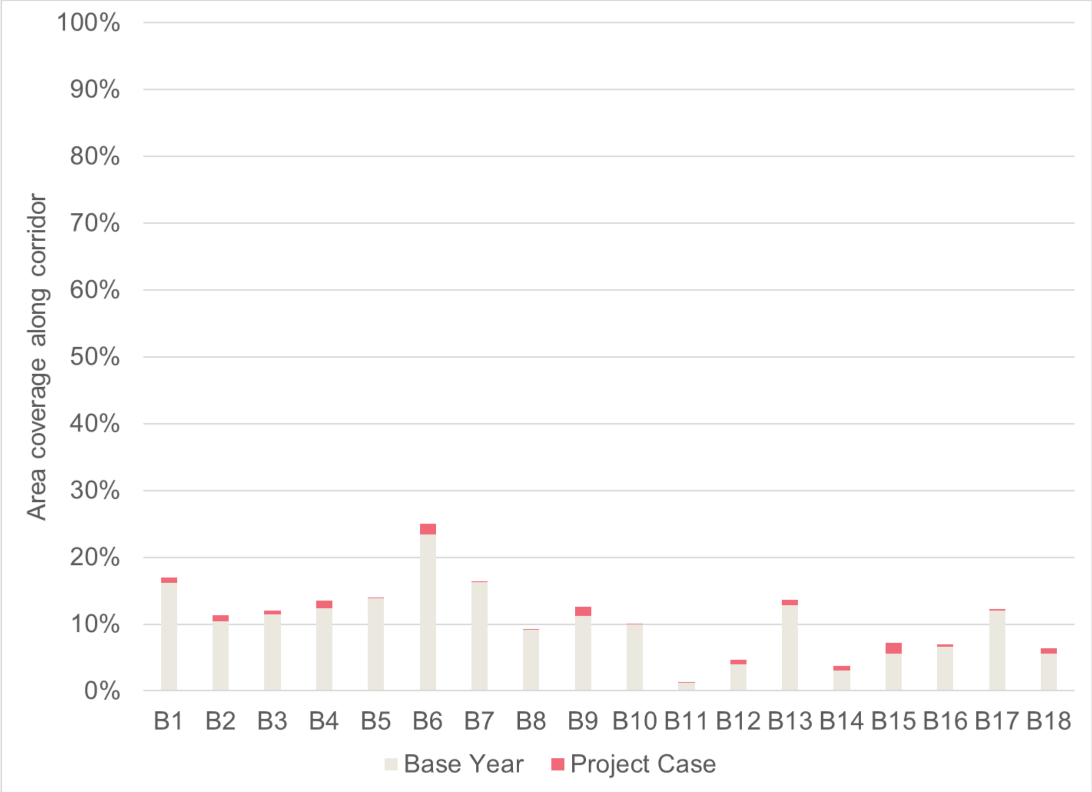
% road network with bike lanes

For context, note that Victoria has 4,050 kilometres of bike lanes, which represents 1.26% of the road network. Coverage is much higher on the 18 bike corridors.

Route



Corridor (area)



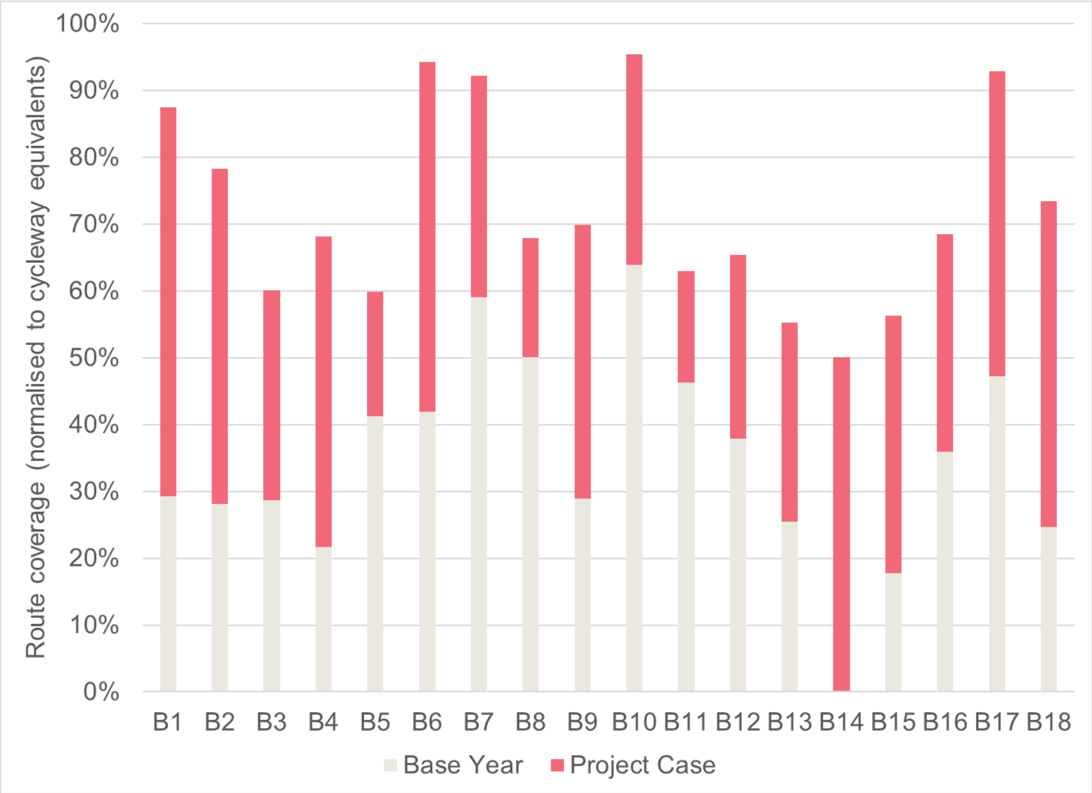
For example, **B15** (Ballarat) currently has bike lanes on **41%** of the route, increasing to **100%** in the project case. On an area basis (i.e. including side roads in the suburbs that the route passes through) the coverage is much lower, with **6%** of roads with bike lanes currently, increasing to **8%** in the project case.

Network coverage (normalised)

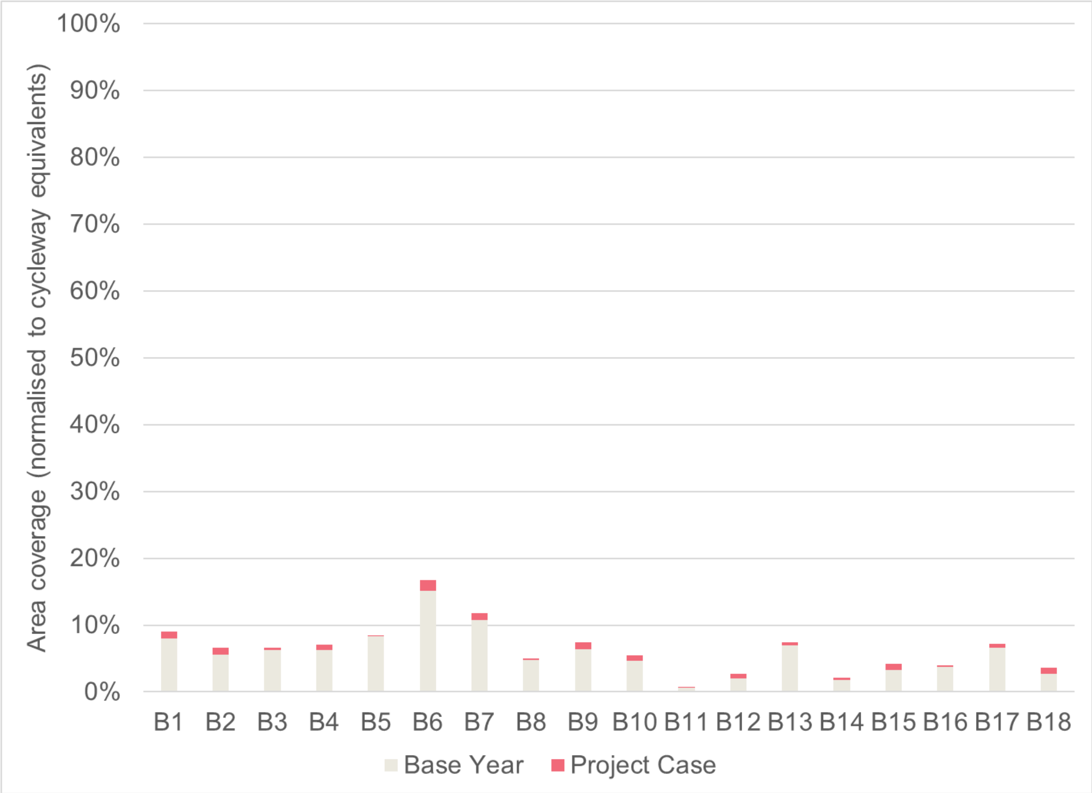
% road network with bike lanes (normalised to cycleway equivalent)

Note: graphs on the previous page measure quantity, whereas these graphs measure quantity and quality.

Route

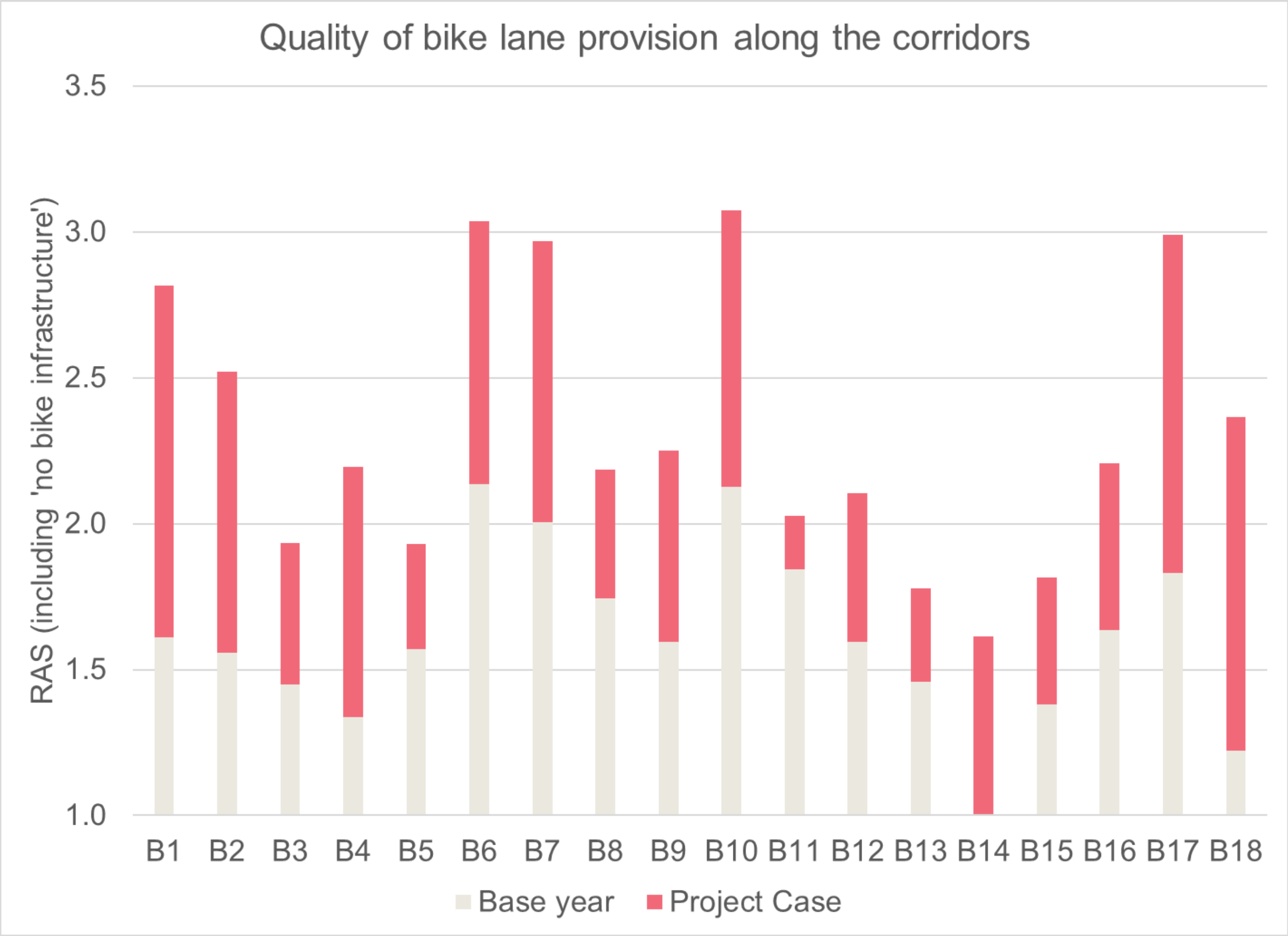


Corridor (area)



For example, **B15** (Ballarat) currently has bike lanes on **18%** of the route, increasing to **56%** in the project case. On an area basis (i.e. including side roads in the suburbs that the route passes through) the coverage is much lower, with **3%** of roads with bike lanes currently, increasing to **1%** in the project case.

Bike lane types



This graph shows the quality of bike lane provision on each corridor, as measured using the Relative Attractiveness Score (RAS).

The RAS includes sections of the corridor with and without bike lanes. For reference, sections with ‘no bike infrastructure’ have a RAS of 1.0, whereas protected bike lanes (cycleway) have a RAS of 3.22.

The graph shows a range of quality, potentially reflecting the practical physical constraints of retrofitting bike lanes into an existing streetscape. Some corridors achieve a very high standard of bike lane provision, notably corridors B6, B7, B10 and B17 – all in Melbourne.

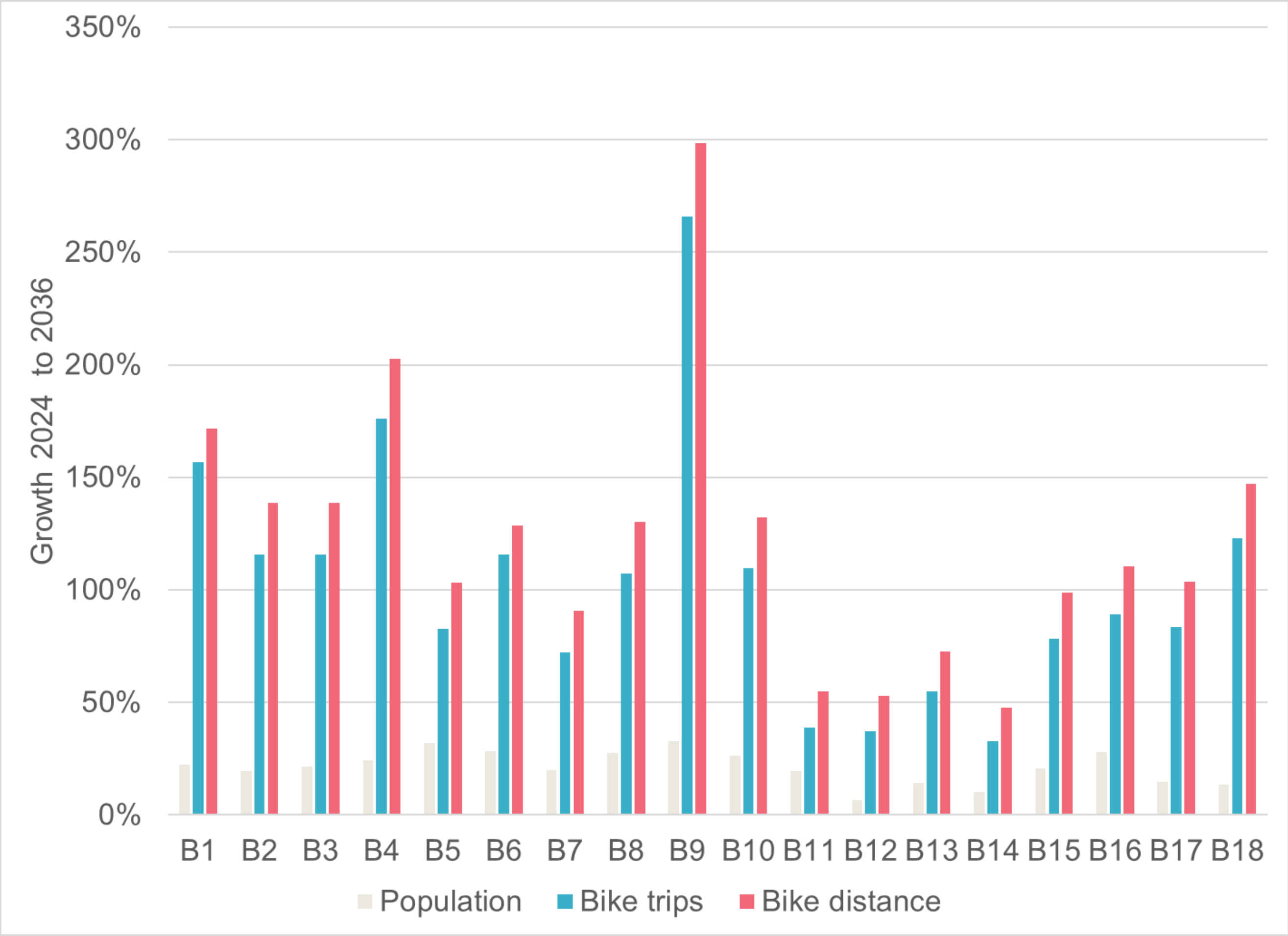
Growth forecasts

The graph indicates:

- The growth in bike trips significantly exceeds population growth
- Continued e-bike take-up produces stronger trip length growth

From a growth perspective the standout route is B9 – Highpoint to Footscray. It has the strongest forecast growth bike trips due to the compounding effect of:

- **Population and density:** Strong underlying population growth, compounded by a shift from 36 persons per hectare in 2024 to 54 persons per hectare in 2036, which suggests the corridor will continue to transition towards townhouses and apartments. This change in density is forecast to increase the bike trips per capita by 85%.
- **Bike lane provision:** Significant increase in both bike lane coverage (58% to 100%) and bike lane quality (RAS 1.6 to 2.25).



Population and density

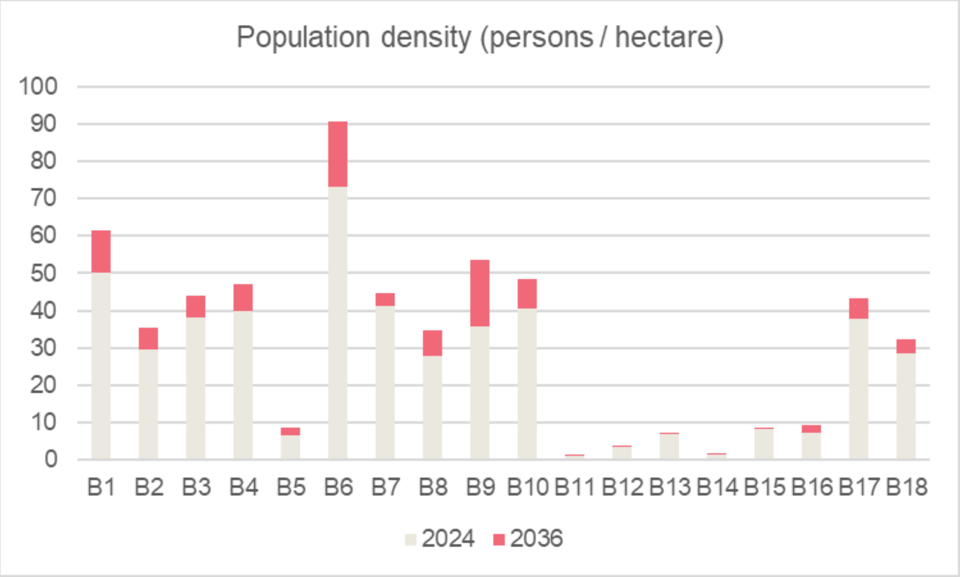
As noted earlier, these two graphs should be read together.

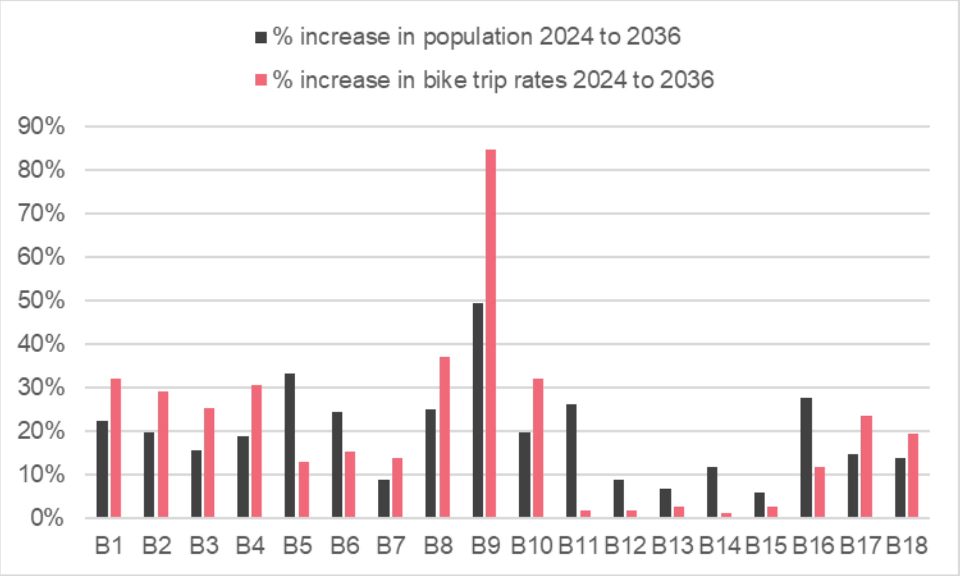
- The top graph shows the current (2024) and forecast (2036) population density. Note it remains low for regional cities (B11 to B16).
- The bottom graph compares the percentage change in population versus bike trip rates (i.e. trips per capita) between 2024 to 2036.

To help interpret the graphs it is perhaps worth comparing two corridors – B5 and B9.

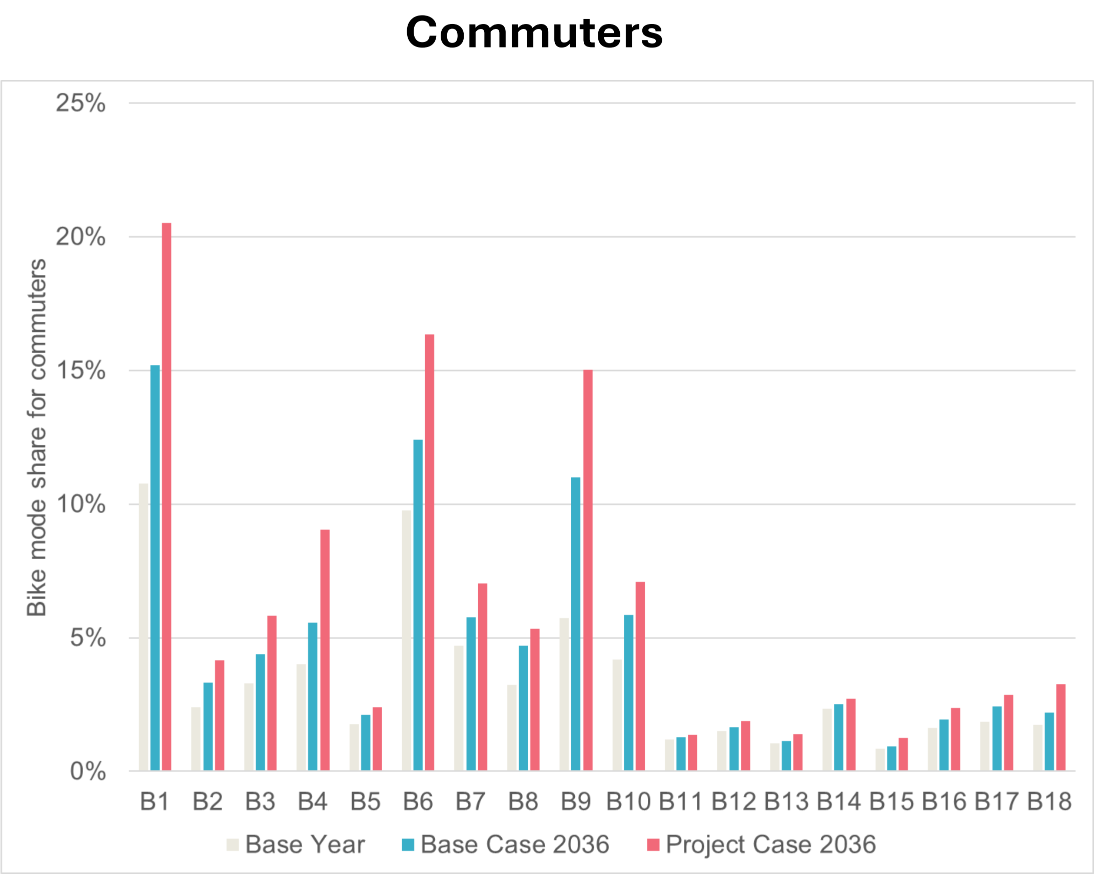
B5 – Werribee to West Footscray: This corridor has a relatively low population density (below 10 persons per hectare), characteristic of areas with predominantly detached housing. Despite a notable increase in population, the population density remains relatively low. This means that future levels of cycling are primarily driven by population growth rather than population density too.

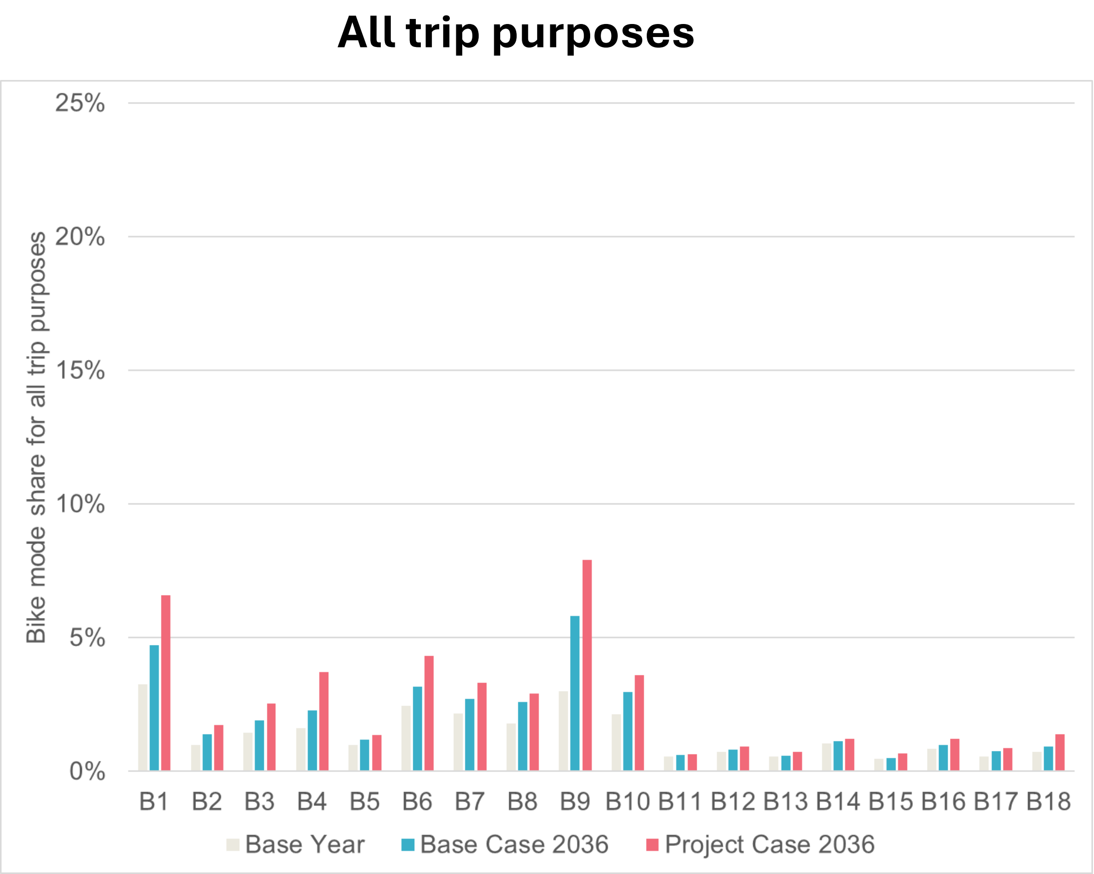
B9 – Highpoint to Footscray: As foreshadowed on the previous page, this corridor has a reasonably high population density in the base year and is forecast to increase considerably in future. This creates two strong underlying drivers of cycle demand – population growth and population density, as shown in the bottom graph.





Bike mode share





- There is already quite a disparity in the bike mode shares on the selected corridors – ranging from about 1% to 10%. Bike mode share is influenced by many factors including demographics, topography, car parking availability, land-use density and of course the perceived safety of roads.
- Bike mode share is forecast to increase on all corridors in the future Base Case. Population growth in of itself does not affect bike mode shares, but transitioning to higher population densities will. The other factor in the Base Case is higher trip rates by an increasing number of e-bike riders.
- For reference, bike modes in other cities around the world include Amsterdam 29%, Berlin 14%, Zurich 6% and London 3% (source: Goel, R. et al., 2022. Cycling behaviour in 17 countries across 6 continents: levels of cycling, who cycles, for what purpose, and how far?)

4. Corridor dashboards

- Current and proposed bike lanes
- Additional weekday bike trips
- Source of additional bike trips
- Bike mode share
- 2036 demand breakdown

B1 - Northcote to Moonee Ponds

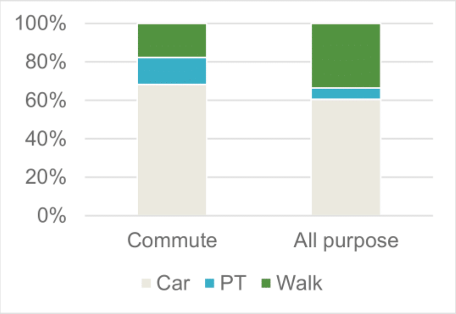
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		10.7	10.7		76%
2.2.1 - Painted bike lane: Exclusive	2.11	7.1		-7.1	50%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	1.1	1.2	0.1	8%	9%
2.6 - Bike boulevard	1.49		2.2	2.2		16%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	5.9		-5.9	42%	
Sub-total (bike lanes)		8.2	14.1	5.9	58%	100%
Total (including 'no bike infrastructure')		14.1	14.1	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.61	2.82

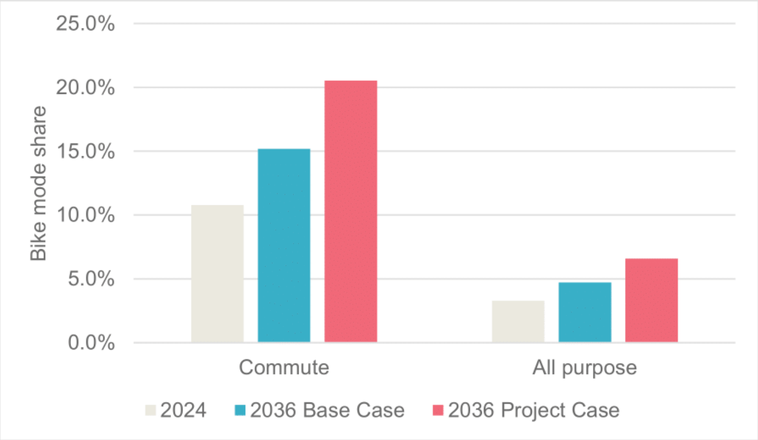
Additional weekday bike trips

2036 Project vs Base Case	2,400

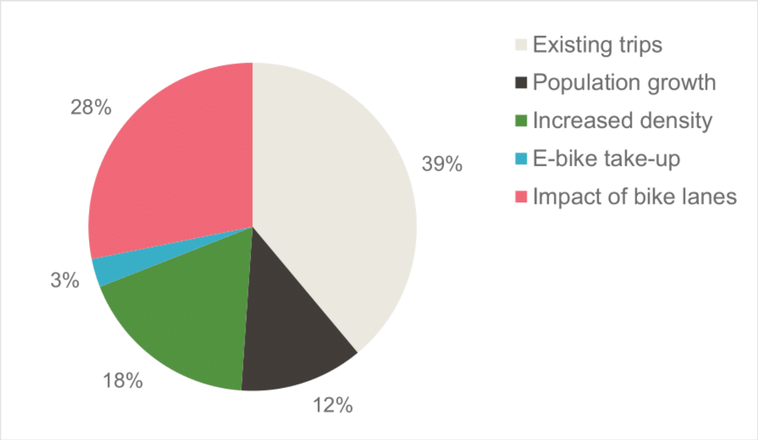
Source of additional bike trips



Bike mode share



2036 demand breakdown



B2 - Essendon to La Trobe University

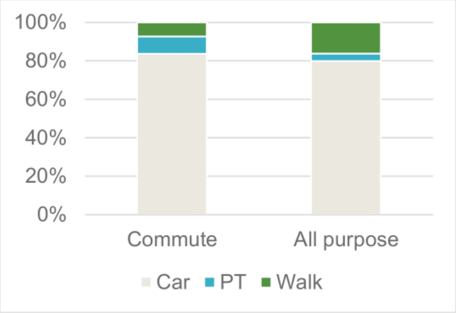
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	Distance two-way (km) PC	Distance two-way (km) △	% breakdown BY	% breakdown PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		19.0	19.0		58%
2.2.1 - Painted bike lane: Exclusive	2.11	14.1		-14.1	43%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	4.0	4.8	0.8	12%	15%
2.6 - Bike boulevard	1.49		8.8	8.8		27%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	1.0		-1.0	3%	
2.1 - No bike infrastructure	1.00	13.7		-13.7	42%	
Sub-total (bike lanes)		19.0	32.7	13.7	58%	100%
Total (including 'no bike infrastructure')		32.7	32.7	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.56	2.52

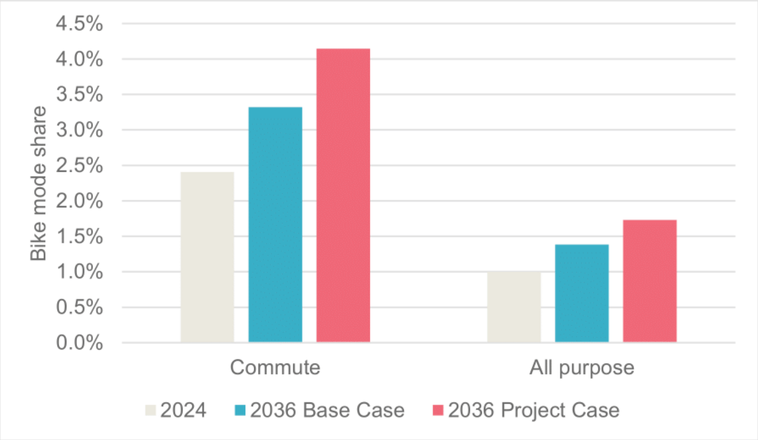
Additional weekday bike trips

2036 Project vs Base Case	530

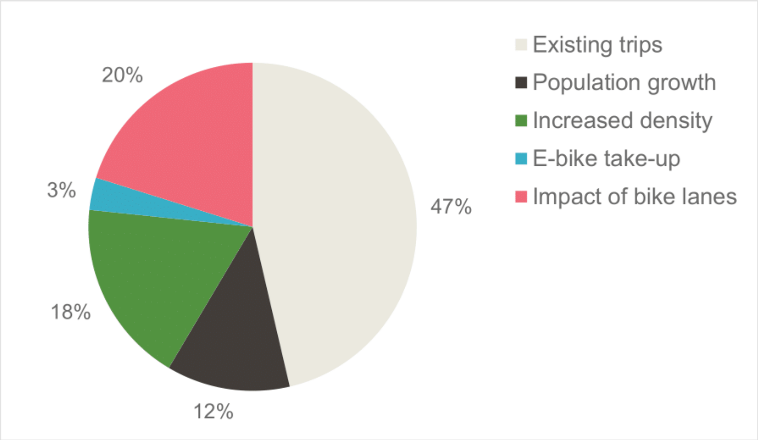
Source of additional bike trips



Bike mode share



2036 demand breakdown



B3 - Alfred Hospital to Clayton

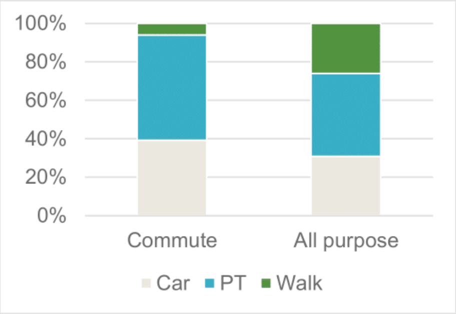
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	Distance two-way (km) PC	Distance two-way (km) △	% breakdown BY	% breakdown PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		6.0	6.0		18%
2.2.1 - Painted bike lane: Exclusive	2.11	2.6		-2.6	8%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	18.5	27.2	8.7	56%	82%
2.6 - Bike boulevard	1.49					
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	12.1		-12.1	36%	
Sub-total (bike lanes)		21.2	33.2	12.1	64%	100%
Total (including 'no bike infrastructure')		33.2	33.2	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.45	1.93

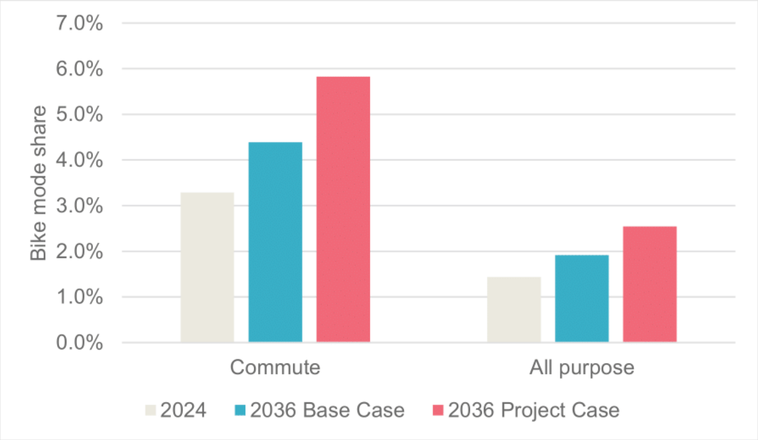
Additional weekday bike trips

2036 Project vs Base Case	5,000

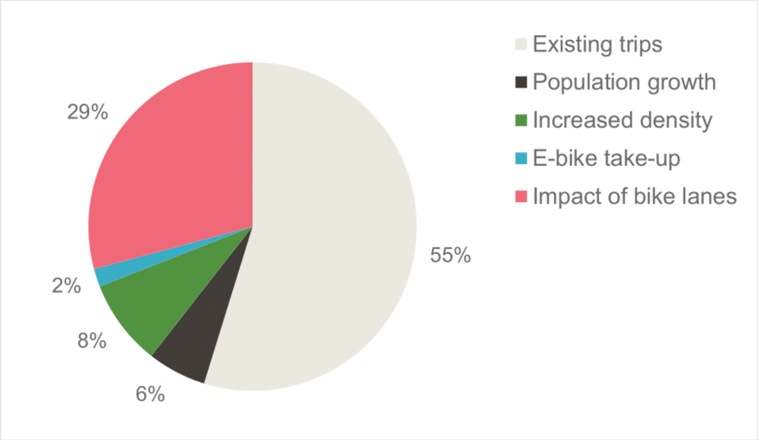
Source of additional bike trips



Bike mode share



2036 demand breakdown



B4 - Box Hill to Docklands

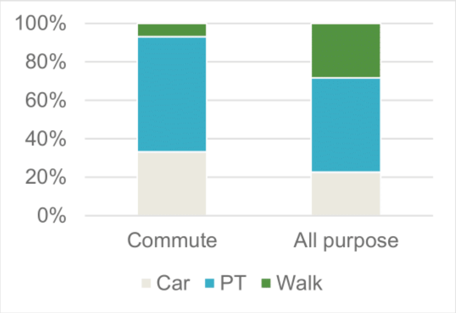
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34	0.3	0.3		1%	1%
2.3 - Protected bike lane (cycleway)	3.22		13.2	13.2		36%
2.2.1 - Painted bike lane: Exclusive	2.11	1.5		-1.5	4%	
2.2.3 - Painted bike lane: Advisory	2.00	1.6		-1.6	4%	
3.1 - Shared use path	1.65	11.9	16.0	4.2	32%	44%
2.6 - Bike boulevard	1.49		7.2	7.2		20%
2.2.2 - Painted bike lane: Shared parking	1.32	2.2		-2.2	6%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	1.8		-1.8	5%	
2.1 - No bike infrastructure	1.00	17.5		-17.5	48%	
Sub-total (bike lanes)		19.2	36.7	17.5	52%	100%
Total (including 'no bike infrastructure')		36.7	36.7	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.34	2.20

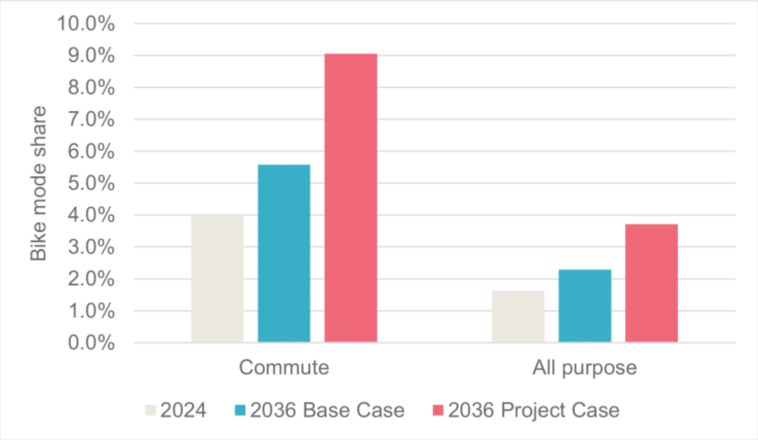
Additional weekday bike trips

2036 Project vs Base Case	8,400

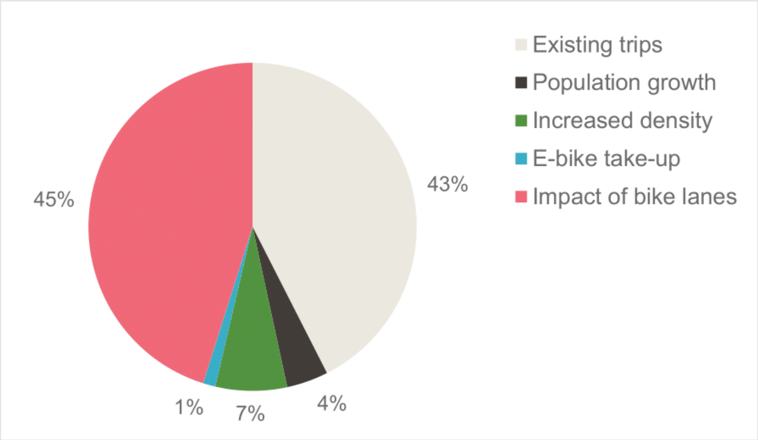
Source of additional bike trips



Bike mode share



2036 demand breakdown



B5 - Werribee to West Footscray

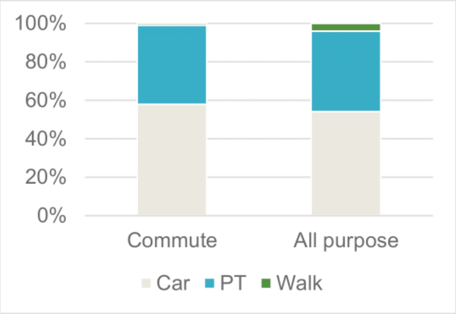
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34		0.1	0.1		0%
2.3 - Protected bike lane (cycleway)	3.22		10.9	10.9		18%
2.2.1 - Painted bike lane: Exclusive	2.11	6.5		-6.5	11%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	43.1	51.0	7.8	70%	82%
2.6 - Bike boulevard	1.49					
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	2.7		-2.7	4%	
2.1 - No bike infrastructure	1.00	9.6		-9.6	16%	
Sub-total (bike lanes)		52.3	62.0	9.6	84%	100%
Total (including 'no bike infrastructure')		62.0	62.0	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.57	1.93

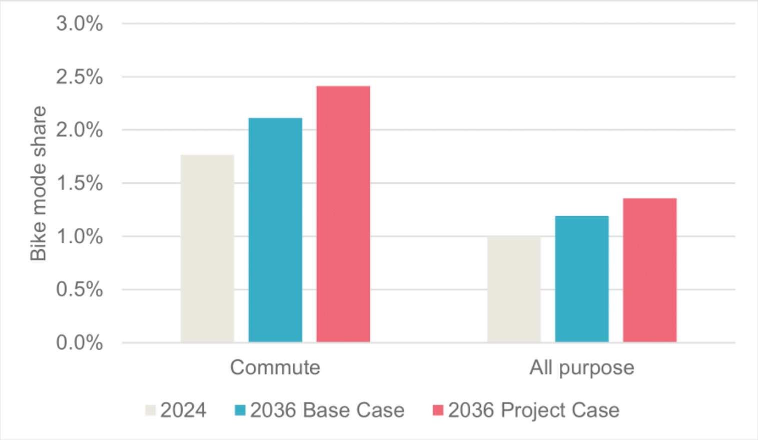
Additional weekday bike trips

2036 Project vs Base Case	1,400

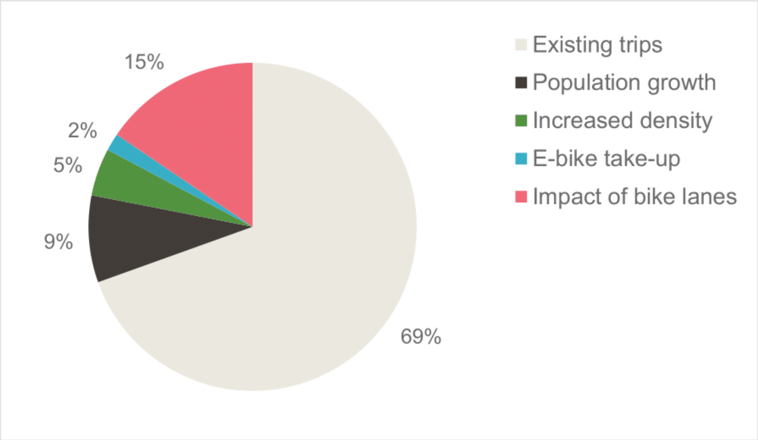
Source of additional bike trips



Bike mode share



2036 demand breakdown



B6 - Abbotsford to Anzac Station

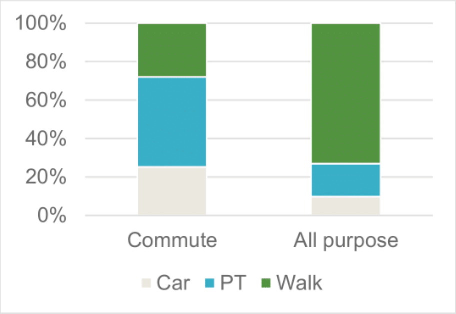
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	Distance two-way (km) PC	Distance two-way (km) △	% breakdown BY	% breakdown PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34	0.9	0.9		6%	6%
2.3 - Protected bike lane (cycleway)	3.22	5.1	12.5	7.4	34%	83%
2.2.1 - Painted bike lane: Exclusive	2.11	3.3		-3.3	22%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	0.0	0.0	0.0	0%	0%
2.6 - Bike boulevard	1.49		1.6	1.6		11%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	0.2		-0.2	1%	
2.1 - No bike infrastructure	1.00	5.5		-5.5	37%	
Sub-total (bike lanes)		9.5	15.1	5.5	63%	100%
Total (including 'no bike infrastructure')		15.1	15.1	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					2.14	3.04

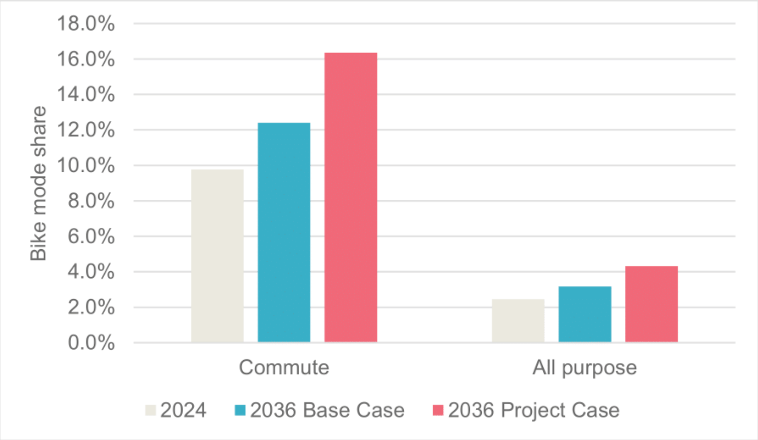
Additional weekday bike trips

2036 Project vs Base Case	4,100

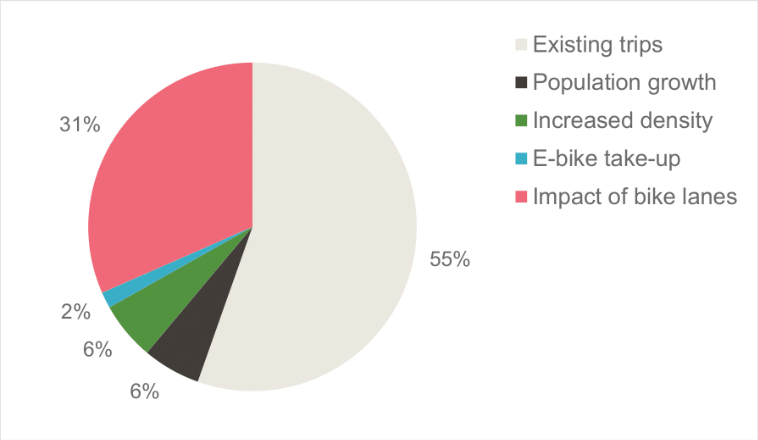
Source of additional bike trips



Bike mode share



2036 demand breakdown



B7 - Anzac Station to Sandringham

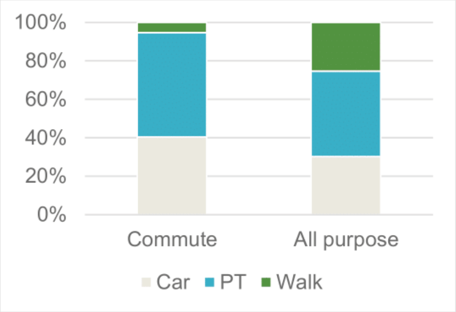
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34	0.1	0.1		0%	0%
2.3 - Protected bike lane (cycleway)	3.22	6.0	33.7	27.7	15%	84%
2.2.1 - Painted bike lane: Exclusive	2.11	19.0		-19.0	47%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	5.0	6.2	1.2	12%	15%
2.6 - Bike boulevard	1.49		0.3	0.3		1%
2.2.2 - Painted bike lane: Shared parking	1.32	8.1		-8.1	20%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	2.1		-2.1	5%	
Sub-total (bike lanes)		38.1	40.2	2.1	95%	100%
Total (including 'no bike infrastructure')		40.2	40.2	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					2.00	2.97

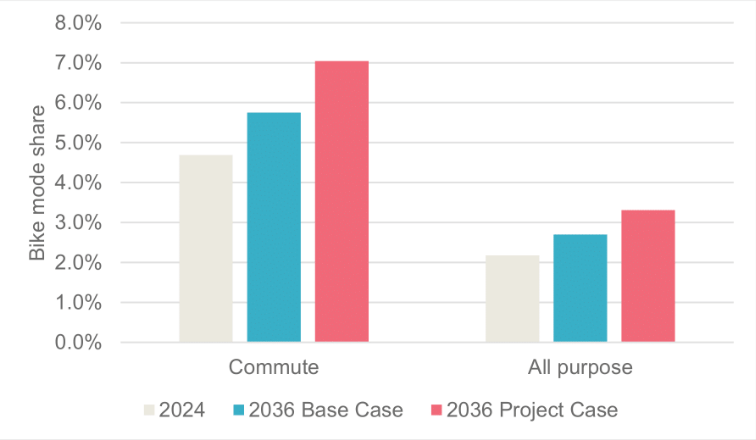
Additional weekday bike trips

2036 Project vs Base Case	2,500

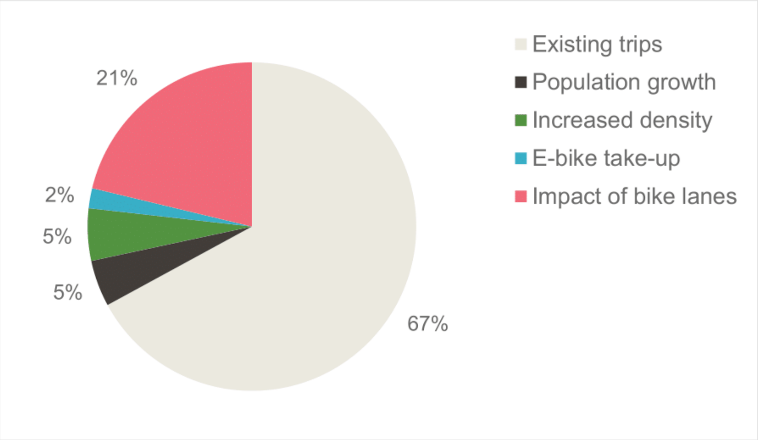
Source of additional bike trips



Bike mode share



2036 demand breakdown



B8 - St Albans to Docklands

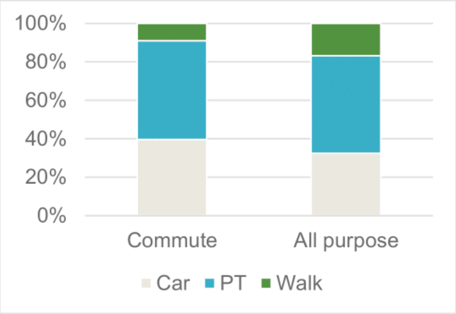
Current and proposed bike lanes

		Distance two-way (km)			% breakdown	
Bike lane	RAS	BY	PC	△	BY	PC
3.2 - Bicycle path	3.52		5.1	5.1		14%
3.3 - Separated path	3.34	2.4	3.8	1.4	7%	10%
2.3 - Protected bike lane (cycleway)	3.22		2.5	2.5		7%
2.2.1 - Painted bike lane: Exclusive	2.11	3.6		-3.6	10%	
2.2.3 - Painted bike lane: Advisory	2.00	0.3		-0.3	1%	
3.1 - Shared use path	1.65	26.3	23.3	-3.1	72%	64%
2.6 - Bike boulevard	1.49		1.8	1.8		5%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	1.1		-1.1	3%	
2.1 - No bike infrastructure	1.00	2.7		-2.7	8%	
Sub-total (bike lanes)		33.7	36.4	2.7	92%	100%
Total (including 'no bike infrastructure')		36.4	36.4	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.74	2.19

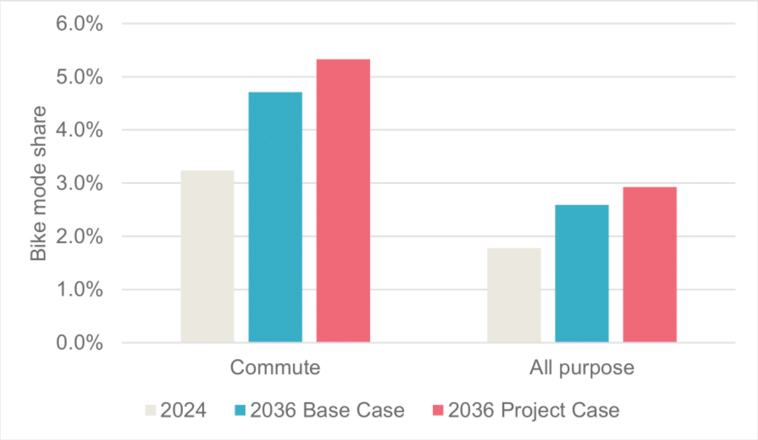
Additional weekday bike trips

2036 Project vs Base Case	1,100

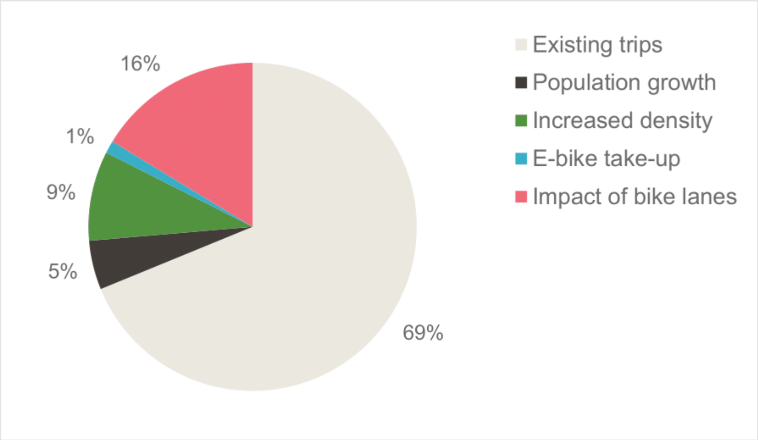
Source of additional bike trips



Bike mode share



2036 demand breakdown



B9 - Highpoint to Footscray

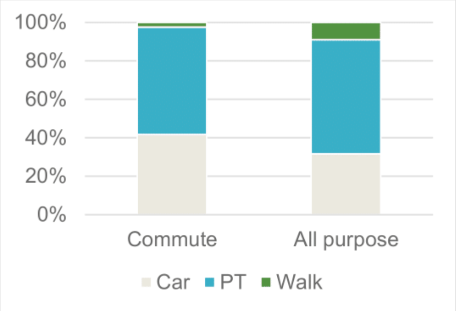
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22	1.7	4.2	2.4	16%	40%
2.2.1 - Painted bike lane: Exclusive	2.11	0.9		-0.9	8%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	2.2	5.0	2.8	20%	47%
2.6 - Bike boulevard	1.49		1.4	1.4		13%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	1.4		-1.4	13%	
2.1 - No bike infrastructure	1.00	4.4		-4.4	42%	
Sub-total (bike lanes)		6.1	10.5	4.4	58%	100%
Total (including 'no bike infrastructure')		10.5	10.5	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.60	2.25

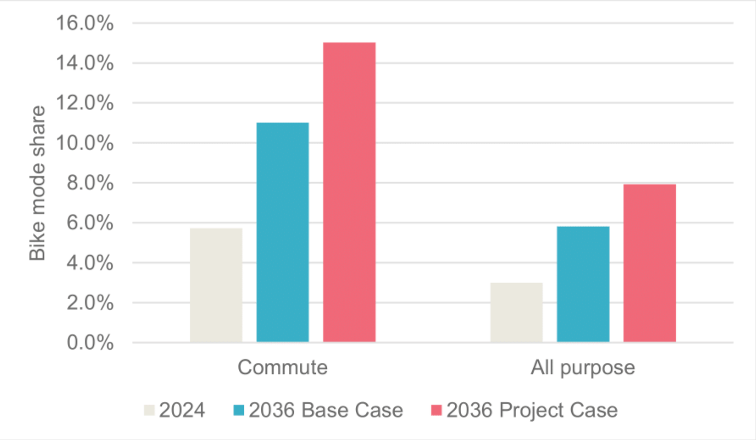
Additional weekday bike trips

2036 Project vs Base Case	2,000

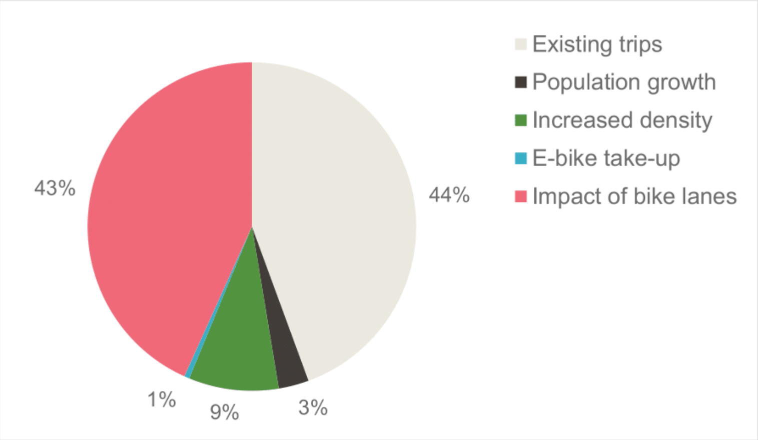
Source of additional bike trips



Bike mode share



2036 demand breakdown



B10 - Essendon to Southbank

Current and proposed bike lanes

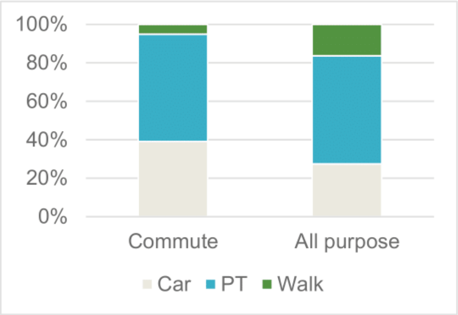
		Distance two-way (km)			% breakdown	
Bike lane	RAS	BY	PC	△	BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22	4.0	17.7	13.7	21%	91%
2.2.1 - Painted bike lane: Exclusive	2.11	10.5		-10.5	54%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	0.1	1.8	1.8	0%	9%
2.6 - Bike boulevard	1.49					
2.2.2 - Painted bike lane: Shared parking	1.32	4.3		-4.3	22%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	0.6		-0.6	3%	
Sub-total (bike lanes)		18.9	19.5	0.6	97%	100%
Total (including 'no bike infrastructure')		19.5	19.5	0.0	100%	100%

Weighted bike lane RAS (including 'no bike infrastructure'):	2.13	3.07

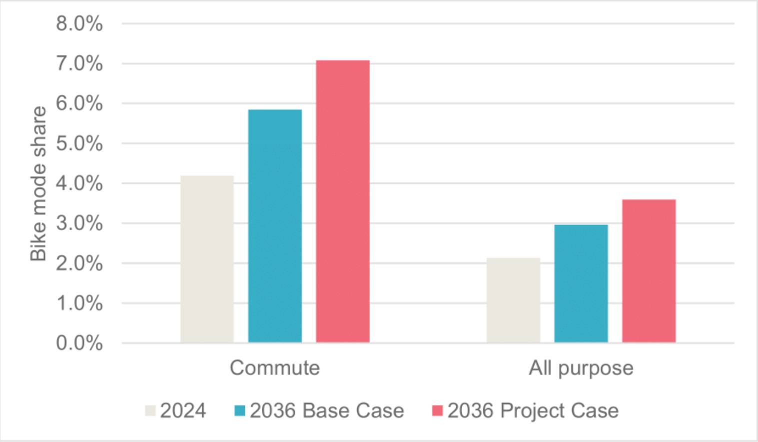
Additional weekday bike trips

2036 Project vs Base Case	1,200

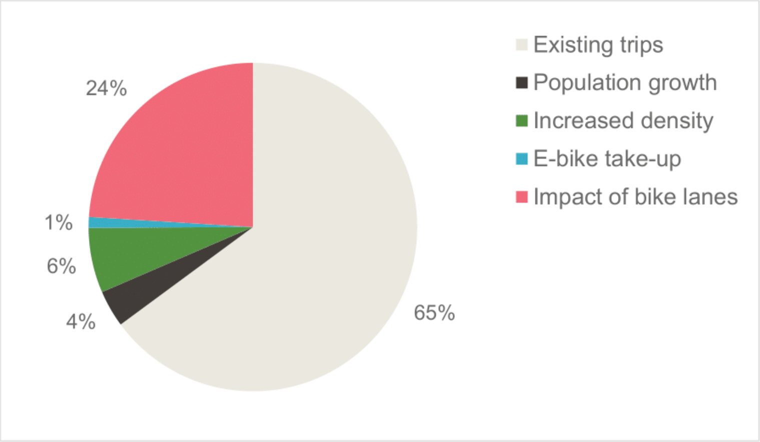
Source of additional bike trips



Bike mode share



2036 demand breakdown



B11 - Wodonga

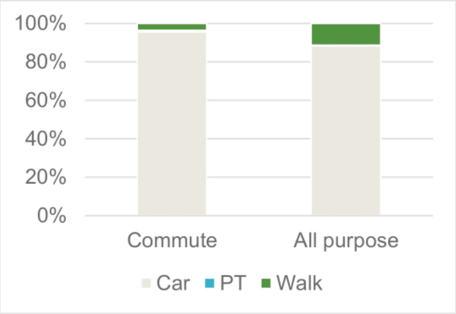
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		3.0	3.0		25%
2.2.1 - Painted bike lane: Exclusive	2.11	8.4		-8.4	69%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	1.4	8.2	6.8	12%	68%
2.6 - Bike boulevard	1.49		0.9	0.9		8%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	2.3		-2.3	19%	
Sub-total (bike lanes)		9.8	12.2	2.3	81%	100%
Total (including 'no bike infrastructure')		12.2	12.2	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.84	2.03

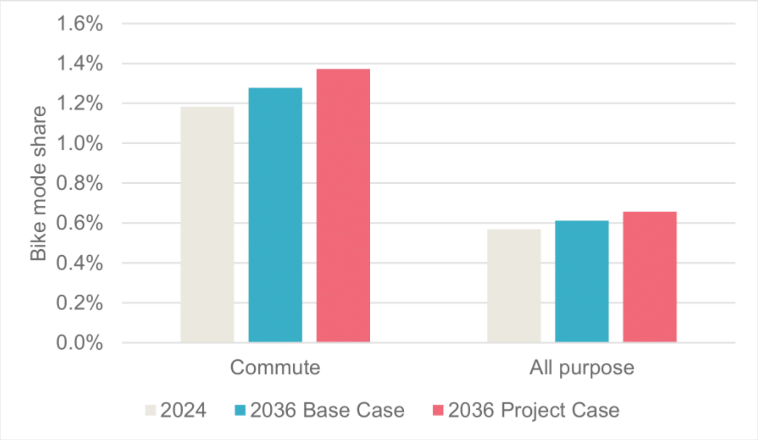
Additional weekday bike trips

2036 Project vs Base Case	70

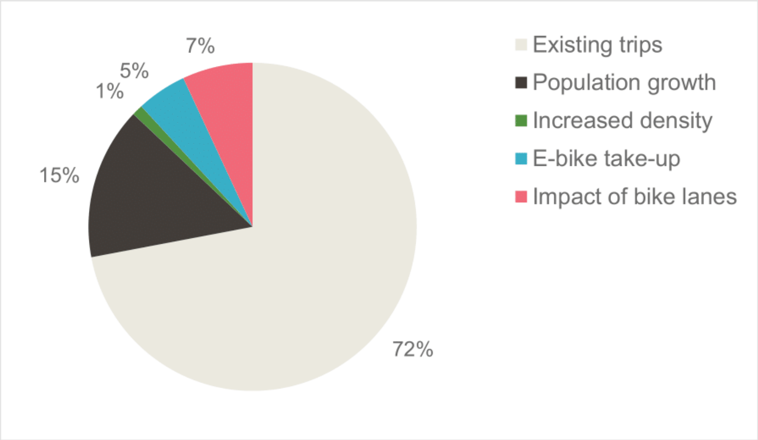
Source of additional bike trips



Bike mode share



2036 demand breakdown



B12 - Wangaratta

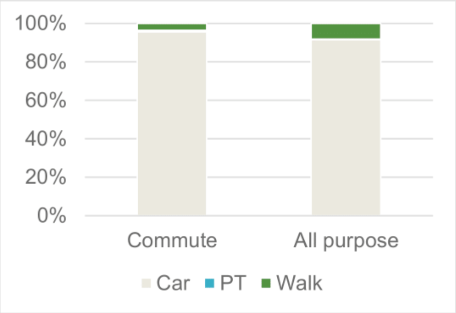
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	Distance two-way (km) PC	Distance two-way (km) △	% breakdown BY	% breakdown PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		5.3	5.3		29%
2.2.1 - Painted bike lane: Exclusive	2.11	4.1		-4.1	23%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	9.2	11.7	2.5	51%	65%
2.6 - Bike boulevard	1.49		0.9	0.9		5%
2.2.2 - Painted bike lane: Shared parking	1.32	0.4		-0.4	2%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	4.2		-4.2	23%	
Sub-total (bike lanes)		13.7	17.9	4.2	77%	100%
Total (including 'no bike infrastructure')		17.9	17.9	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.59	2.10

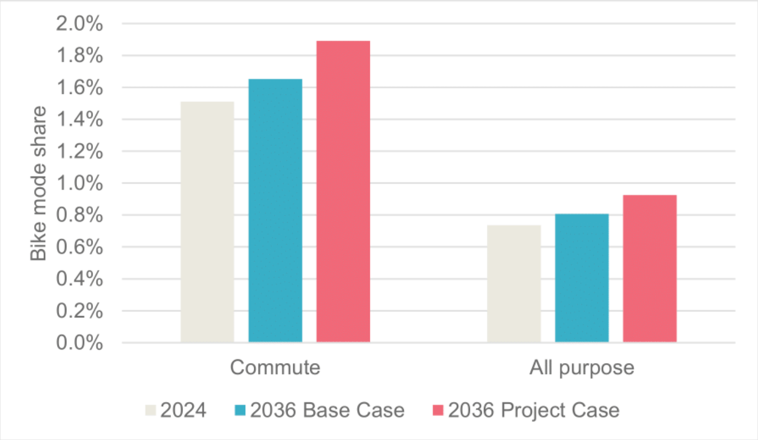
Additional weekday bike trips

2036 Project vs Base Case	130

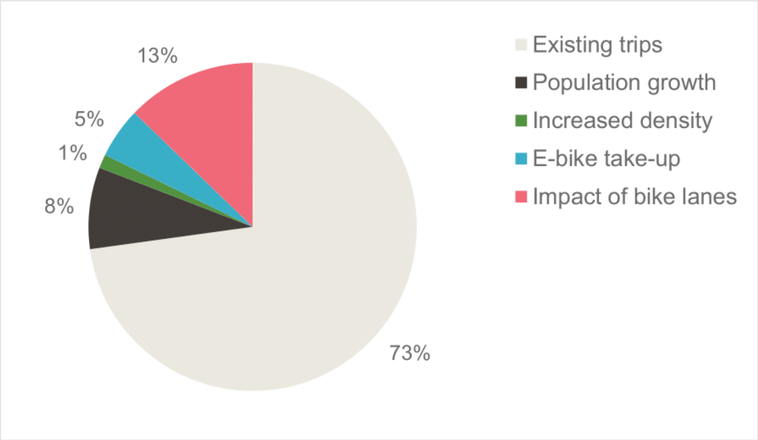
Source of additional bike trips



Bike mode share



2036 demand breakdown



B13 - Bendigo

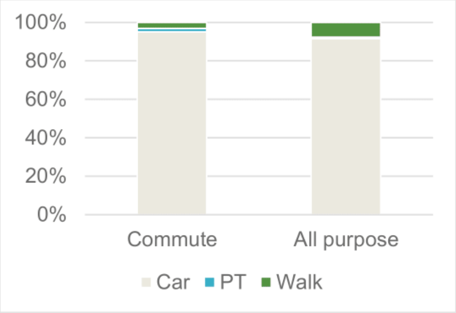
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34		0.9	0.9		2%
2.3 - Protected bike lane (cycleway)	3.22	1.9	2.3	0.5	5%	6%
2.2.1 - Painted bike lane: Exclusive	2.11	2.4		-2.4	6%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	16.3	34.9	18.5	42%	90%
2.6 - Bike boulevard	1.49		0.8	0.8		2%
2.2.2 - Painted bike lane: Shared parking	1.32	1.2		-1.2	3%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	17.0		-17.0	44%	
Sub-total (bike lanes)		21.8	38.9	17.0	56%	100%
Total (including 'no bike infrastructure')		38.9	38.9	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.46	1.78

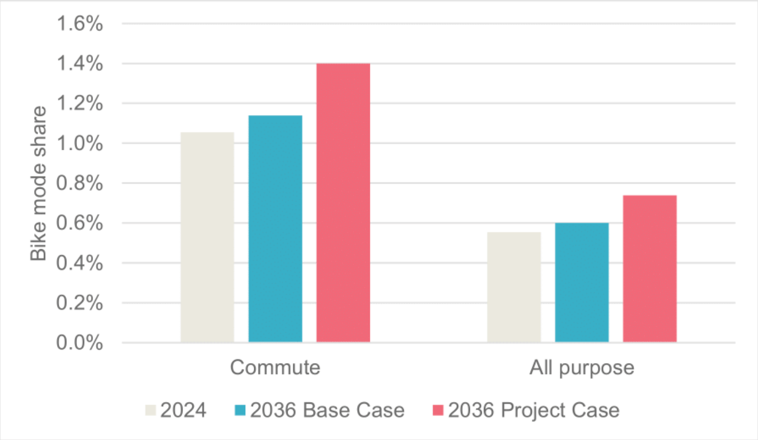
Additional weekday bike trips

2036 Project vs Base Case	490

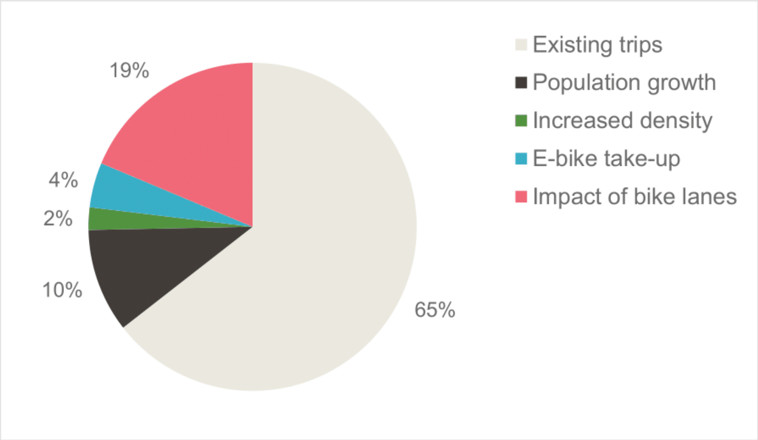
Source of additional bike trips



Bike mode share



2036 demand breakdown



B14 - Castlemaine

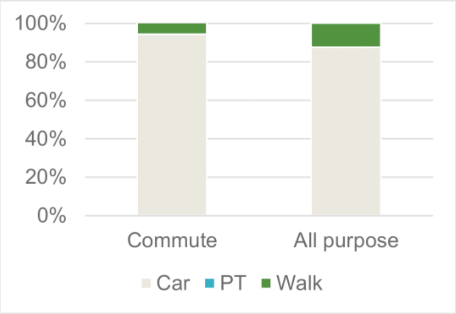
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	Distance two-way (km) PC	Distance two-way (km) △	% breakdown BY	% breakdown PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22					
2.2.1 - Painted bike lane: Exclusive	2.11					
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65		3.9	3.9		77%
2.6 - Bike boulevard	1.49		1.1	1.1		23%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	5.0		-5.0	100%	
Sub-total (bike lanes)		0.0	5.0	5.0	0%	100%
Total (including 'no bike infrastructure')		5.0	5.0	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.00	1.61

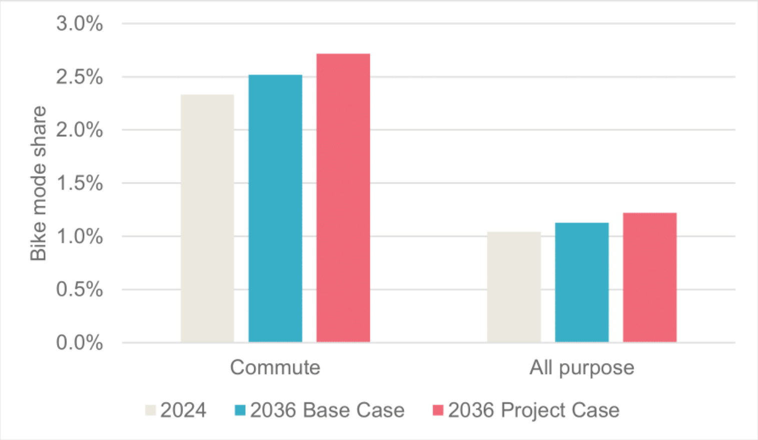
Additional weekday bike trips

2036 Project vs Base Case	50

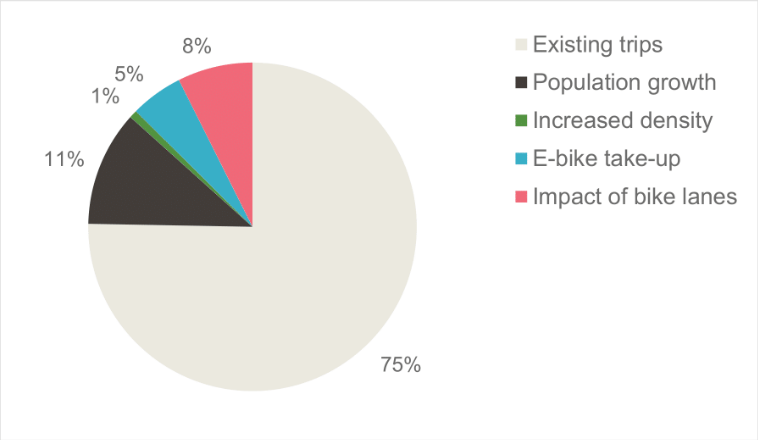
Source of additional bike trips



Bike mode share



2036 demand breakdown



B15 - Ballarat

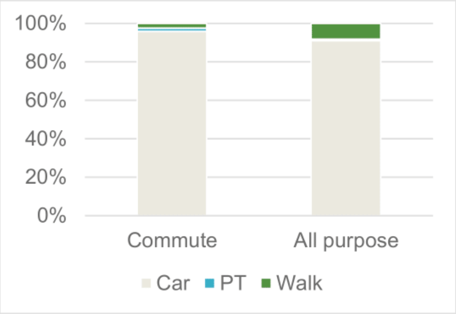
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		3.3	3.3		12%
2.2.1 - Painted bike lane: Exclusive	2.11	6.7		-6.7	25%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	4.5	19.3	14.7	17%	71%
2.6 - Bike boulevard	1.49		4.6	4.6		17%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	15.9		-15.9	59%	
Sub-total (bike lanes)		11.2	27.1	15.9	41%	100%
Total (including 'no bike infrastructure')		27.1	27.1	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.38	1.81

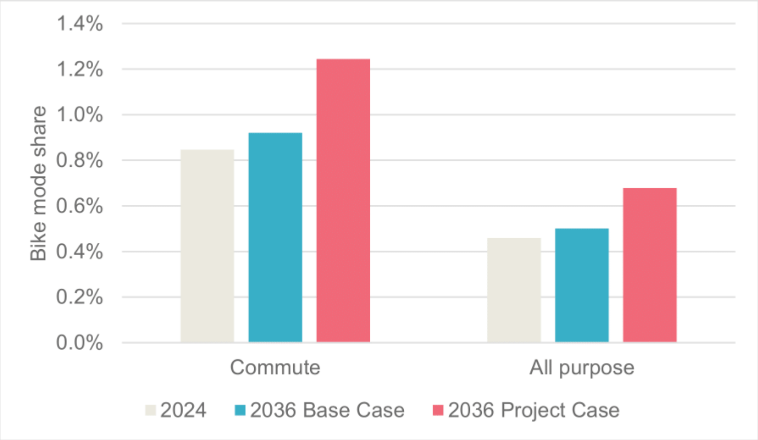
Additional weekday bike trips

2036 Project vs Base Case	840

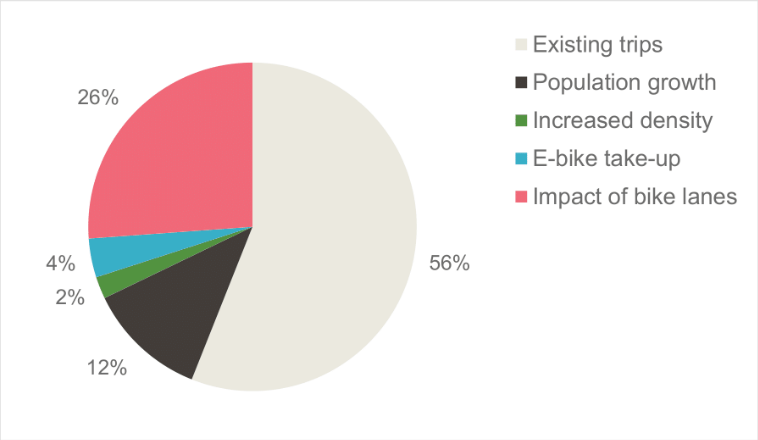
Source of additional bike trips



Bike mode share



2036 demand breakdown



B16 - Geelong

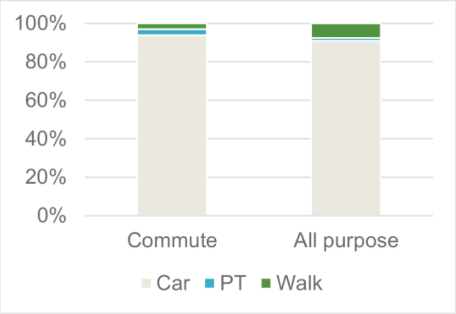
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34	0.5	0.5		1%	1%
2.3 - Protected bike lane (cycleway)	3.22	3.5	11.4	7.9	11%	35%
2.2.1 - Painted bike lane: Exclusive	2.11	4.1		-4.1	13%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	10.7	15.8	5.2	33%	49%
2.6 - Bike boulevard	1.49		4.6	4.6		14%
2.2.2 - Painted bike lane: Shared parking	1.32					
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05	4.2		-4.2	13%	
2.1 - No bike infrastructure	1.00	9.4		-9.4	29%	
Sub-total (bike lanes)		22.9	32.3	9.4	71%	100%
Total (including 'no bike infrastructure')		32.3	32.3	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.63	2.21

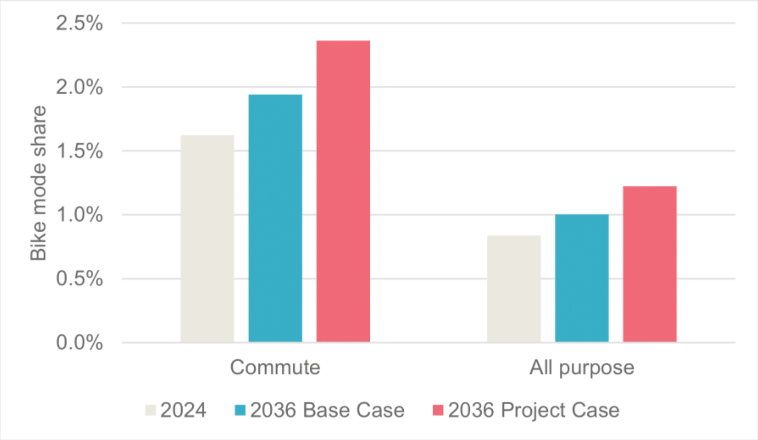
Additional weekday bike trips

2036 Project vs Base Case	1,300

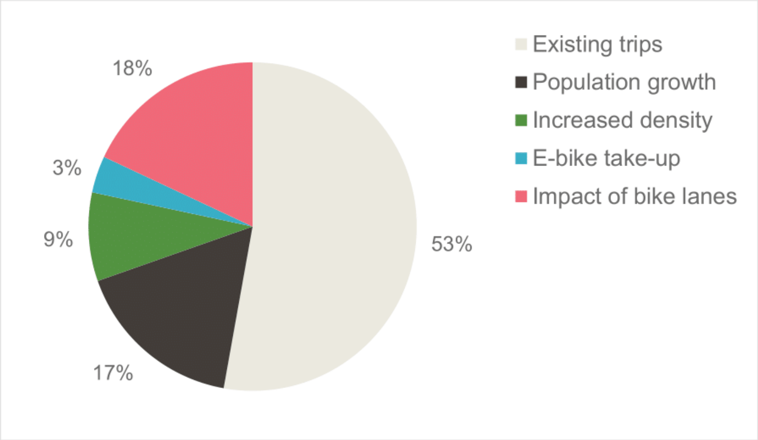
Source of additional bike trips



Bike mode share



2036 demand breakdown



B17 - Caulfield to Auburn

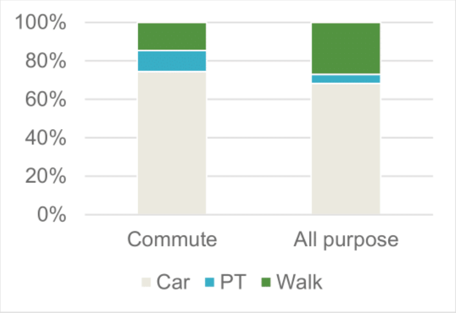
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22		10.3	10.3		85%
2.2.1 - Painted bike lane: Exclusive	2.11	8.2		-8.2	68%	
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	1.0	1.8	0.8	8%	15%
2.6 - Bike boulevard	1.49					
2.2.2 - Painted bike lane: Shared parking	1.32	0.8		-0.8	7%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	2.0		-2.0	17%	
Sub-total (bike lanes)		10.0	12.0	2.0	83%	100%
Total (including 'no bike infrastructure')		12.0	12.0	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.83	2.99

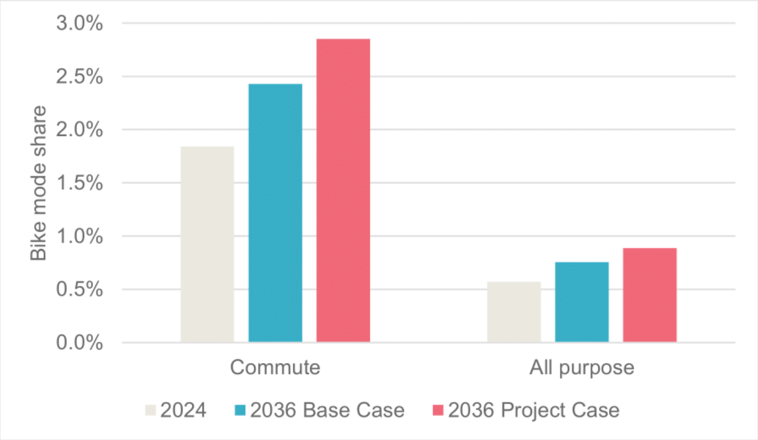
Additional weekday bike trips

2036 Project vs Base Case	220

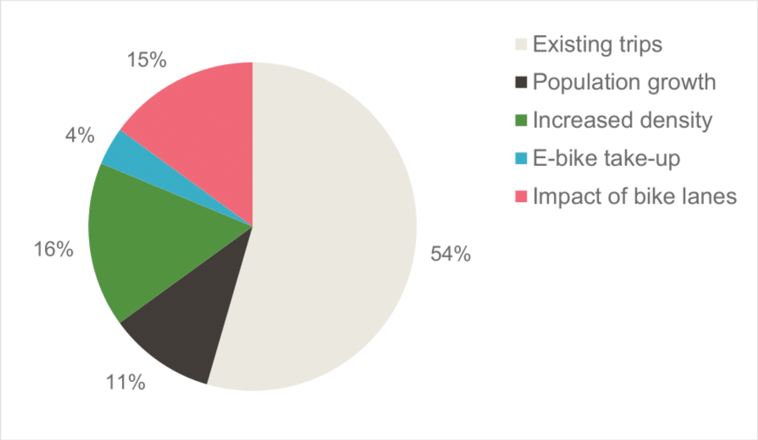
Source of additional bike trips



Bike mode share



2036 demand breakdown



B18 - Murrumbeena to Southland

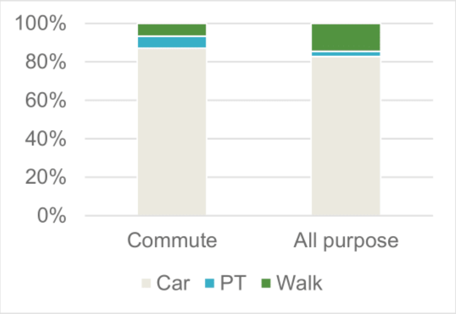
Current and proposed bike lanes

Bike lane	RAS	Distance two-way (km) BY	PC	△	% breakdown BY	PC
3.2 - Bicycle path	3.52					
3.3 - Separated path	3.34					
2.3 - Protected bike lane (cycleway)	3.22	0.1	11.2	11.1	0%	50%
2.2.1 - Painted bike lane: Exclusive	2.11					
2.2.3 - Painted bike lane: Advisory	2.00					
3.1 - Shared use path	1.65	0.4	2.2	1.9	2%	10%
2.6 - Bike boulevard	1.49		9.2	9.2		41%
2.2.2 - Painted bike lane: Shared parking	1.32	14.2		-14.2	63%	
2.5 - Bus lane	1.10					
2.4 - Shared lane (sharrows)	1.05					
2.1 - No bike infrastructure	1.00	7.9		-7.9	35%	
Sub-total (bike lanes)		14.7	22.6	7.9	65%	100%
Total (including 'no bike infrastructure')		22.6	22.6	0.0	100%	100%
Weighted bike lane RAS (including 'no bike infrastructure'):					1.22	2.36

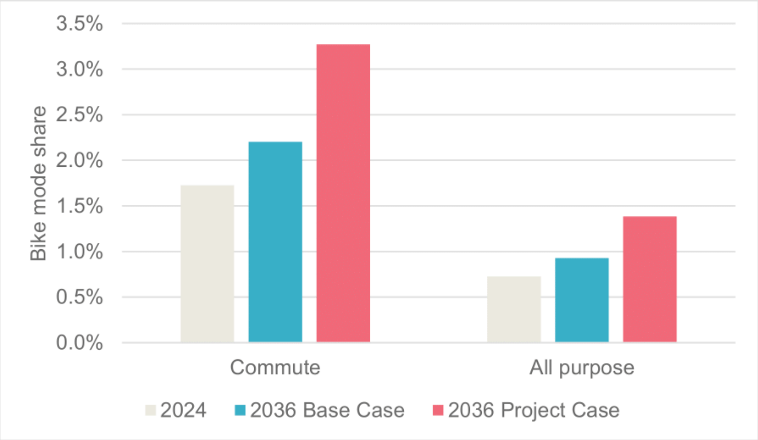
Additional weekday bike trips

2036 Project vs Base Case	680

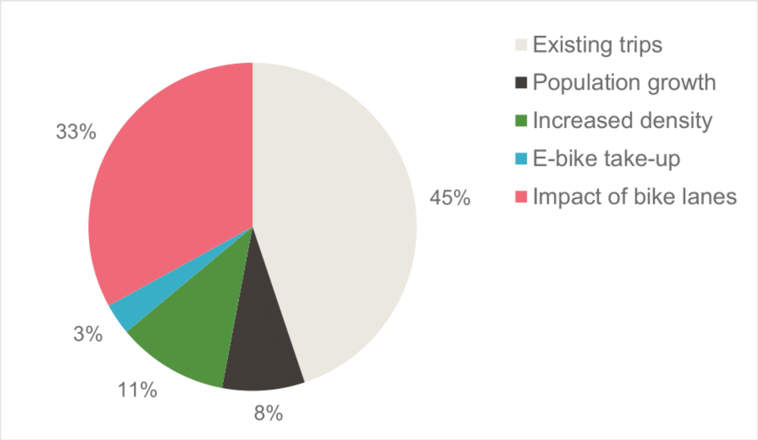
Source of additional bike trips



Bike mode share



2036 demand breakdown



5. Technical background

- Scope requirements
- Challenge of forecasting cycle demand
- Cycle Demand Model (CDM)
- Calibration & validation
- Areas for further development

Scope requirements

This text box is taken from the request for tender.

> The supplier's methodology should specify how they will estimate the increased demand, usage and mode changes of the cycling corridors as a result of the infrastructure changes. Given there is some uncertainty and this is a relatively new area of work, IV would like the supplier to consider using a scenario approach using assumptions to identify a range of potential outcomes. Complex modelling such as computable general equilibrium (CGE) or strategic transport modelling (including in VITM) is <u>not</u> required for this project.

Challenge of forecasting cycle demand

Issues for cyclists
Other modelling issues*

In the near term is the added complexity COVID introduced on travel demand and propensity to work from home.

Cycle Demand Model (CDM)

- CDM is an Excel-based principal factor (PF) model, that pivots around observed demand data to forecast the underlying growth in cycle demand and the impact of investing in different types of bike lane.
- A key feature is the deconstruction on demand into 5 discrete components (see diagram on next page), which provides additional transparency and insight on the principal factors influencing cycle demand on a corridor basis.
- The main forecasts are:
  - Cycle demand and distance travelled
  - Mode shift

cdm | cycle demand model

cdm | cycle demand model

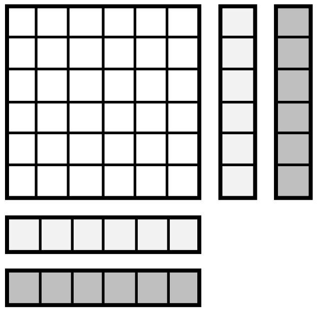
components of cycle demand : base case project case

Base Year

- ❑ JTW mode15 and mode236
- ❑ 5 modes: bike, e-bike, car, PT, walk
- ❑ Study area
- ❑ Candidate trips
- ❑ VISTA expansion to all trip purposes

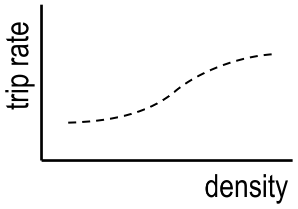
Pop & Emp

- ❑ Doubly constrained growth



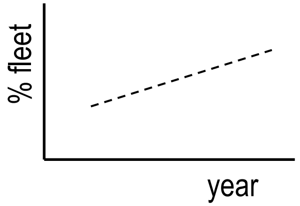
Pop density

- ❑ Cycle trip rates increase with population density
- ❑ Estimated from Census data



e-bikes

- ❑ e-bike penetration
- ❑ Australia approx 5-6 years behind the Netherlands
- ❑ Increased bike use and distance travelled



Bike lanes

- ❑ Melbourne-derived elasticity (high-med-low)
- ❑ Benchmarked
- ❑ Re-weighted by the Relative Attractiveness Score (RAS) of proposed bike lanes

Bike lane type	RAS
Bicycle path	3.52
Separated path	3.34
Protected bike lane (cycleway)	3.22
Painted bike lane: Exclusive	2.11
Painted bike lane: Advisory	2.00
Shared use path	1.65
Bike boulevard	1.49
Painted bike lane: Shared parking	1.32
Bus lane	1.10
Shared lane (sharrows)	1.05
No bike infrastructure	1.00

Calibration & validation

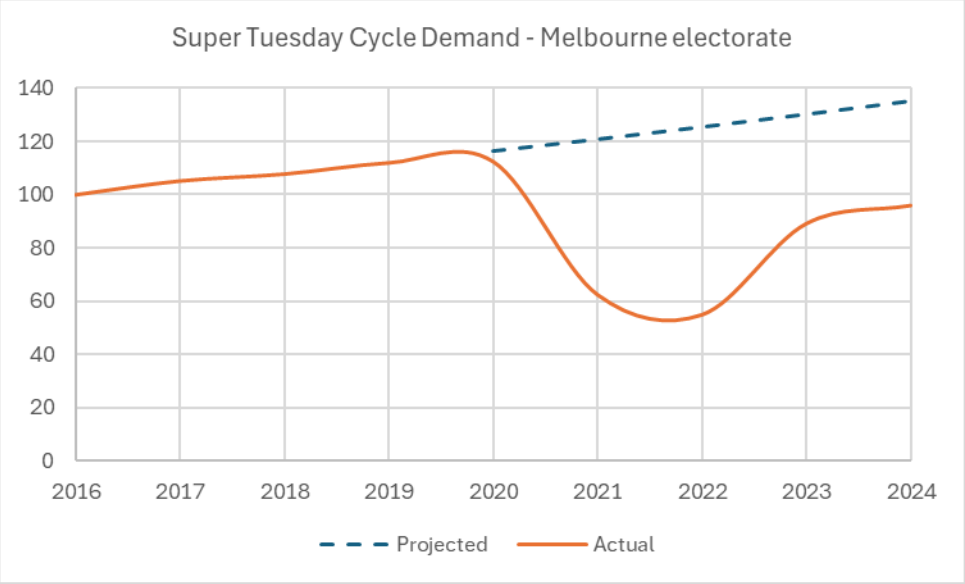
- The following slides outline how each of the 5 components of CDM were calibrated and validated

1) Base year demand
2) Population and employment growth
3) Population density
4) E-bikes
5) Bike lanes

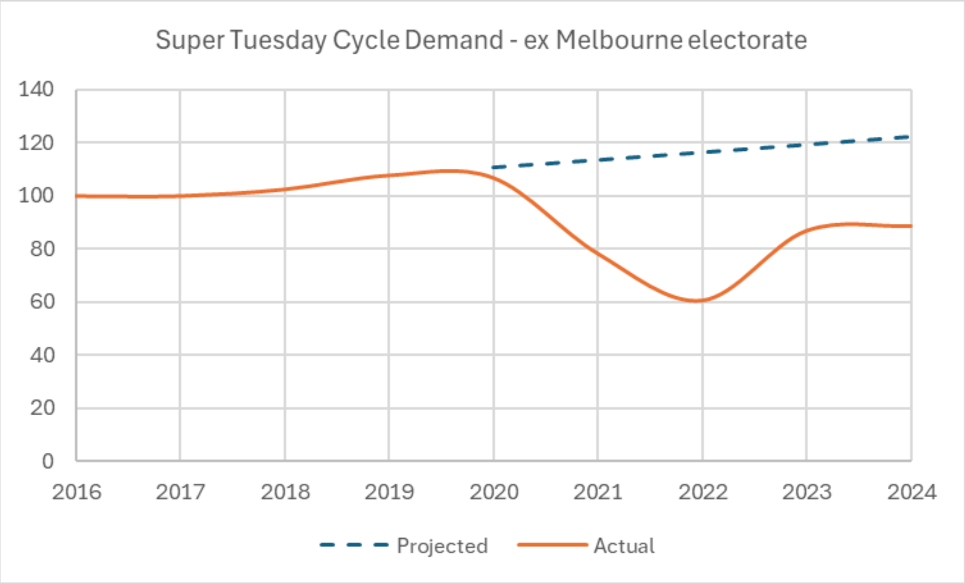
Validation of combined growth

(1) Base year demand (2024)

- Underlying demand in each corridor was sourced from the 2016 Census, and included:
  - ‘bicycle only’ demand from the ‘mode15’ dataset; and
  - ‘bicycle + other mode’ from the ‘mode236’ dataset, which added about 7% more trips.
- A seasonality factor of 12% was applied to the Census data to increase it to an annual average weekday
- 2016 demand was factored using a doubly-constrained method to account for the change in population and employment growth through to 2024
- The forecast 2024 demand was then calibrated against observed count data to account for COVID impacts
- Finally, e-bikes (10%) were separated from push bikes based on 2024 Super Tuesday visual counts

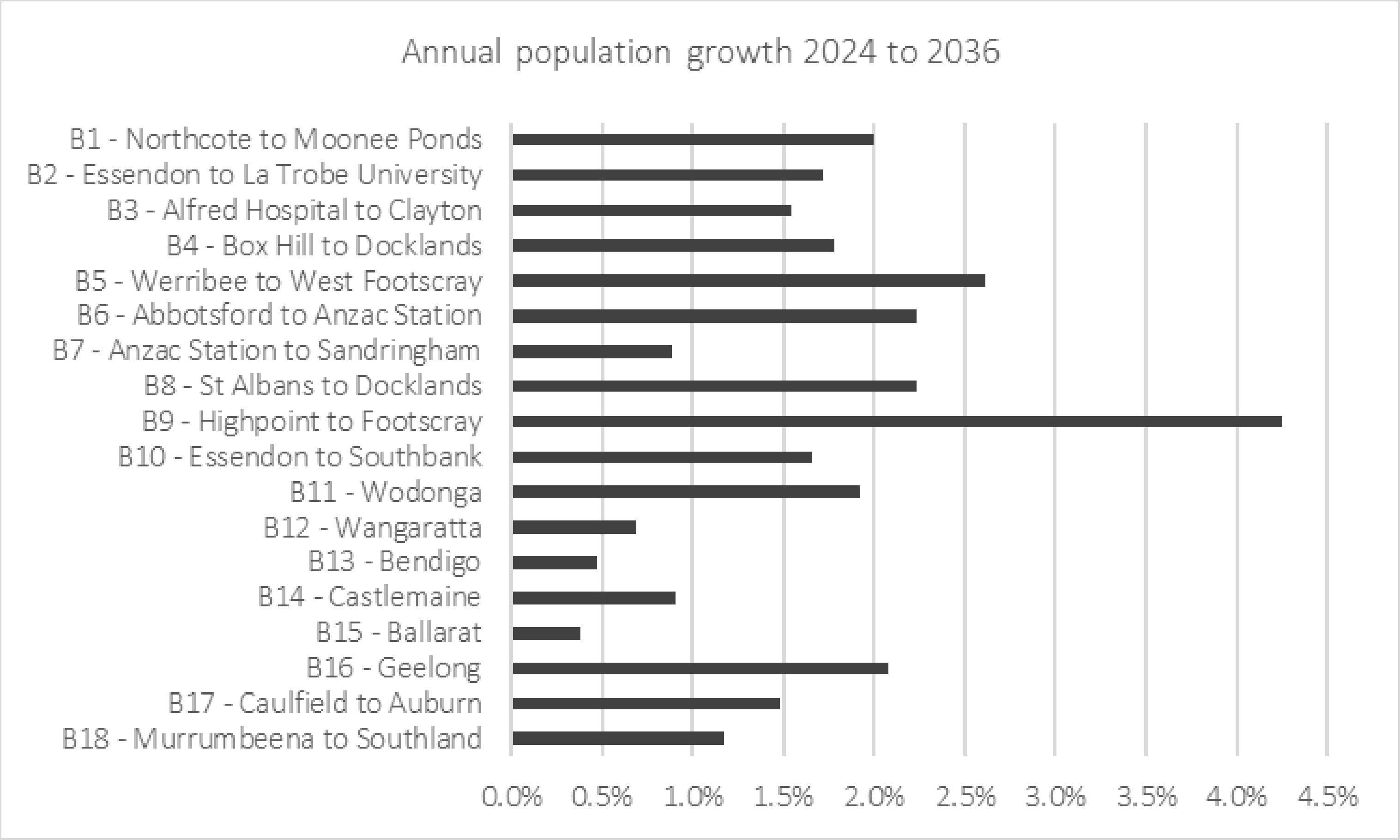


71%



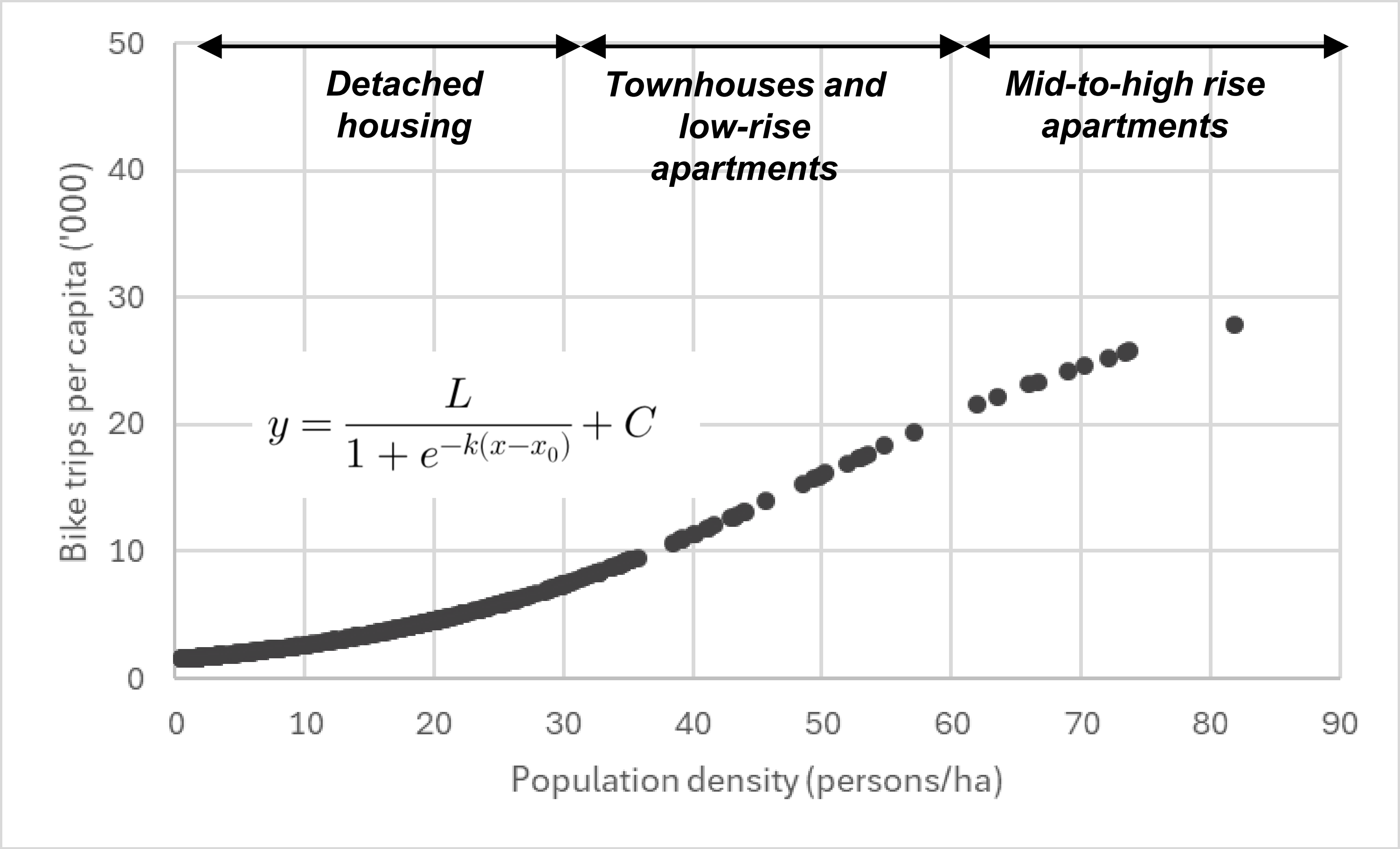
73%

(2) Population & employment growth



- Population & employment growth was sourced from the 2024 Small Area Land-use Projections (SALUP)
- This graph shows the 2024 to 2036 annual population growth rate for each bike corridor.
- Note: SALUP data is confidential and should not be used in any publications without prior consent from DTP

(3) Population density



- Cycle trip rates are higher in areas with higher population density
- The s-shaped logistic curve was calibrated from Census data:
  - Rises slowly at first;
  - Then more steeply around the midpoint; and
  - Levels off near an upper limit.

(4) E-bikes

The CDM e-bike module considers the take-up rate and propensity to cycle more often and further.

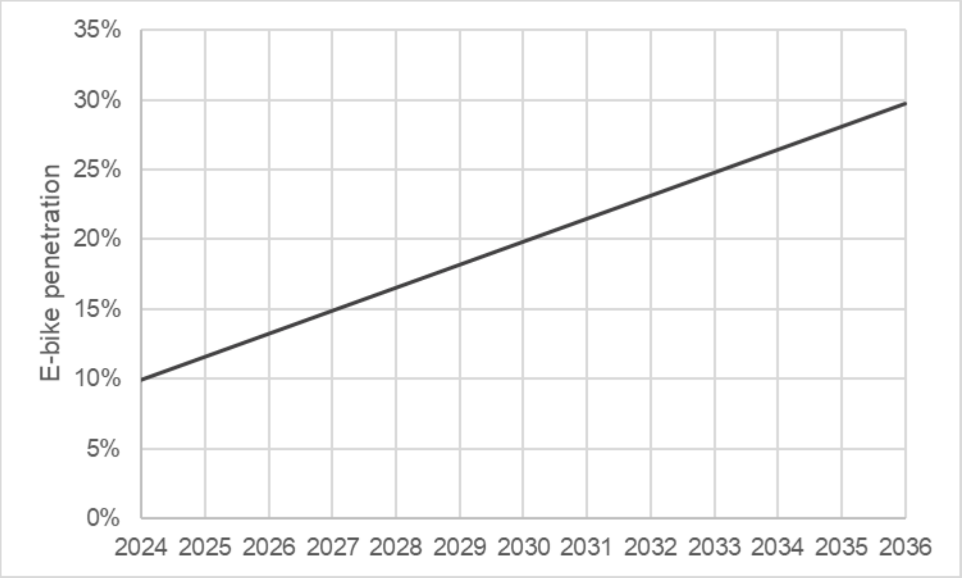
Take-up rate

- E-bikes represent about 10% of bikes ridden in Melbourne. (Source: Super Tuesday counts)
- The take-up rate was estimated to be approximately 5-6 years behind the Netherland’s take-up rate. (Source: www.bovag.nl)
- The Netherland’s adoption curve is currently very linear, although it could taper of per a traditional s-curve at some point in the future. This ought to be monitored. Based on this current linear adoption curve, e-bikes in Melbourne are forecast to represent 30% of bikes by 2036.

Propensity to cycle more often and further

- E-bike riders are assumed to ride 23% more than with regular bikes. (Source: MacArthur et al (2018) A North American Survey of Electric Bicycle Owners. Cairns et al (2017) Electrically-assisted bikes: Potential impacts on travel behaviour.)
- E-bike riders are assumed to travel 50% further per trip, on average. (Source: Cairns et al (2017) Electrically-assisted bikes: Potential impacts on travel behaviour.)

Netherlands e-bike adoption curve, anchored to Melbourne’s current take-up rate of 10%



(5) Bike lanes

An elasticity of demand with respect to the change in bike lane provision (normalized to cycleway equivalents) of 0.47 was estimated for Melbourne; with a low and high range of 0.37 and 0.58, respectively. The elasticities were estimated on an SA2 suburb basis using the following data:

- Bike mode shares from the Census journey to work (mode15), adjusted upwards to include bike access to other modes (mode236);
- Population density (persons per hectare), for consistency with the application within CDM; and
- Percent of road network with bike lanes, based on open street map data on bike lane provision, factored by the Relative Attractiveness Scores (RAS) and normalised to cycleway equivalents (type 2.3).

The resulting coefficients had a p-value < 0.05 and |t-stat| > 2, which is considered statistically robust.

Furthermore, the median elasticity (0.47) matches precisely the revealed elasticity for Seville, which implemented a similarly extensive and high-quality bike lane network 15-20 years ago. And the low elasticity (0.37) benchmarks well to literature from the US (0.34).

The elasticities were then implemented within CDM by first normalizing the corridor bike lane provision to a cycleway equivalents.

Seville

Year	km	Daily bike trips
2006	12	13,062
2010	120	67,925
% change	900%	420%
Implied elasticity		0.47

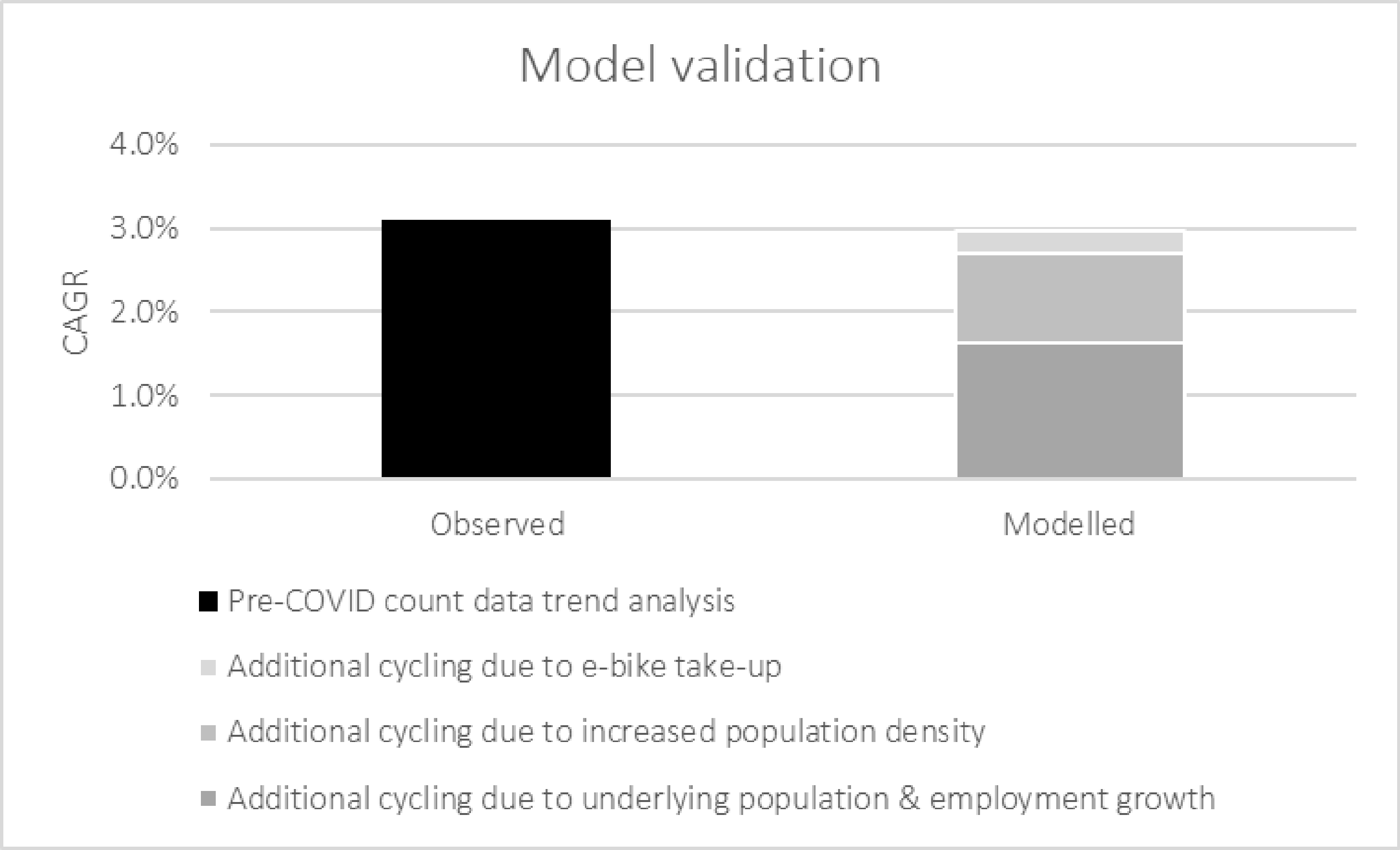
Source:
Marqués, R et al (2015) Research in Transportation Economics (plus email correspondence with ShapeTransport 20th May 2017)

US major cities

	Miles of type II bike lanes per sq.mi.	Bike commute mode share
Current average across 50 US cities	0.31	0.91%
Future, with 1 additional mile of type II bike lanes	1.31	1.91%
% change	323%	110%
Implied elasticity	0.34	

Source:
Dill & Carr (2003) Bicycle Commuting and Facilities in Major US Cities: If You Build Them, Commuters Will Use Them

Validation of combined growth



- In CDM, underlying (base case) cycling demand is forecast to increase as a function of three components:
  - Underlying population & employment growth
  - Increased population density
  - E-bike take-up
- The graph shows that the model validate well against the observed pre-COVID annual growth rates from bike counts.
- Note: actual growth will vary on a corridor-by-corridor basis.

Areas for further development

1. **Bike counts** – Undertake comprehensive before and after bike counts of the whole corridor (not just the route itself) to assess the impact on both route choice and mode shift. The data could also then be used to estimate revealed elasticities of demand with respect to changes in bike lane provision.
2. **Stated preference surveys** – Undertake SP surveys to confirm the relative attractiveness of different bike lanes. This would be particularly useful for 'bike boulevards', which represent 10% of the proposed bike lanes but are not well documented from a customer preference perspective in existing literature. Segmentation of the SP surveys into different cycling cohorts (e.g. confident cyclist vs others), age or gender could also provide useful insights for distributional impacts.
3. **Route choice module** – Extend the Cycle Demand Model to include a route choice module, to further test the effectiveness of the proposed bike lanes in drawing existing cyclists off the side streets and onto the main route.

Contact details

Graham Mounsey
Director, ShapeTransport

m: 0415 403 763
a: PO Box 334, Freshwater 2096
e: graham.mounsey@shapetransport.com
in: linkedin.com/in/grahammounsey/

SHAPE TRANSPORT