



ACT
Government

Infrastructure Canberra

Our Ref: iCBRFOI2025-26/04

2.2(a)(ii)

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FREEDOM OF INFORMATION REQUEST

I refer to your application under section 30 of the *Freedom of Information Act 2016* (the Act), received by Infrastructure Canberra (iCBR), on 26 July 2025.

In your information access request, you sought access to:

- *Daily AM peak, inter peak, PM peak and off peak bus and light rail boardings on the routes of each of stages 2A and 2B, in 2026 and 2046 (Figure 3-3:)*
- *Daily car kilo metres travelled in parallel with light rail routes for stages 2A and 2B in 2046, with and without light rail (Figure 3-5).*
- *Daily light rail passenger kilometres in 2026 and 2046 on each of stages 2A and 2B, in 2026 and 2046, for Stage 2A and for the full light rail route (Figure 7-5).*
- *Daily bus passenger kilometres in 2026 and 2046 along each of stages 2A and 2B for the base case, for light rail stage 2A and for the full light rail route (Figure 7-6).*
- *Daily public transport passenger kilometres along each of stages 2A and 2B, for the base case, for light rail stage 2A and for the full light rail route (Figure 7-7).*
- *Daily car kilometres travelled in parallel with light rail routes for stages 2A and 2B in 2026 and 2046, with and without light rail stage 2A, and with and without the full light rail route (Figure 7-8).*

Authority

I am an Information Officer appointed by the Director General under section 18 of the Act to deal with access applications made under Part 5 of the Act.

Decision on access

Searches were completed for relevant information, and one report was identified as within the scope of your access request. I have decided to release this report with personal details of the VLC staff that prepared the report withheld.



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Please note due to the evolving nature of modelling this report would have been current at time of writing and will be superseded by later assessments.

My decision is detailed further in the following Statement of Reasons.

Statement of Reasons

In making my decision on disclosing government information, I must identify all relevant factors in Schedule 2 of the Act and determine, on balance, where the public interest lies.

In reaching my access decision, I have taken the following into account:

Factors favouring disclosure in the public interest (Schedule 2, Section 2.1)

- Section 2.1(a)(i) – promote open discussion of public affairs and enhance the governments accountability;
- Section 2.1(a)(viii) – reveal reason for government decision

I am satisfied that these are relevant considerations favouring disclosure in this case, and in the interests of enhancing open discussion, I afford them significant weight.

Factors favouring non-disclosure in the public interest (Schedule 2, Section 2.2)

- Section 2.2(a)(ii) – prejudice the protection of an individual's right to privacy or any other right under the *Human Rights Act 2004*;

I consider that the protection of an individual's right to privacy, especially in the course of dealings with the ACT Government is a significant factor as the parties involved have provided their personal contact information for the purposes of working with the ACT Government. I have considered this information and in my opinion the protection of individuals' personal details outweighs the benefit which may be derived from releasing them. I consider that individuals are entitled to expect that the personal information they have supplied as part of this process to the ACT Government will be dealt with in a manner that protects their privacy. Considering the type of information to be withheld from release, I am satisfied that the factors in favour of release can still be met while protecting the personal information of the individuals.

Charges

I have decided to waive any charges in relation to this Freedom of Information application.

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Under section 28 of the Act, iCBR maintains an official online record of access applications called a Disclosure Log. Your original access application, my decision and documents released to you in response to your access application will be published on the iCBR Disclosure Log within three to ten working days after the date of the decision.

Your personal details will not be published.

You may view the iCBR Disclosure Log at: [Disclosure log - Infrastructure Canberra \(act.gov.au\)](https://www.act.gov.au/infrastructure-canberra/disclosure-log).



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Ombudsman Review

My decision on your access request is a reviewable decision as identified in Schedule 3 of the Act. You have the right to seek ombudsman review of this outcome under section 73 of the Act within 20 working days from the day that my decision is published on the iCBR Disclosure Log, or a longer period allowed by the Ombudsman.

If you wish to request a review of my decision you may write to the Ombudsman at:

The ACT Ombudsman
GPO Box 442
CANBERRA ACT 2601
Via email: actfoi@ombudsman.gov.au

ACT Civil and Administrative Tribunal (ACAT) Review

Under section 84 of the Act, if a decision is made under Section 82(2) on an Ombudsman review, you may apply to ACAT for review of the Ombudsman decision.

Further information may be obtained from the ACAT at:

ACT Civil and Administrative Tribunal
Level 4, 1 Moore Street
GPO Box 370
CANBERRA CITY ACT 2601
Telephone: (02) 6207 1740
<http://www.acat.act.gov.au>

Should you have any queries in relation to your request, please contact me by telephone on (02) 6205 5288, or via email iCBR.FOI@act.gov.au.

Please ensure you quote your reference number: **iCBRFOI25-26/04**

Yours sincerely,

2.2(a)(ii)

Brooke Grey
Information Officer
Infrastructure Canberra
26/9/2025



Prepared for



- : CLR Technical Report -
- : Patronage Report
- : **Strategic Modelling and Public**
- : **Transport Integration Advisory**
- : **Services - Stage 2 of the Canberra**
- : **Light Rail Project**
- : July 2019

Canberra Light Rail Stage 2

DRAFT

Patronage Report

Project No. 16-078

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By issuing this report VLC is not recommending any course of action or investment undertaking.

Date	Revision	Prepared By	Checked By	Approved By	Description
08/07/2019	1	<small>Schedule 2.2(a)(ii)</small> [Redacted]	<small>Schedule 2.2(a)(ii)</small> [Redacted]	<small>Schedule 2.2(a)(ii)</small> [Redacted]	DRAFT



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1. Introduction

1.1 Background

Veitch Lister Consulting (VLC) has been engaged to provide patronage forecasts for Stage 2 of the Canberra Light Rail network running from Alinga St in the City to Woden. This is the modelling task for the project, which follows the Assumptions Report delivered in July 2019.

1.2 Scope of this Report

This report documents patronage forecasts for Canberra Light Rail Stage 2, City to Woden, based on the assumptions as described in the Model Assumptions Report of July 2019. The modelled scenarios included a base case, three potential light rail alignments with different demographics assumptions. For these core runs project case demographics scenarios were used – i.e. Parliament-East and Parkes-Barton – to account for expected increases in population and employment along the light rail corridor.

Further to the core model scenarios above, a staging option was modelled, which is an extension of light rail stage one to Commonwealth Park. The staging option used specific demographics assumptions – i.e. West-Basin.

The resultant 21 modelled scenarios are summarised in Table 1-1 which include light rail alignment, year and demographics scenarios used. Throughout this report and in the below table demographics scenarios are abbreviated as follows:

- Business as usual (BAU_v2);
- Parliament-East (E_v2);
- Parkes-Barton (B_v2);
- West Basin (WB); and
- Older version Business as usual (used for staging option and earlier base case) (BAU).

Table 1-1 Modelled scenarios - alignment, year and demographics

Alignment	2026		2036		2046	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Base (light rail stage one)	BAU_v2	-	BAU_v2	-	BAU_v2	-
State Circle	BAU_v2	E_v2	BAU_v2	E_v2	BAU_v2	E_v2
Capital Circle	E_v2	-	E_v2	-	E_v2	-
Barton	B_v2	-	B_v2	-	B_v2	-
Staging Option (to Commonwealth Park)	BAU	WB	BAU	WB	BAU	WB

This report contains the following sections:

- Section 2 details the model results for the core project scenario including boardings, load profiles and wider network impacts.
- Section 3 provides a summary of the different project cases.
- Section 4 discusses the Commonwealth Park staging option and provides a comparison with the base case.
- Appendix A includes a discussion of sensitivity tests conducted on the bus network and demographics scenarios.



2. Model results

This section outlines model outputs and provides patronage analysis for the core scenarios tested.

Overall, in 2036, the introduction of the City to Woden light rail coincides with slightly more car trips (around 2,000-5,000 depending on scenario) and slightly fewer public transport trips (2,000-3,000 depending on scenario). However, there were also reductions in overall time spent travelling (in vehicle/person car hours) and overall distance travelled on both PT and in cars in the project cases.

All three modelled project alignments had similar numbers of total boardings. Although, using the project demographics, the Barton and State Circle alignments are expected to attract slightly higher patronage than the Capital Circle alignment. The State Circle alignment, using Business as usual demographics, is also expected to have slightly lower patronage levels.

The stops with the highest boardings and alightings for all alignments are expected to be in the City, i.e. Alinga St and City West, and stops at the terminus, i.e. Gungahlin Place and Woden. Boarding patterns in the AM and PM peak periods indicate that these trips mainly represent commuting trips to the City.

The State and Capital alignments experienced higher boardings and alightings at Woden and Alinga St, mainly due to their faster travel time. They are also expected to have higher loadings in the inner north near Civic. While the Barton alignment was slower, it had more boardings and alightings in the inner south near the Parliamentary Triangle, and experienced greater loadings around the inner south compared to the State and Capital Circle alignments.

For all alignments, the most common method of accessing the light rail was through walking, although stops at the termini (Woden and Gungahlin PI) experienced very high levels of public transport transfer access.

2.1 Boardings and alightings

This section outlines the modelled light rail boardings and alightings for all core project alignments.

2.1.1 Daily boardings

Daily boardings for northbound and southbound travel for each project scenario are shown in Table 2-1, Table 2-2 and Table 2-3.

The total boardings are similar across all scenarios, with the State Circle alignment with Business as usual demographics assumptions and the Capital Circle alignment experience approximately 1,000 fewer daily boardings across all modelled years than the Barton alignment and State Circle alignment with Parliament-East demographic assumptions.

Table 2-1 Total boardings by project scenario 2026

Scenario	Northbound	Southbound	Total
2026 State (BAU_v2) (245-3)	14,335	14,061	28,395
2026 State (E_v2) (248-3)	14,718	14,454	29,172
2026 Barton (B_v2) (251-3)	14,656	14,353	29,009
2026 Capital (E_v2) (254-3)	14,174	13,971	28,145



Table 2-2 Total boardings by project scenario 2036

Scenario	Northbound	Southbound	Total
2036 State (BAU_v2) (246-3)	18,138	17,799	35,937
2036 State (E_v2) (249-3)	19,152	18,811	37,963
2036 Barton (B_v2) (266-3)	19,146	18,700	37,846
2036 Capital (E_v2) (255-3)	18,548	18,254	36,802

Table 2-3 Total boardings by project scenario 2046

Scenario	Northbound	Southbound	Total
2046 State (BAU_v2) (247-3)	21,160	20,835	41,995
2046 State (E_v2) (250-3)	22,413	22,085	44,497
2046 Barton (B_v2) (267-3)	22,496	22,054	44,550
2046 Capital (E_v2) (256-3)	21,663	21,399	43,061

2.1.2 Northbound boardings and alightings by stop

Figure 2-1 and Figure 2-2 show the northbound boardings and alightings expected in 2036, indicating the majority of boardings occurred at Woden and in the City, and alightings in the City and at Gungahlin.

In 2036, approximately 4,100 to 4,600 boardings were modelled at Woden, depending on the scenario. This accounts for approximately 22-25 per cent of total northbound boardings. In the City, approximately 2,500 and 3,500 daily boardings are expected at the City West and Alinga St stops respectively. Together, these city-based stops accounted for approximately 33 per cent of northbound daily boardings.

For all scenarios, approximately 3,400 – or around 18 per cent of total alightings are expected at Gungahlin, while Alinga St and City West accounted for 5,500 to 5,800 – or 29-30 per cent of total alightings.

The Barton alignment is projected to attract fewer boardings than Capital and State Circle alignments along the southern portion of the light rail line. At Woden, the Barton alignment had 4,100 boardings compared to 4,600 for Capital Circle and 4,500 for State Circle, which could be attributed to the longer travel times on the Barton alignment. However, while the Barton alignment attracted fewer boardings on the southern portion of the line, the boardings at the Sydney Ave (PB) stop were much higher at 1,300, than other stops near the Parliamentary Triangle (e.g. Parliament House experiences around 400 boardings and Melbourne Ave experiences around 500).

Compared to the Capital and State Circle alignments, the Barton alignment also has fewer alightings at stops near the City – with approximately 200 fewer people alighting at Alinga Street – while again providing for more alightings at stops near the Parliamentary Triangle. This appears to show that the Barton alignment serves more trips to/from the inner south but fewer trips between the City and Woden compared to other alignments.

Along the northern portion of the light rail line, all alignments had comparable northbound boardings and alightings.



Figure 2-1 Northbound daily light rail boardings by stop - all alignments 2036

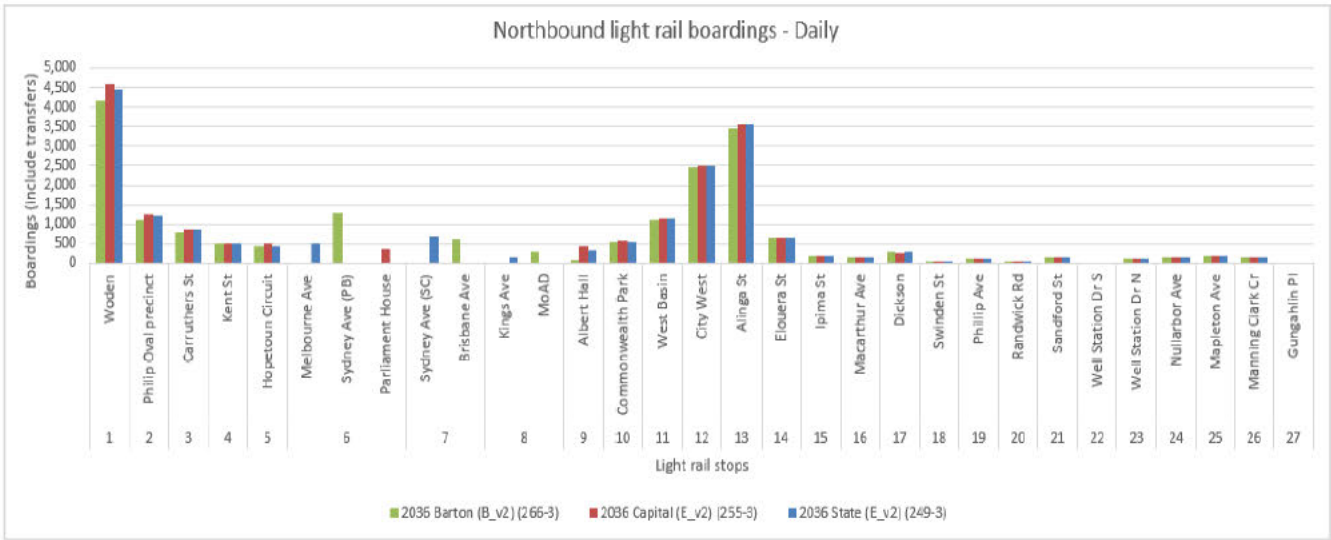
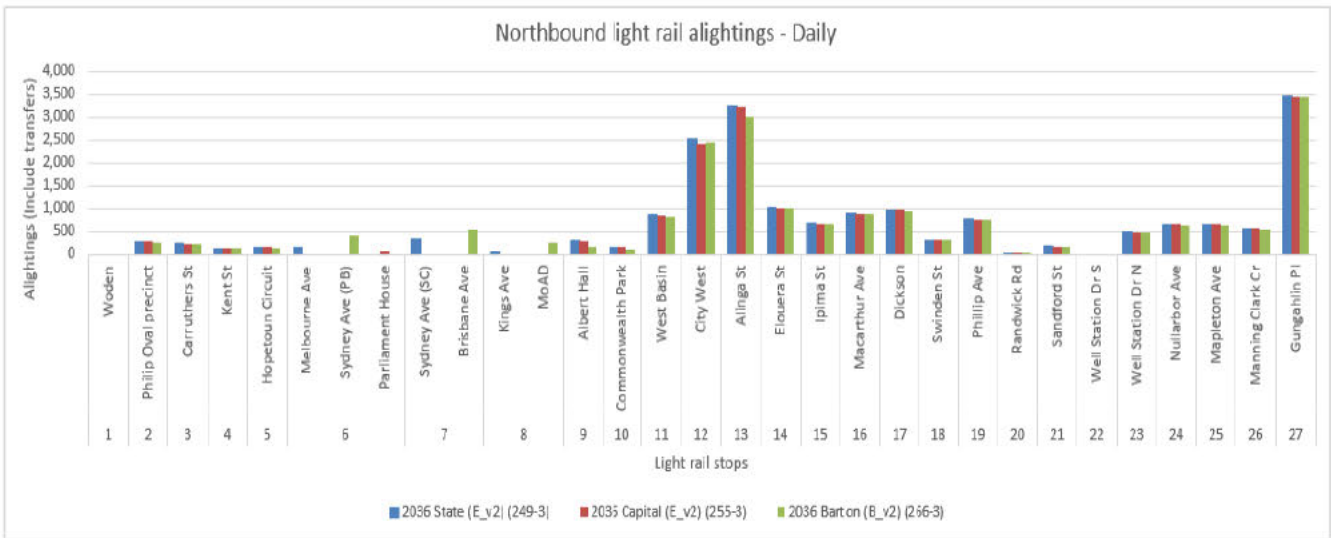


Figure 2-2 Northbound daily light rail alightings by stop - all alignments 2036



2.1.3 Southbound boardings and alightings by stop

Figure 2-3 and Figure 2-4 show the boardings and alightings by alignment for 2036. The majority of southbound boardings are expected at Gungahlin and in the City, while most alightings occurred in the City, Philip Oval precinct and Woden.

With 3,000 to 3,500 and 2,000 and 2,200 southbound alightings forecast for Woden and Philip Oval precinct respectively, these stops collectively accounted for around 30 per cent of all alightings. Similarly, forecasts indicate that 32-33 per cent of the total southbound alightings are expected at Alinga St and City West, with around 3,500 and 2,500 respectively.

The Barton alignment attracts slightly lower alightings at stops from Alinga to Woden except for the Museum of Australian Democracy (MoAD), Brisbane Ave and Sydney Ave (PB) compared to other alignments, again showing fewer passengers travelling between the City and Woden but more customers using the service to travel between South Canberra and Woden.

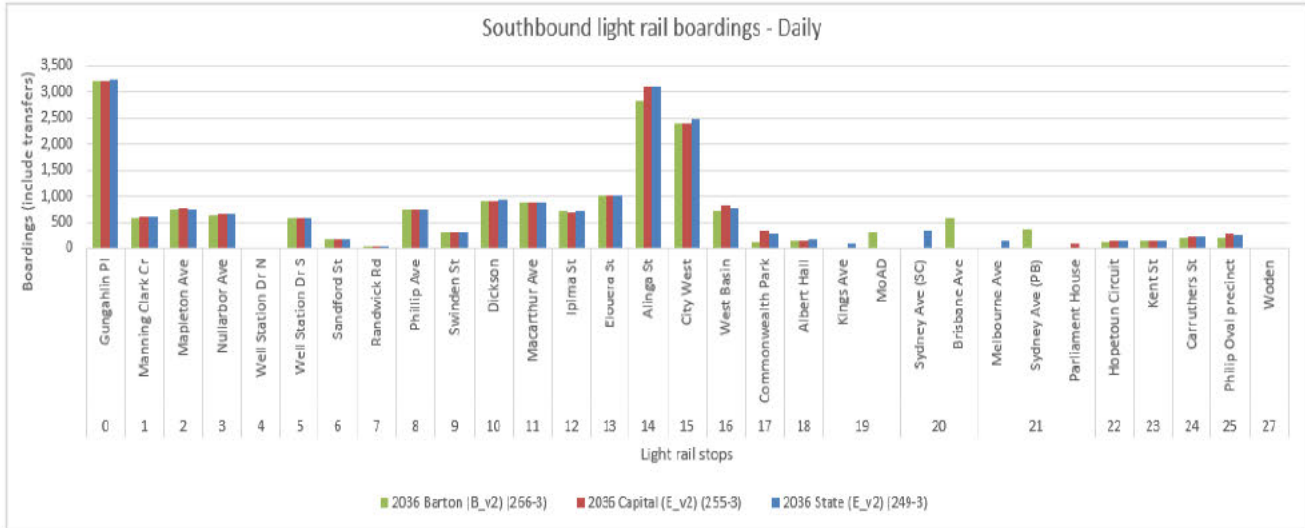
With approximately 3,200 boarding forecast, Gungahlin PI accounted for approximately 17 per cent of total daily boardings. Alinga St and City West are expected to attract the second and third highest



boardings at 2,800-3,100 and 2,400-2,500 respectively. Combined, Alinga St and City West accounted for approximately 28-30 per cent of total southbound boardings.

With the Barton alignment, fewer passengers were observed boarding at city stations. However, more passengers are expected to board near the Parliamentary Triangle for travel towards Woden, compared to other alignments. State and Capital Circle alignments had similar boardings for most stops within the Parliamentary Triangle area.

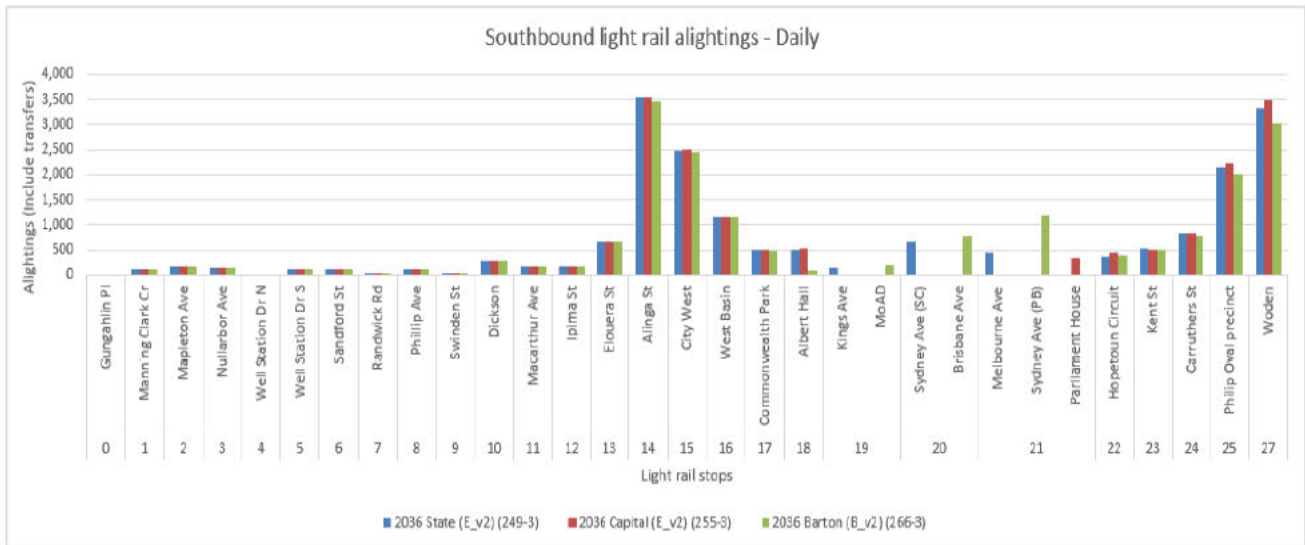
Figure 2-3 Southbound daily light rail boardings by stop - all alignments 2036



With 3,000 to 3,500 and 2,000 to 2,200 southbound alightings forecast for Woden and Philip Oval precinct respectively, these stops collectively accounted for around 30 per cent of all alightings. Similarly, forecasts indicate that 32-33 per cent of the total southbound alightings are expected at Alinga St and City West, with around 3,500 and 2,500 respectively.

The Barton alignment attracts slightly lower alightings at stops from Alinga to Woden except for MoAD, Brisbane Ave and Sydney Ave (PB) compared to other alignments, again showing fewer customers travelling between the City and Woden but more customers using the service to travel between South Canberra and Woden.

Figure 2-4 Southbound daily light rail alightings by stop - all alignments 2036





2.1.4 Northbound boardings by access mode

Figure 2-5, Figure 2-6 and Figure 2-7 show northbound light rail daily boardings by access mode for each alignment for 2036.

Overall, walk access is the main mode by which the light rail is accessed, accounting for just over 70 per cent of total boardings across all stops. For all alignments, public transport transfer access is very high at Woden, constituting around 68 per cent of total daily boardings at this stop. There is a small amount of car access for stops south of the City.

Figure 2-5 2036 northbound daily light rail boardings by access mode – Barton

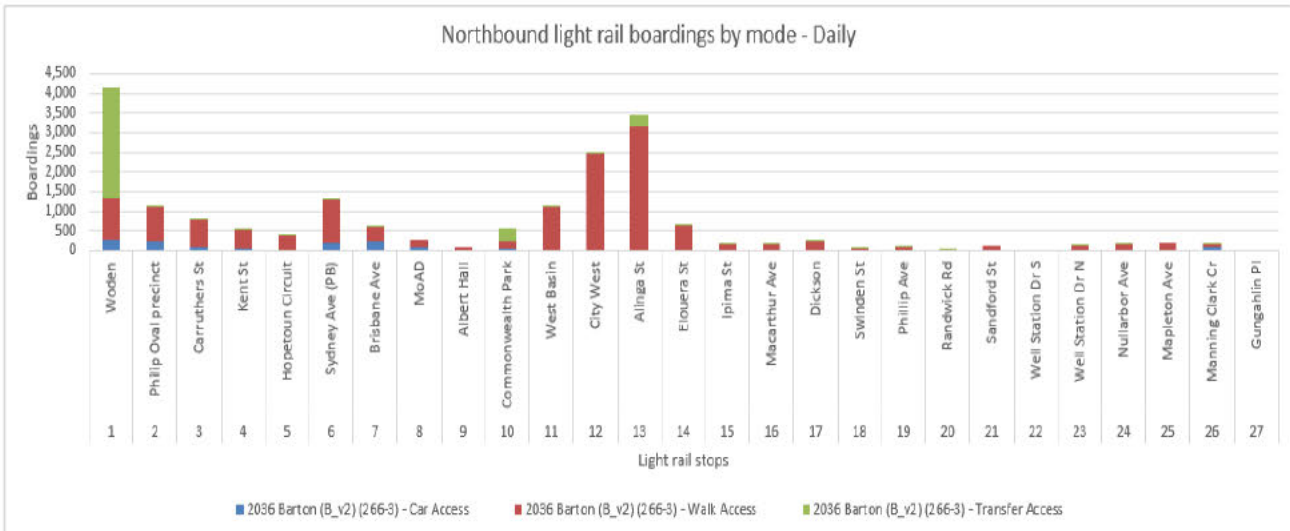


Figure 2-6 2036 northbound daily light rail boardings by access mode - Capital Circle

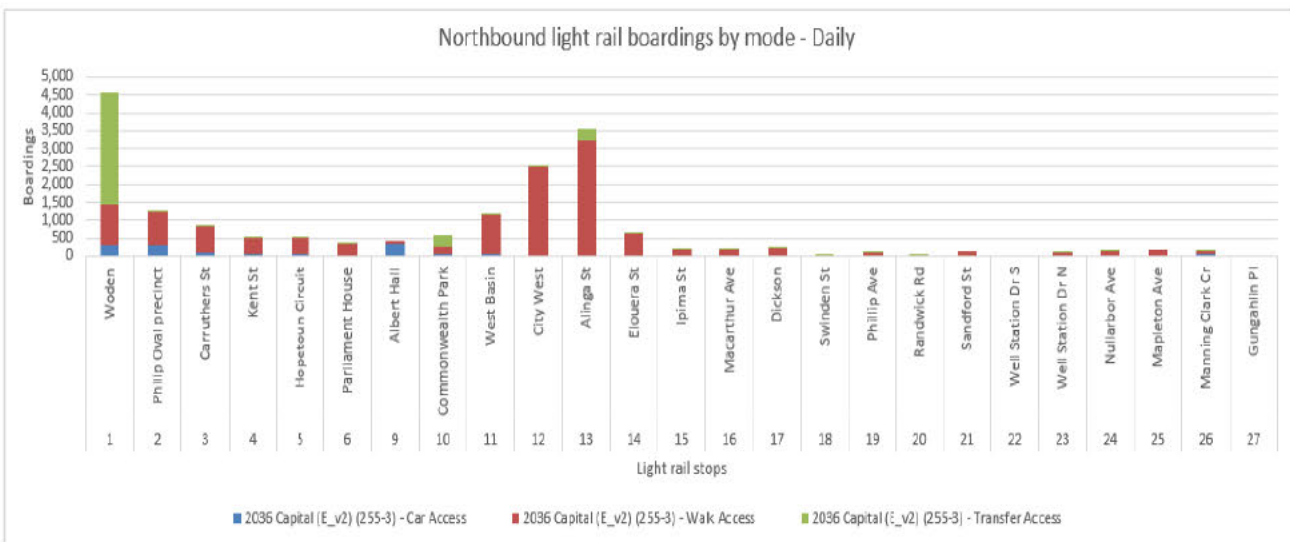
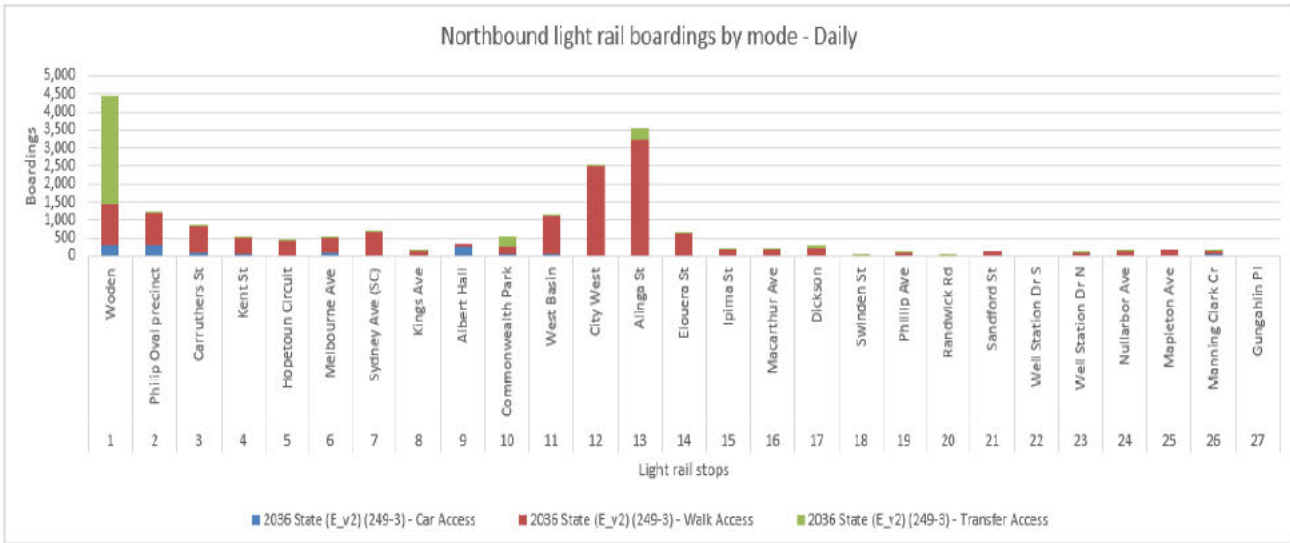




Figure 2-7 2036 northbound daily light rail boardings by access mode - State Circle



2.1.5 Southbound boardings by access mode

Figure 2-8, Figure 2-9 and Figure 2-10 show southbound light rail daily boardings by mode for each alignment in 2036.

As with northbound daily boardings, walk access is the most common method of accessing light rail stops and accounts for approximately 78 per cent of southbound light rail boardings. Again, some car access occurs along stops on the portion of the light rail corridor north of the City.

Public transport transfer access is very high at Gungahlin PI, constituting approximately 48 per cent of total boardings at this stop.

Figure 2-8 2036 southbound daily light rail boardings by access mode - Barton

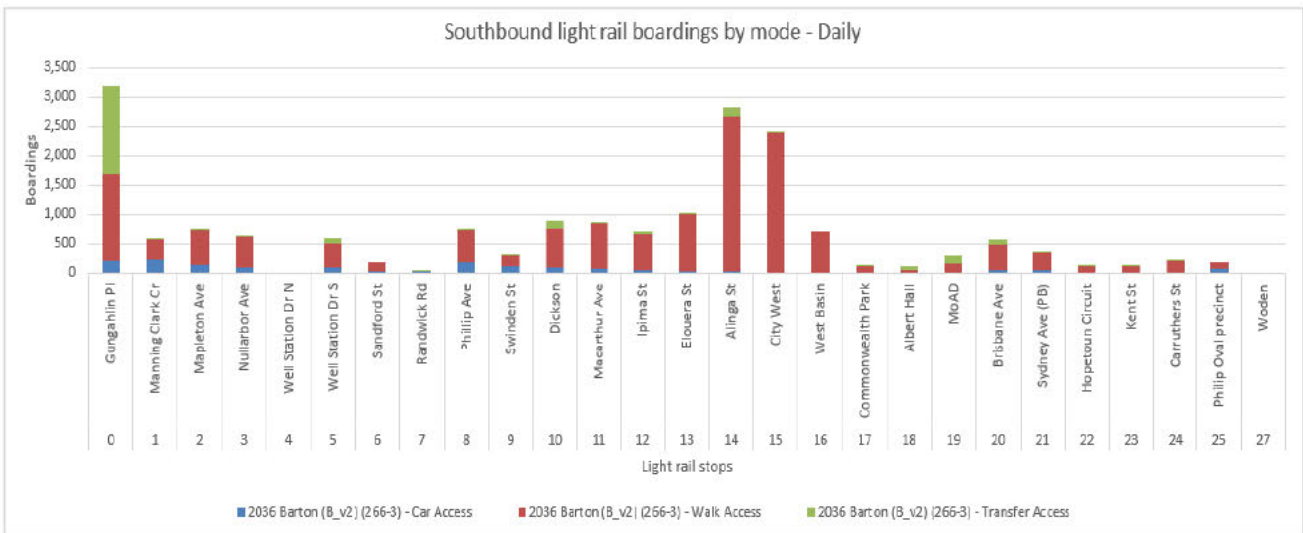




Figure 2-9 2036 southbound daily light rail boardings by access mode - Capital Circle

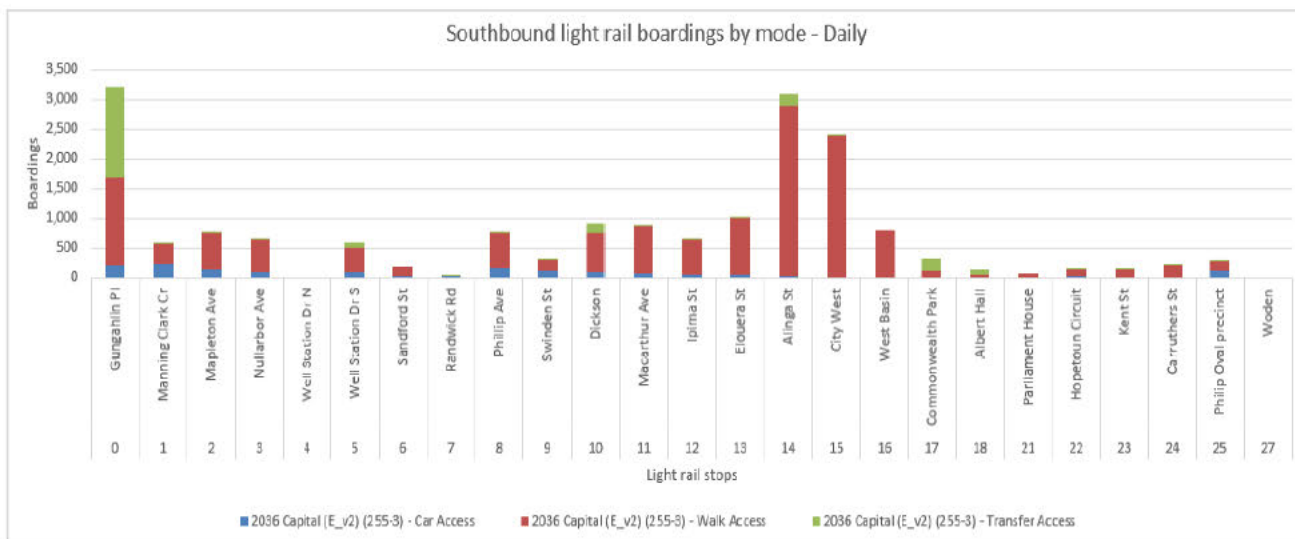
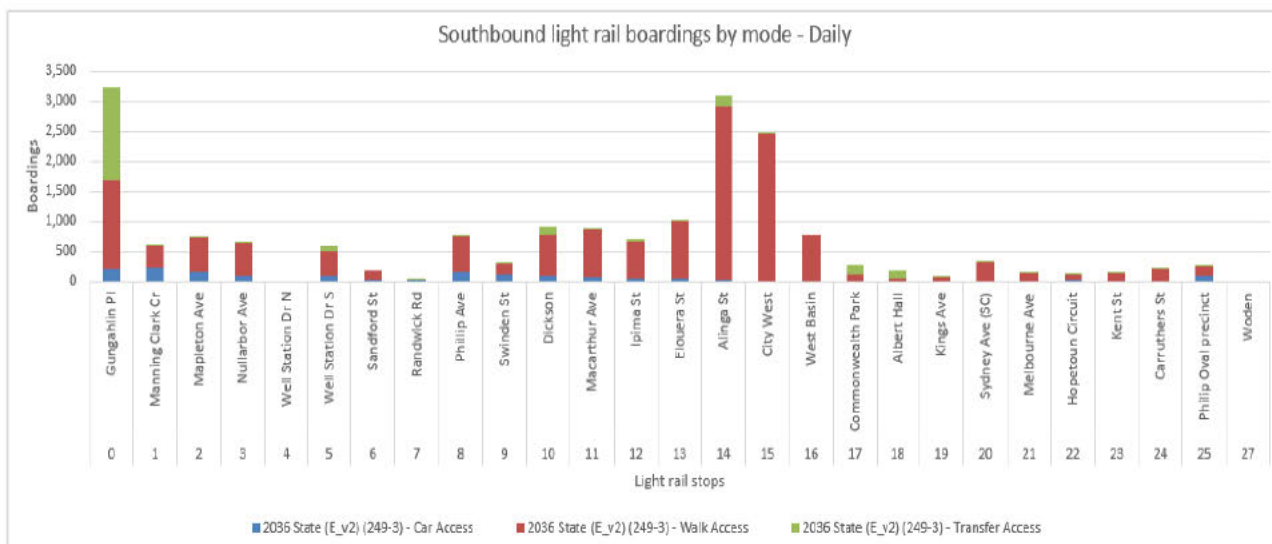


Figure 2-10 2036 southbound daily light rail boardings by access mode - State Circle



2.2 Load profiles

This section describes the expected load profiles for all modelled scenarios, representing the total passenger loadings for the AM-peak (7am-9am) and PM-peak (4pm-6pm) periods. Load profiles discussed in this section are taken from the 2036 results.

Generally, the loadings show large increases or declines as alignments approach the City, which confirms the large number of boardings and alightings, described in the earlier section.

The Barton alignment was notable as it consistently had lower loadings than the State and Capital Circle alignments on the southern portion of the line, suggesting more trips were made between South Canberra and Woden but fewer trips were made between the City and Woden.

Across all scenarios, loadings for the northern section of the line between Gungahlin and Alinga St were higher than loadings for the southern section between Woden and Alinga St. This suggests that demand for travel by light rail originating from the northern suburbs travelling to the City is greater than demand for travel by light rail between the southern suburbs and the City.



2.2.1 AM-peak northbound load profiles by section

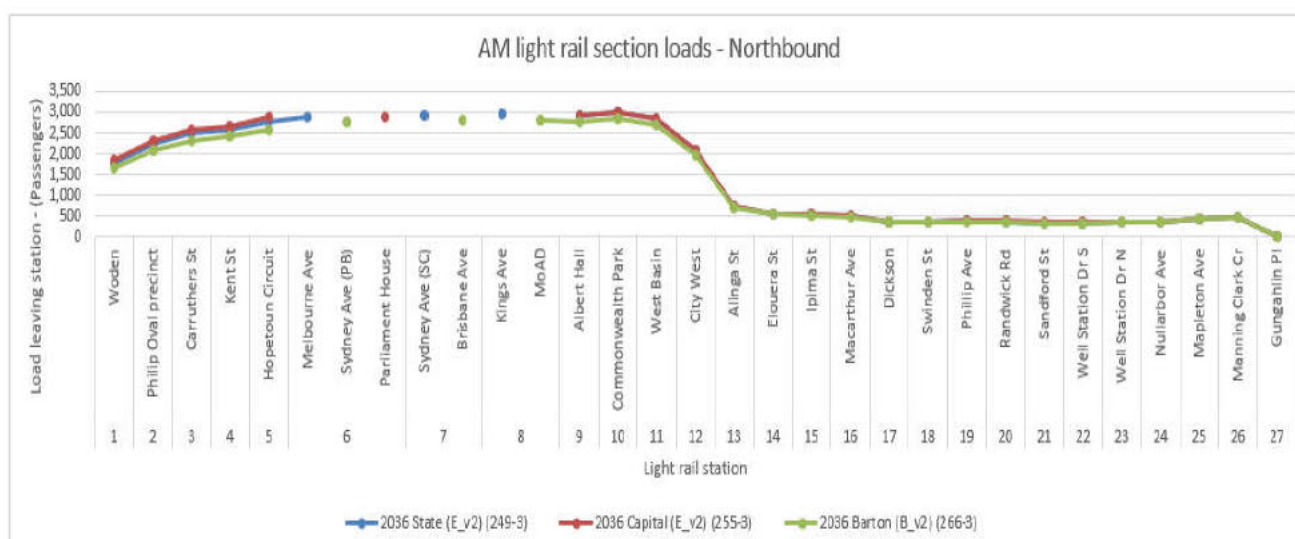
Figure 2-11 shows AM-peak northbound loadings for all alignments in 2036.¹

The Barton alignment exhibits slightly lower loading than the other alignments. In 2036, the expected loading for the Barton alignment commences with 1,700 passengers at Woden, and increases to around 2,900 at Commonwealth Park before declining significantly at Alinga St.

In contrast, the expected initial loadings for the State and Capital Circle alignments are around 1,800 before increasing to around 3,000 at Commonwealth Park before declining at Alinga St.

From Alinga St to Gungahlin, however, all alignments exhibit similar loadings.

Figure 2-11 AM-peak northbound load profiles - 2036 all alignments



2.2.2 AM-peak southbound load profiles by section

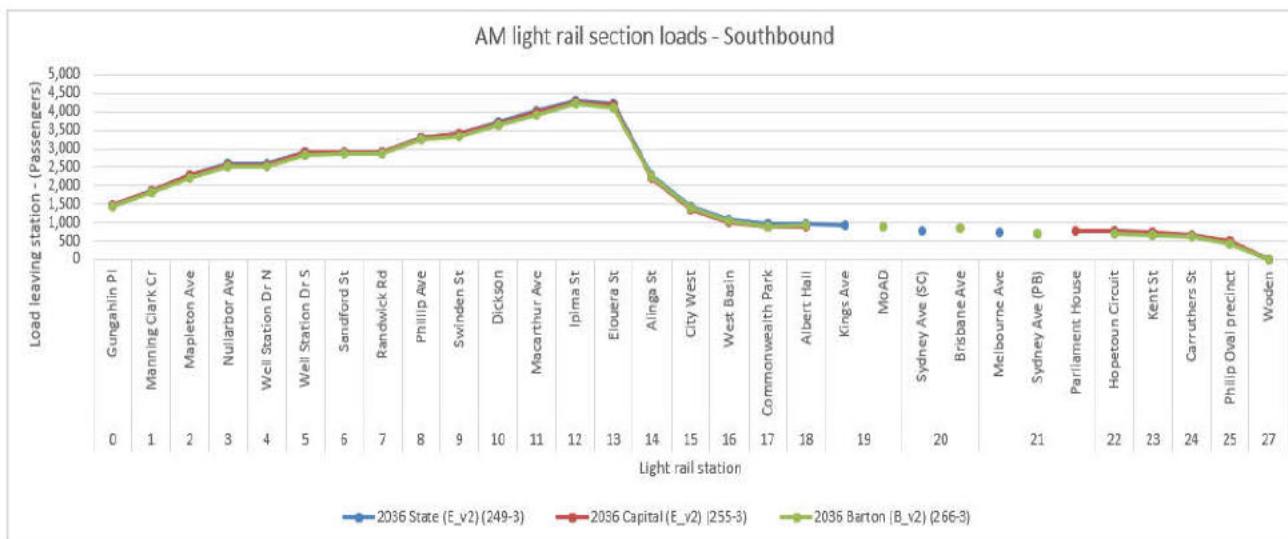
Figure 2-12 shows AM-peak southbound loadings for all alignments in 2036.

In this case there is very little difference between the different alignment. For all alignments the initial patronage is expected to be approximately 1,500 at Gungahlin PI, then increasing to approximately 4,200 at Ipima St before declining to around 2,300 at Alinga St; and then gradually declining for the remainder of the trip to Woden.

¹ Where alignments do not share stops, stops with similar geographic locations are grouped by order numbers. This causes load lines to be disjointed in the chart. Note that the height of the dot represents the load at that stop.



Figure 2-12 AM peak southbound load profiles - 2036 all alignments

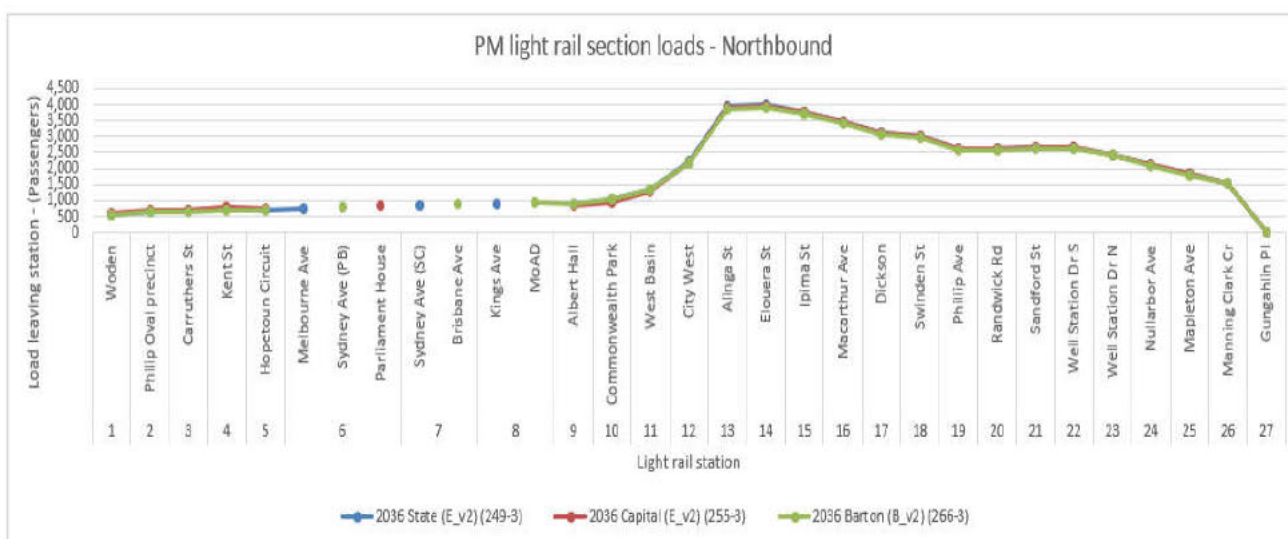


2.2.3 PM-peak northbound load profiles by section

Figure 2-13 shows PM-peak northbound loadings for all alignments in 2036.

In 2036 load profiles are similar across all alignments. The load profile peaks around Elouera St/Alinga St with loadings of around 3,900-4,000 depending on scenario.

Figure 2-13 PM-peak northbound loads - 2036 all alignments



2.2.4 PM-peak southbound load profiles by section

Figure 2-14 shows PM-peak southbound loadings for all alignments in 2036.

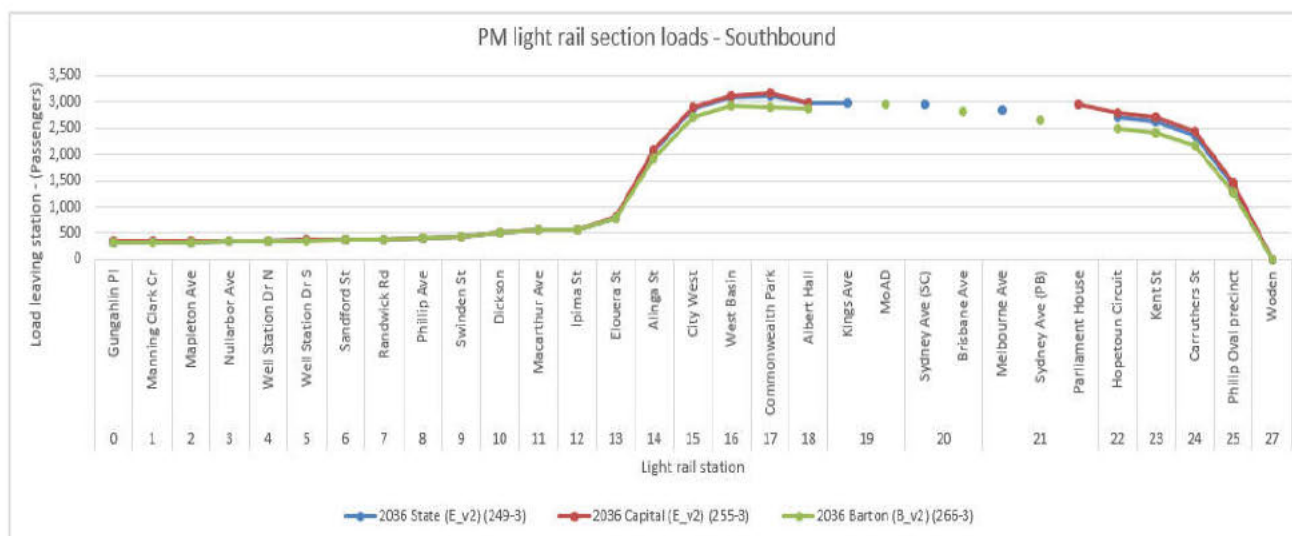
PM-peak southbound loadings are low and flat from Gungahlin to Ipima St, after which the patronage is expected to increase sharply to Commonwealth Park. The passenger loads vary between alignments with the Barton alignment expected to carry fewer passengers from Elouera St to West Basin. The expected loadings at Elouera St on the Barton alignment are 600, and rapidly increasing to 2,900 at Commonwealth Park.

For the State and Capital Circle alignments, expected loadings at Elouera St are around 800, increasing to around 3,100 at Commonwealth Park.



Loadings for the remainder of the journey to Woden are consistently higher for State and Capital Circle alignments.

Figure 2-14 PM-peak southbound loads - 2036 all alignments



2.3 Comparison of demographics scenarios for State Circle alignment

Additional model runs were undertaken for the State Circle alignment using both, Parliament-East (E_v2) and Business as usual (BAU_v2) demographics. The Parliament-East demographics were adjusted to reflect anticipated employment and population growth along the light rail corridor, including greater concentration of population and employment within the Parliamentary Triangle.

Overall the Parliament-East demographics resulted in higher patronage on the City to Woden light rail.

This section reviews the impacts of the two demographics scenarios on boardings/alightings and loads on the State Circle alignment. This section does not discuss access by mode as there was minimal difference between the scenarios.

2.3.1 Northbound boardings and alightings by stop

With Business as usual demographics assumptions in 2036, the State Circle alignment is expected to attract fewer boardings at Woden but more boardings in the City than the scenario using the Parliament-East demographics.

Figure 2-15 compares the boardings for State Circle under each demographic scenario for 2036. In For the scenario using Business as usual demographics, boardings at Woden are expected to be around 300 fewer than with the Parliament-East case demographics, while boardings at Alinga St were expected to be around 100 higher.



Figure 2-15 Comparison of State Circle boardings by demographics assumptions in 2036

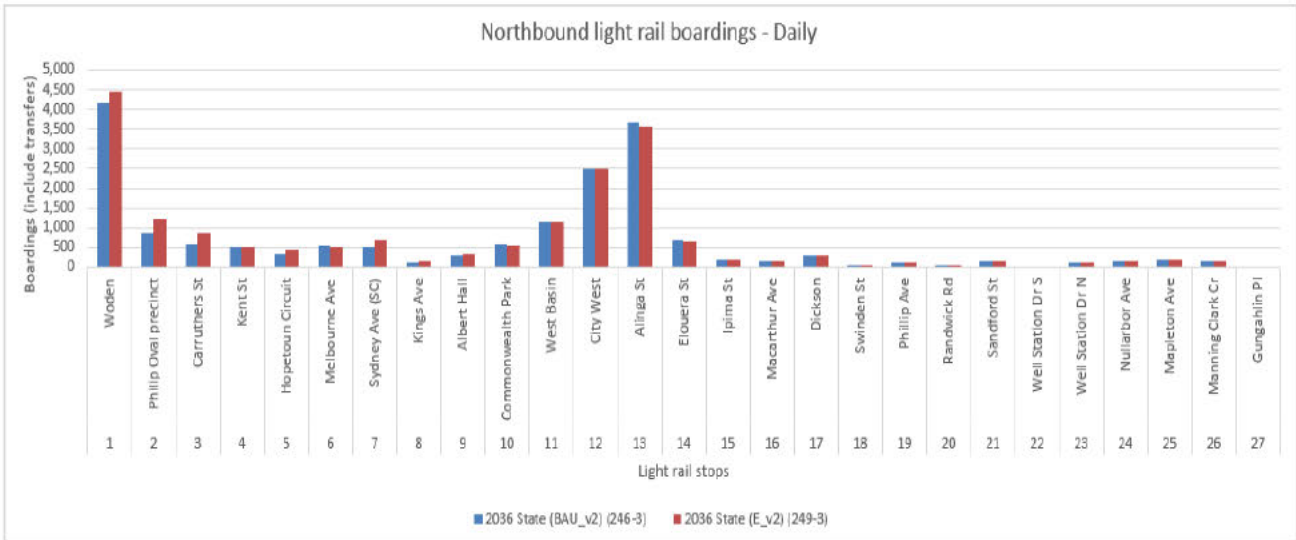
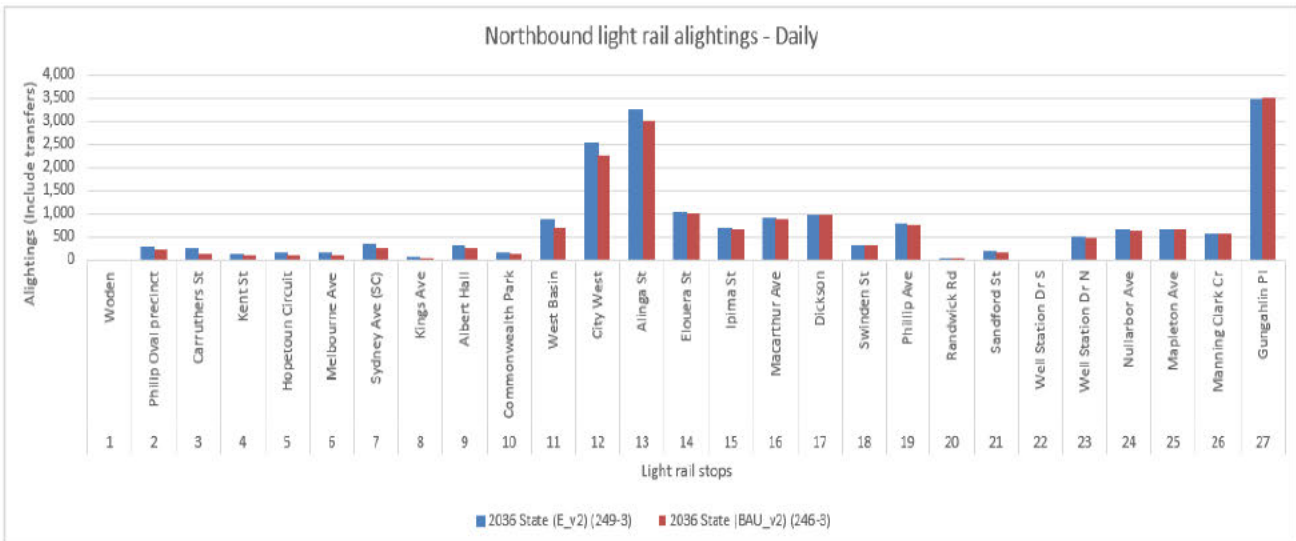


Figure 2-16 compares alightings for State Circle under each demographics scenario, indicating that the Business as usual scenario resulted in lower alightings along most stops along the corridor. Overall, in the northbound direction, the Business as usual scenario had around 1,000 fewer daily boardings and hence fewer alightings.

Figure 2-16 Comparison of State Circle alightings by demographics assumptions in 2036



2.3.2 Southbound boardings and alightings by stop

Figure 2-17 compares the boardings for the State Circle alignment in 2036 for the different demographics assumptions, indicating that the Business as usual demographics scenario is expected to attract very similar boardings at Gungahlin and in the north, but marginally fewer boardings in the City than the Parliament-East demographics scenario.

The boardings at Alinga St and City West are expected to account for approximately 200 fewer passengers each in the Business as usual scenario, compared to the Parliament-East scenario.



Figure 2-17 Comparison of State Circle boardings by demographics assumptions in 2036

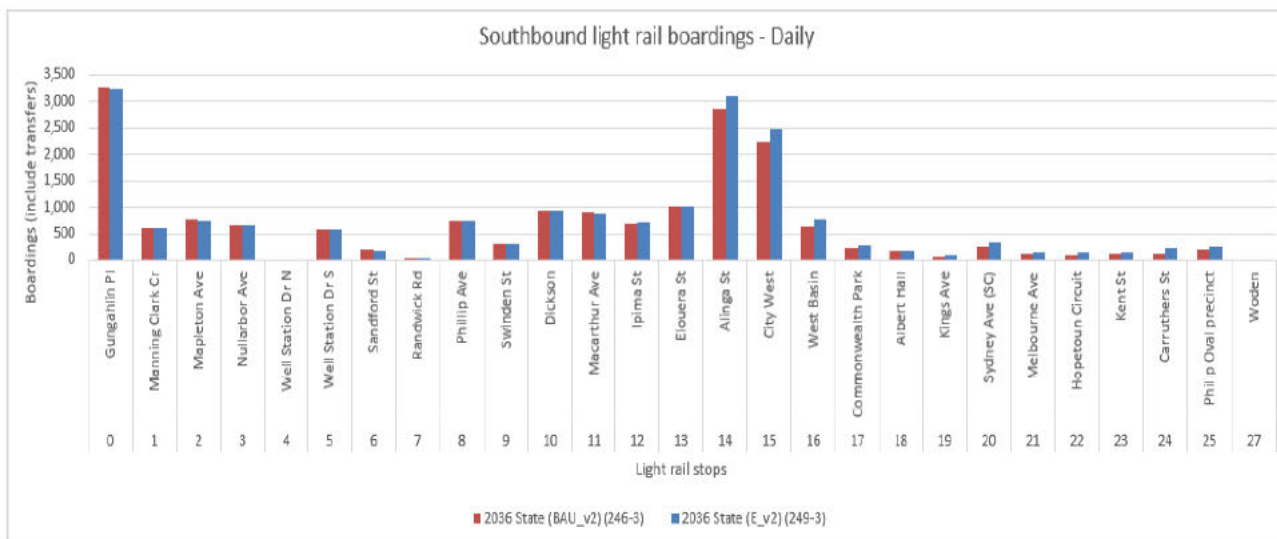
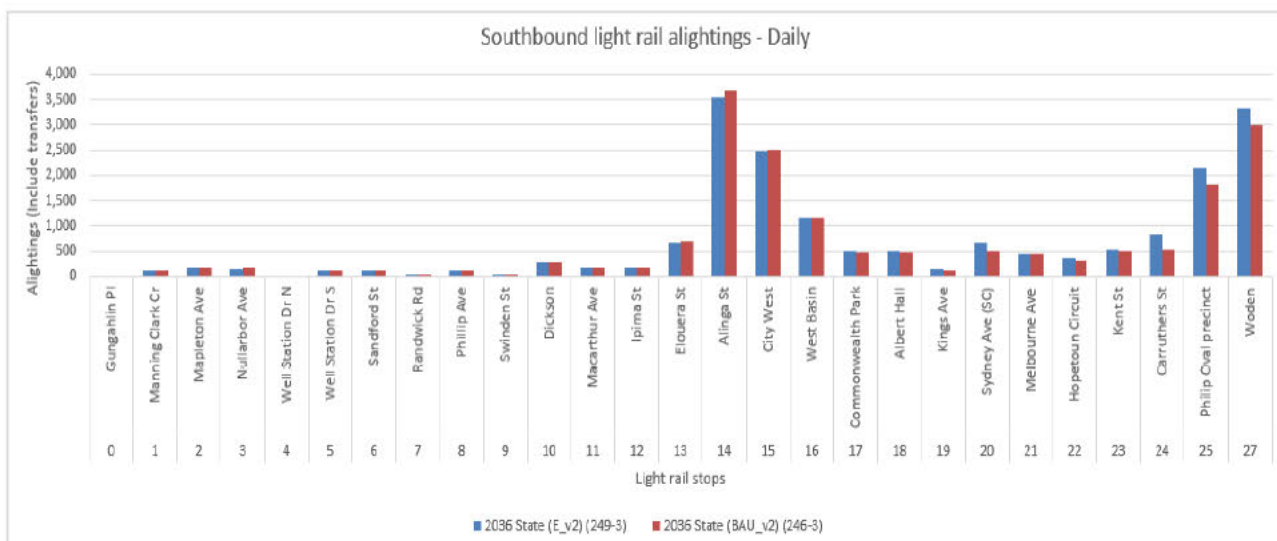


Figure 2-18 compares alightings for the State Circle alignment under different demographics scenarios in the southbound direction. Alightings were around 100 higher at Alinga St with Business as usual demographics, but were around 300 less at both Philip Oval precinct and Woden stops compared to the Parliament-East scenario.

Figure 2-18 Comparison of State Circle alightings by demographics assumptions in 2036



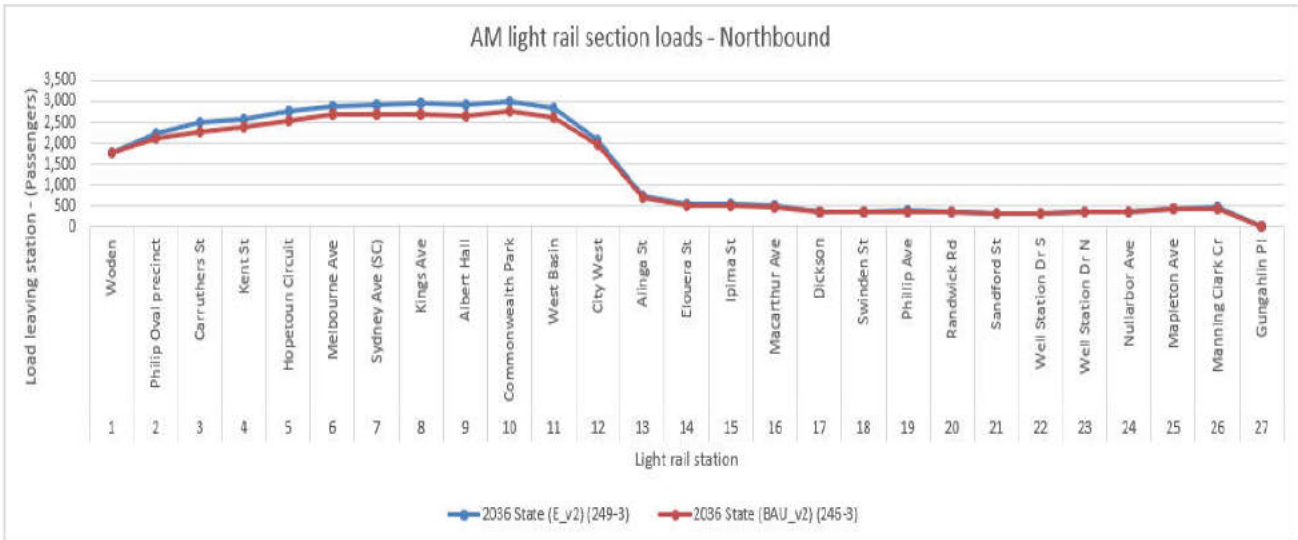
2.3.3 AM-peak northbound load profiles by section

Figure 2-19 provides a comparison of loadings in the AM peak in a northbound direction, for State Circle with the different demographic assumptions in 2036.

With Business as usual demographics assumptions, the light rail is expected to carry slightly lower patronage to the south of the City, while to the north the expected loadings are similar for both scenarios.



Figure 2-19 2036 AM peak northbound load profiles - State Circle demographics comparison

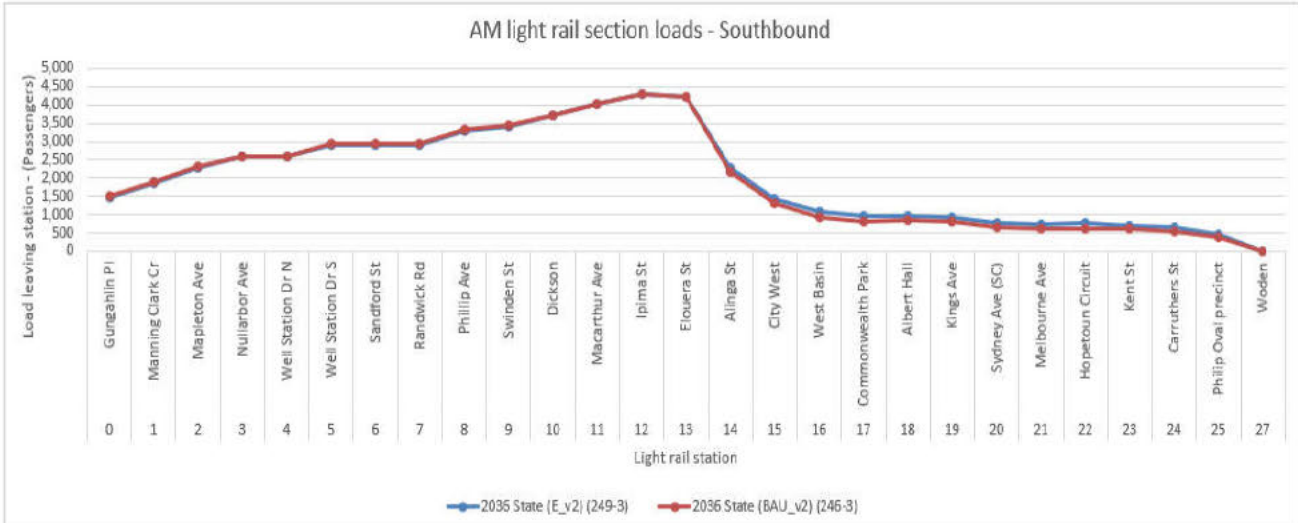


2.3.4 AM-peak southbound load profiles by section

Figure 2-20 provides a comparison of loadings in the AM peak in a southbound direction, for State Circle with the different demographic assumptions in 2036.

North of the City, there is very little difference in loadings between the two demographics scenarios. Loadings are slightly lower south of the City for Business as usual demographics assumptions.

Figure 2-20 2036 AM peak southbound load profiles - State Circle demographics comparison



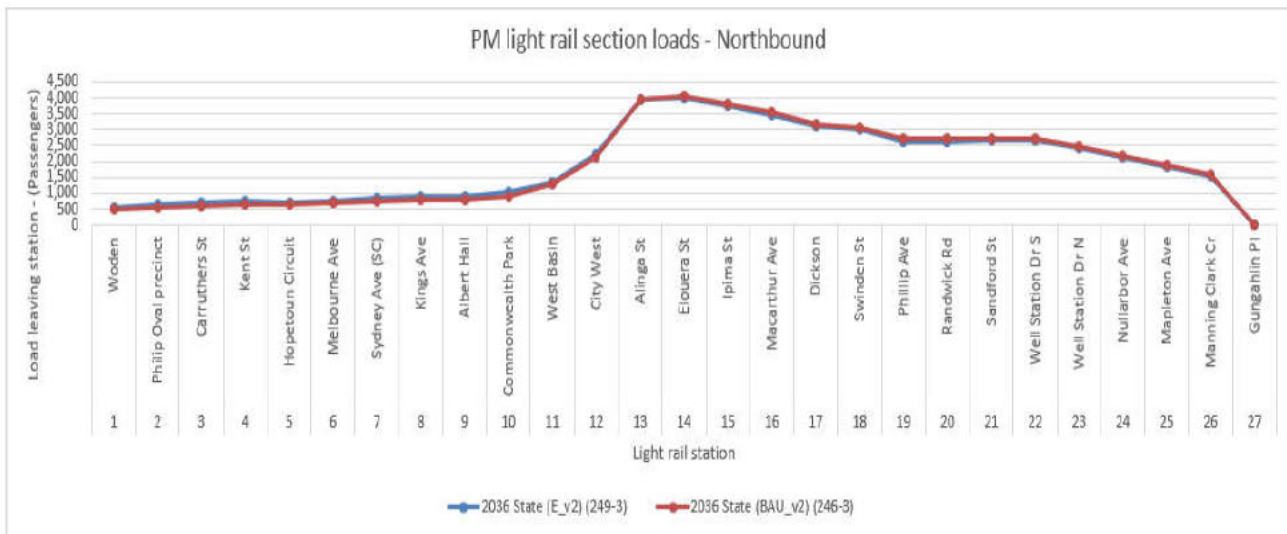
2.3.5 PM-peak northbound load profiles by section

Figure 2-21 provides a comparison of loadings in the PM peak in a northbound direction, for State Circle with different demographic assumptions in 2036.

With Business as usual demographics assumptions, State Circle experiences slightly lower PM peak northbound loadings south of the City than with Parliament-East demographics assumptions. Similar to the southbound travel in the AM peak loadings exhibit very little difference north of the city between demographics scenarios.



Figure 2-21 2036 PM peak northbound loads - State Circle demographics comparison

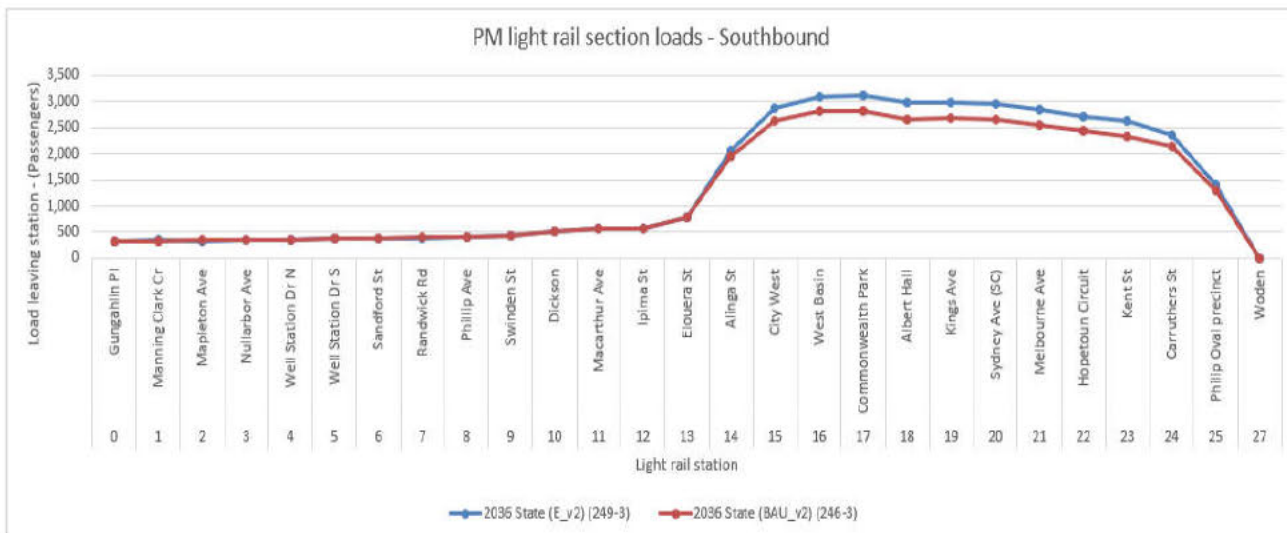


2.3.6 PM-peak southbound load profiles by section

Figure 2-22 provides a comparison of loadings in the PM peak in a southbound direction, for State Circle with different demographics assumptions in 2036.

The State Circle alignment is expected to carry very similar passenger loads north of the City in both scenarios. In contrast, to the south of the City, the loadings are expected to be significantly lower for the Business as usual demographic scenario.

Figure 2-22 2036 PM peak southbound loads - State Circle demographics comparison





2.4 Wider network impact

The introduction of significant new infrastructure such as the second stage of the light rail will result in network wide changes to travel behaviour.

Table 2-4 and Table 2-5 compare PT trips and car trips made in the base and project cases. The modelling indicates that overall, in 2036, the introduction of the City to Woden light rail coincides with:

- slightly more car trips and fewer public transport trips;
- a slight decrease in the total time spent travelling, both for in-vehicle passenger hours on public transport, as well as person car hours; and
- a slight decrease in the distance travelled on both public transport and cars.

Table 2-4 PT trips in project and base cases, 2036

Variant	Total PT trips	In vehicle passenger hours	In vehicle passenger kms
2036 Base (BAU_v2) (243-3)	138,161	41,832	1,290,366
2036 State (E_v2) (249-3)	136,112	40,034	1,202,585
2036 Barton (B_v2) (266-3)	135,098	40,140	1,199,056
2036 Capital (E_v2) (255-3)	135,992	39,739	1,203,761

Table 2-5 Car trips in project and base cases, 2036

Variant	Total car trips	Person car hours	Total car kms
2036 Base (BAU_v2) (243-3)	1,671,341	434,161	16,333,419
2036 State (E_v2) (249-3)	1,673,283	427,196	16,225,370
2036 Barton (B_v2) (266-3)	1,677,995	428,161	16,255,480
2036 Capital (E_v2) (255-3)	1,673,143	427,031	16,221,568

2.4.1 Bus network

Figure 2-23 to Figure 2-25 show the impact of each light rail alignment on the wider bus network in 2036 by comparing the project cases against the base case. In general, large declines in bus patronage are expected along the light rail corridor where bus routes were replaced with the light rail, as well as south of Woden along Athllon Drive where bus frequencies were reduced, and an additional transfer introduced at Woden.

All alignments also result in some small increases to bus loadings along some routes that directly feed the light rail corridor at Woden, without requiring an additional transfer in Tuggeranong or Weston Creek. The R6 rapid bus service between Woden and City via Narrabundah is also expected to experience increased patronage loadings.

The different light rail alignments did not result in noticeably different impacts on the bus network.



Figure 2-23 Barton alignment – bus network impacts

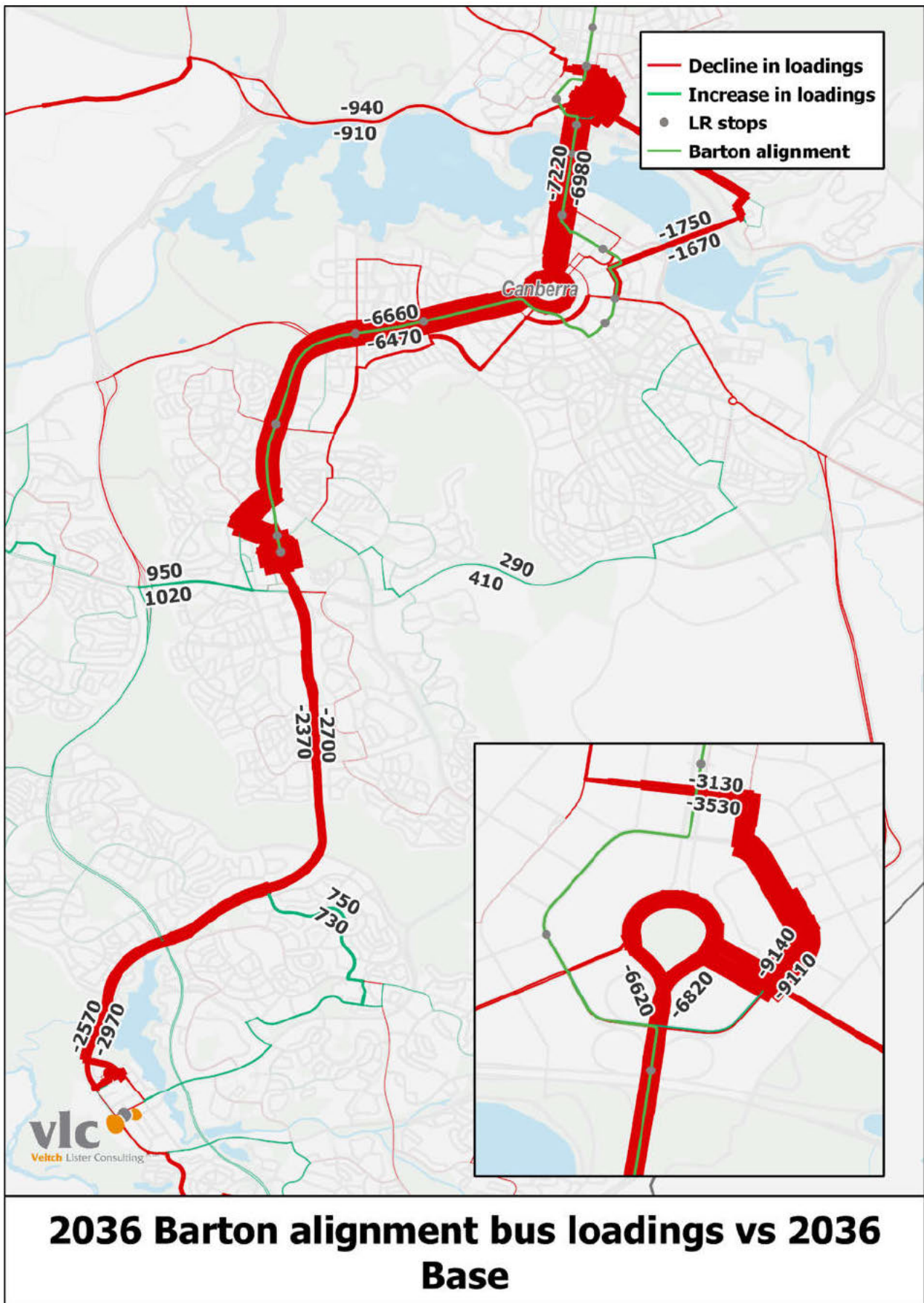




Figure 2-24 Capital alignment – bus network impact

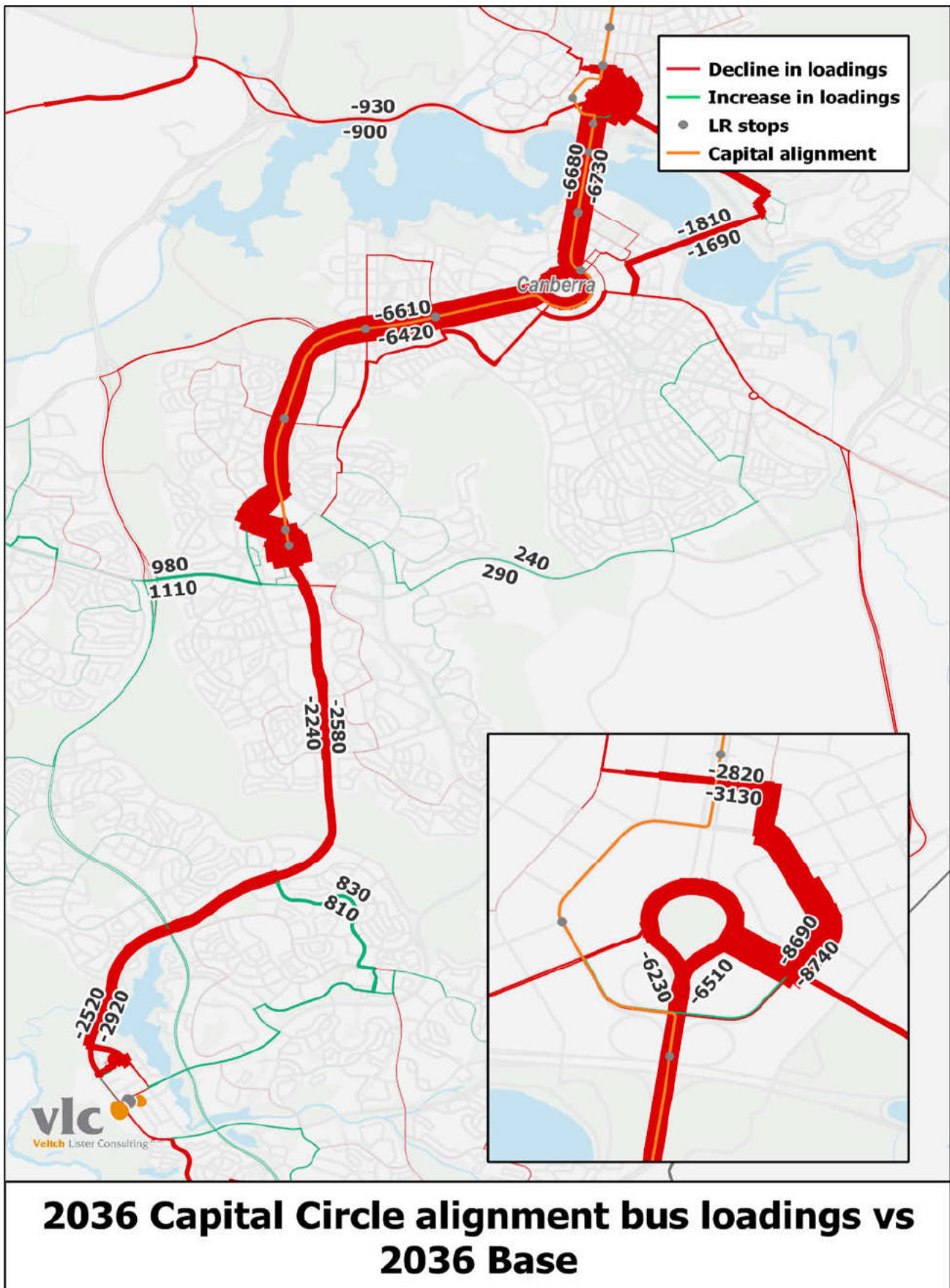
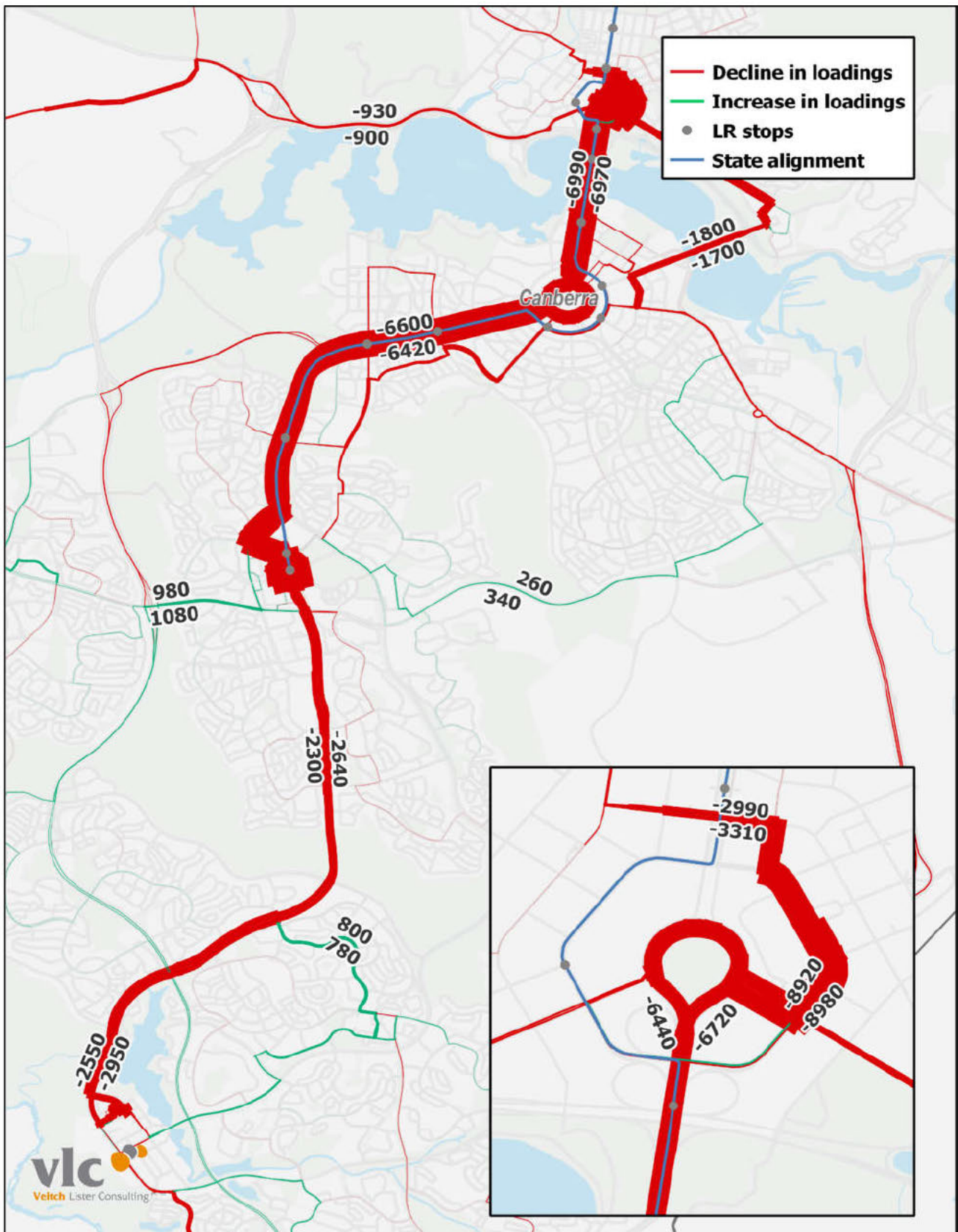




Figure 2-25 State alignment – bus network impact



2036 State Circle alignment bus loadings vs 2036 Base



2.4.2 Light rail access

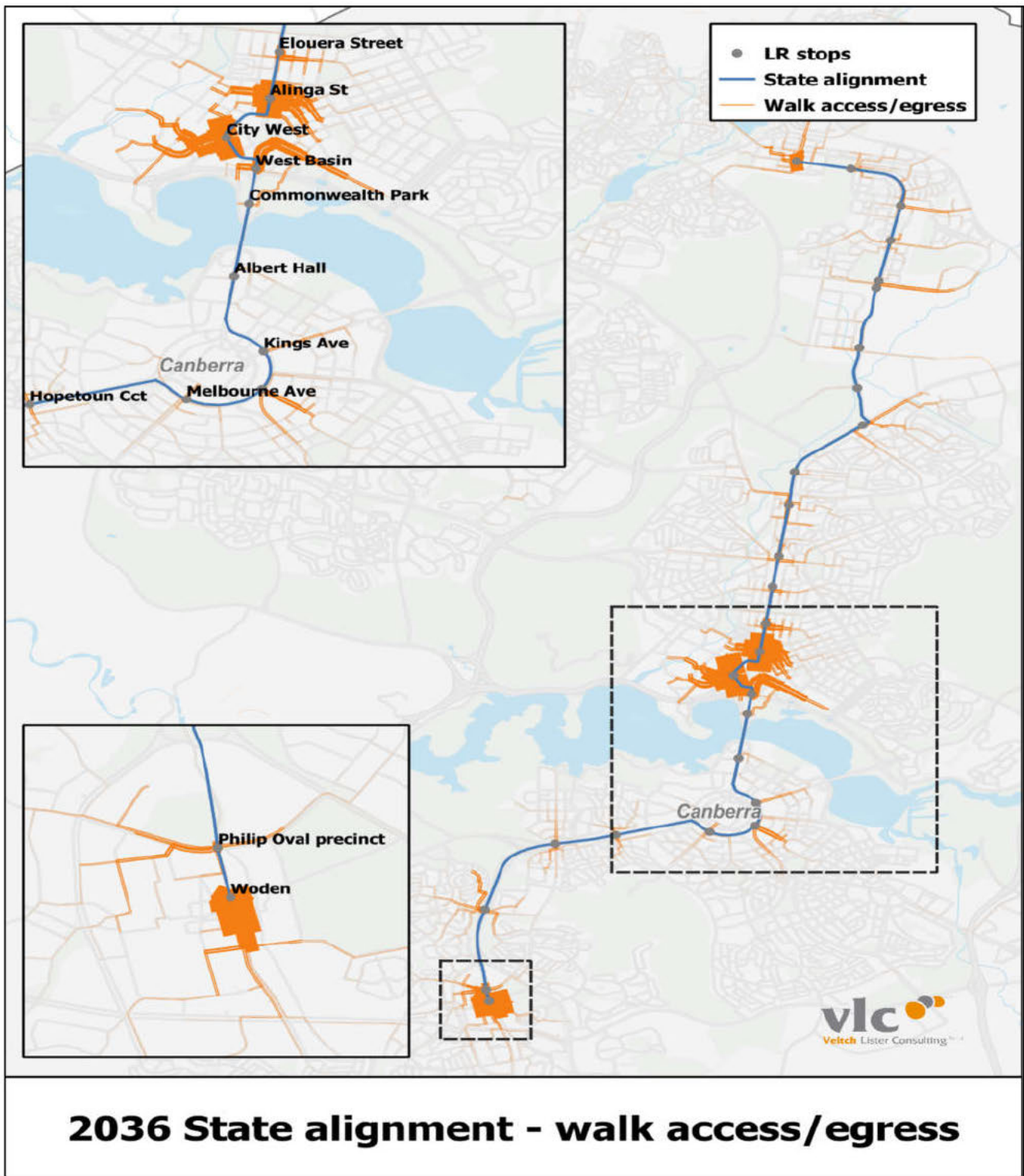
This section shows the access and egress trip pathways for the light rail by mode. Access refers to how passengers travel from their origins to light rail, while egress refers to how passengers travel from light rail to their destinations. Access and egress modes considered include car, bus and walking.

Figure 2-26 shows walk access and egress to the State Circle alignment of the light rail. As discussed above, walking is the most common method of accessing the light rail, with most walking trips appearing to originate close to the light rail line. A large number of passengers boarding and alighting at Alinga Street and City West walk to and from ANU and the CBD, respectively.

Meanwhile, there are few walk access trips in the inner south, with Sydney Avenue (SC) experiencing the most from the employment area to the east of Parliament House.



Figure 2-26 Walk access/egress for light rail



2036 State alignment - walk access/egress

Figure 2-27 shows bus access and egress for light rail trips. Predominantly, bus trips are used to access the light rail at Woden and Gungahlin. A large number of bus trips originate from Tuggeranong to the Woden interchange to access the light rail, while hardly any trips are made by bus to access the light rail in the inner south near Parliament House. In this case passengers appear to bypass the new State Circle stops to transfer at Commonwealth Park (as seen in Figure 2-5 to Figure 2-10).

There is also a notable number of bus trips from Belconnen, Molonglo and the south-east (Kingston/Fyshwick) being made to access the light rail.



Figure 2-27 Bus access/egress for light rail

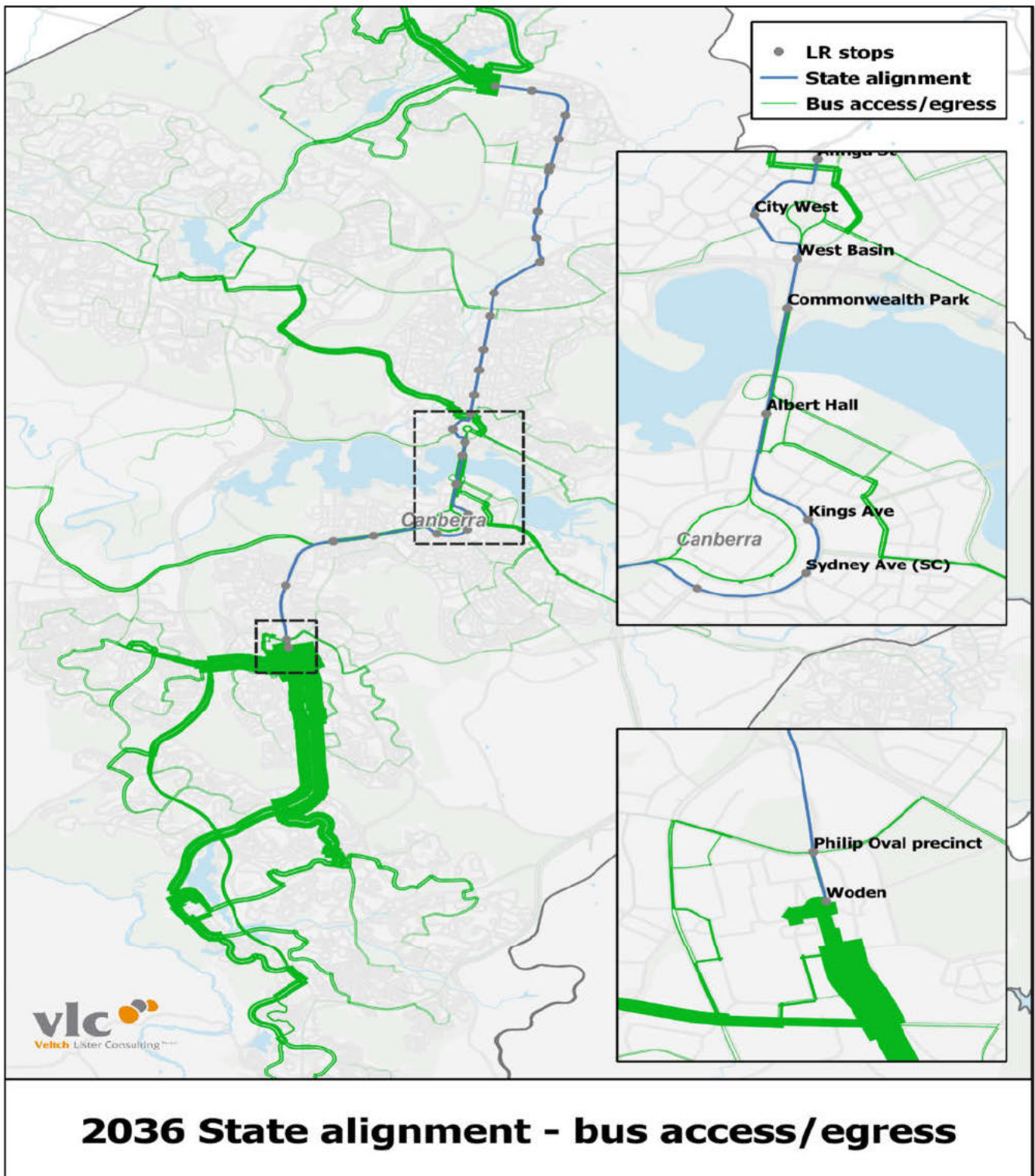
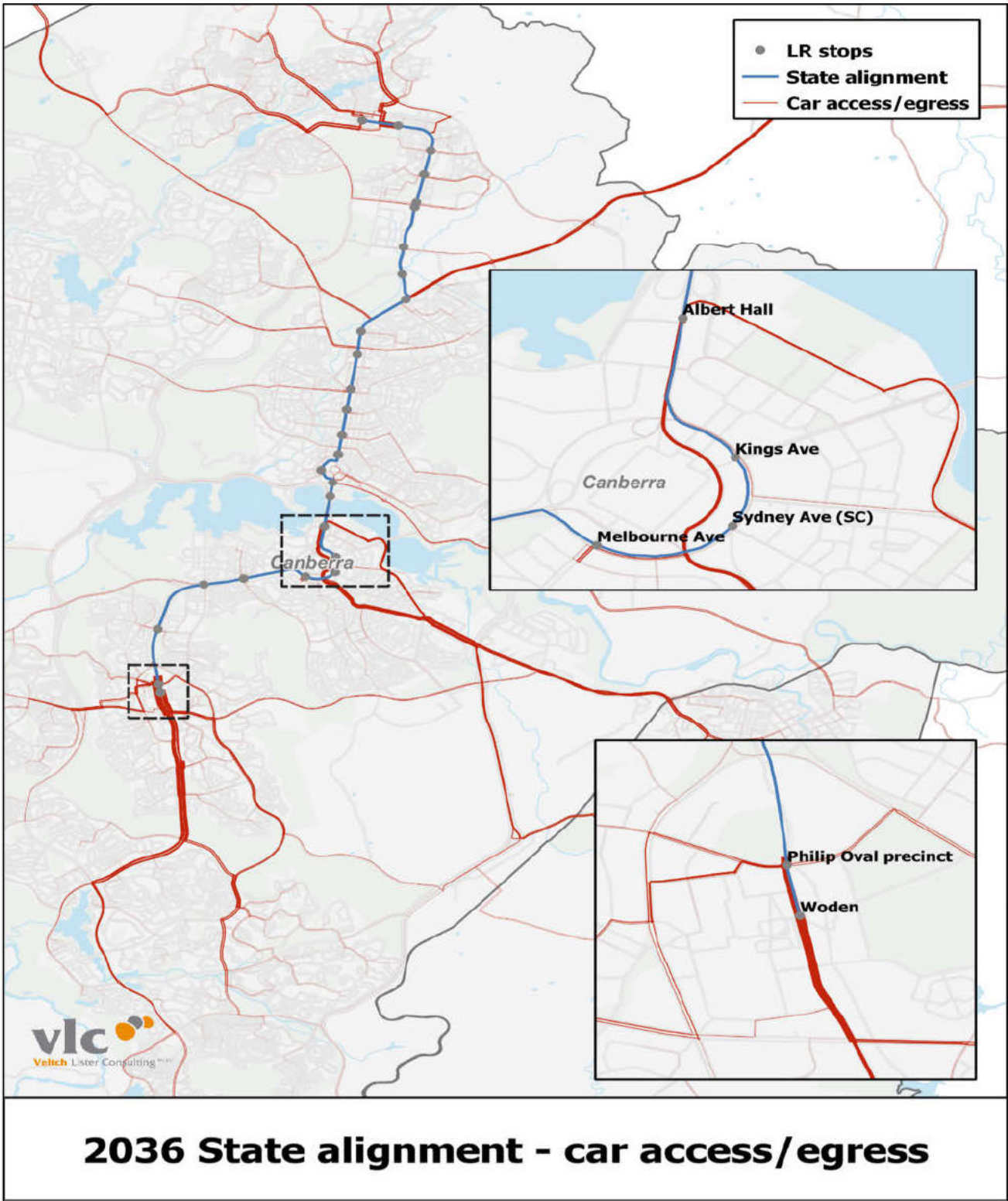


Figure 2-28 shows car access and egress for light rail trips. While there were relatively few passengers accessing the light rail by car, most of the trips were to or from Gungahlin and Woden. There were very few car trips made to the inner south State Circle stops and the CBD.

Car access trips sometimes originated from far away, with a notable number travelling approximately 10km from Queanbeyan to board at Albert Hall. Similarly, there were a large number travelling from NSW along the Federal Highway to board at Philip Ave, and from the Barton Highway to board at Gungahlin or near Dickson.



Figure 2-28 Car access/egress for light rail





3. Summary of projected patronage forecasts

Summary outputs of the patronage forecasts for the different scenarios tested are shown in Tables 3-1 – 3-9. These show total boardings, stops with the most and fewest modelled boardings and the busiest light rail section for each modelled scenario split into modelled years.

The model suggests that total boarding numbers are similar between alignments; however, there are differences between the boarding locations and loadings for different alignments.

The Barton alignment tends to experience fewer boardings at Woden and stops in the City and lower loadings on journeys between Woden and the City during peak periods compared to the State and Capital Circle alignments. The Barton alignment, however, compensates for this with greater boardings in the inner south near the Parliamentary Triangle area.

Overall, Capital Circle experiences the lowest total boardings, but experiences the highest loadings on trips between Woden and the City, and large numbers of boardings at Woden and the City during peak periods. This may be explained by the relative travel times of the different alignments, with Barton having the greatest travel time and Capital Circle the lowest, hence Barton is the less attractive alignment for trips from Woden to the City.

From this it appears that State and Capital Circle alignments may better serve trips between Woden and the City in the peaks while Barton may better serve areas in the inner south.

Table 3-1 Total boardings, all project scenarios 2026

Model Scenario	Total light rail boardings			Light rail boardings, northbound			Light rail boardings, southbound		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
2026 State (BAU_v2) (245-3)	28,395	7,424	7,116	14,335	3,022	4,209	14,061	4,402	2,907
2026 State (E_v2) (248-3)	29,172	7,575	7,250	14,718	3,171	4,181	14,454	4,404	3,069
2026 Barton (B_v2) (251-3)	29,009	7,467	7,150	14,656	3,098	4,161	14,353	4,368	2,989
2026 Capital (E_v2) (254-3)	28,145	7,399	7,101	14,174	3,112	4,065	13,971	4,288	3,035

Table 3-2 Total boardings, all project scenarios 2036

Model Scenario	Total light rail boardings			Light rail boardings, northbound			Light rail boardings, southbound		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
2036 State (BAU_v2) (246-3)	35,937	9,476	9,362	18,138	4,066	5,306	17,799	5,410	4,056
2036 State (E_v2) (249-3)	37,963	9,865	9,769	19,152	4,366	5,365	18,811	5,500	4,405
2036 Barton (B_v2) (266-3)	37,846	9,798	9,651	19,146	4,363	5,329	18,700	5,435	4,322
2036 Capital (E_v2) (255-3)	36,802	9,630	9,580	18,548	4,271	5,253	18,254	5,358	4,328

Table 3-3 Total boardings, all project scenarios 2046

Model Scenario	Total light rail boardings			Light rail boardings, northbound			Light rail boardings, southbound		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
2046 State (BAU_v2) (247-3)	41,995	11,239	10,941	21,160	4,885	6,145	20,835	6,354	4,796
2046 State (E_v2) (250-3)	44,497	11,786	11,497	22,413	5,305	6,255	22,085	6,481	5,242
2046 Barton (B_v2) (267-3)	44,550	11,676	11,426	22,496	5,251	6,262	22,054	6,426	5,164
2046 Capital (E_v2) (256-3)	43,061	11,458	11,246	21,663	5,176	6,093	21,399	6,281	5,153

Alinga St, City West and Woden are consistently the stops where the most daily boardings are expected for all scenarios, while Station Dr North and Randwick Rd are consistently the stops where fewest daily boardings are expected for all scenarios.

Kings Ave is consistently listed as the having the third fewest boardings for the State Circle alignment regardless of demographic assumptions (the Kings Ave stop is only on the State Circle alignment).



Stanford St receives the fewest boardings on the Capital Circle alignment while Albert Hall receives the fewest boardings on the Barton alignment until 2046 when Stanford St receives the fewest boardings.

Table 3-4 Light rail stops with most and fewest boardings, all project scenarios 2026

Model Scenario	Stops with most boardings (Daily)			Stops with fewest boardings (Daily)		
	1st	2nd	3rd	1st	2nd	3rd
2026 State (BAU_v2) (245-3)	Alinga St (4,604)	City West (3,493)	Woden (3,239)	Randwick Rd (29)	Well Station Dr N (119)	Kings Ave (163)
2026 State (E_v2) (248-3)	Alinga St (4,640)	City West (3,593)	Woden (3,409)	Randwick Rd (32)	Well Station Dr N (116)	Kings Ave (176)
2026 Barton (B_v2) (251-3)	Alinga St (4,444)	City West (3,481)	Woden (3,164)	Randwick Rd (32)	Well Station Dr N (116)	Albert Hall (180)
2026 Capital (E_v2) (254-3)	Alinga St (4,577)	City West (3,531)	Woden (3,488)	Randwick Rd (31)	Well Station Dr N (116)	Sandford St (216)

Table 3-5 Light rail stops with most and fewest boardings, all project scenarios 2036

Model Scenario	Stops with most boardings (Daily)			Stops with fewest boardings (Daily)		
	1st	2nd	3rd	1st	2nd	3rd
2036 State (BAU_v2) (246-3)	Alinga St (6,544)	City West (4,734)	Woden (4,166)	Randwick Rd (51)	Well Station Dr N (121)	Kings Ave (194)
2036 State (E_v2) (249-3)	Alinga St (6,651)	City West (4,977)	Woden (4,451)	Randwick Rd (52)	Well Station Dr N (116)	Kings Ave (246)
2036 Barton (B_v2) (266-3)	Alinga St (6,296)	City West (4,862)	Woden (4,149)	Randwick Rd (52)	Well Station Dr N (116)	Albert Hall (234)
2036 Capital (E_v2) (255-3)	Alinga St (6,645)	City West (4,904)	Woden (4,588)	Randwick Rd (52)	Well Station Dr N (116)	Sandford St (326)

Table 3-6 Light rail stops with most and fewest boardings, all project scenarios 2046

Model Scenario	Stops with most boardings (Daily)			Stops with fewest boardings (Daily)		
	1st	2nd	3rd	1st	2nd	3rd
2046 State (BAU_v2) (247-3)	Alinga St (7,730)	City West (5,582)	Woden (4,795)	Well Station Dr N (108)	Kings Ave (192)	Randwick Rd (219)
2046 State (E_v2) (250-3)	Alinga St (7,951)	City West (5,858)	Woden (5,154)	Well Station Dr N (116)	Randwick Rd (220)	Kings Ave (270)
2046 Barton (B_v2) (267-3)	Alinga St (7,596)	City West (5,746)	Woden (4,823)	Well Station Dr N (116)	Randwick Rd (228)	Sandford St (375)
2046 Capital (E_v2) (256-3)	Alinga St (7,940)	City West (5,799)	Woden (5,300)	Well Station Dr N (116)	Randwick Rd (220)	Sandford St (375)

For northbound travel, the busiest section in the AM peak northbound was most often between Commonwealth Park and West Basin for 2026 and 2036, although this switched for all alignments to Albert Hall and Commonwealth Park in 2046. The greatest southbound loadings during the AM peak were between Ipima St and Alinga St for all alignments in all years.

For the PM peak, all scenarios experienced their highest loadings in the northbound direction between Elouera St and Ipima St while the highest loadings for southbound were generally between West Basin and Commonwealth Park for in 2026 and 2036 and between Commonwealth Park and Albert Hall in 2046. The Barton alignment was different, experiencing its peak loading near the Parliamentary Triangle between MoAD, Brisbane Ave and Sydney (PB).



Table 3-7 Light rail sections with highest loads, all project scenarios 2026

Model Scenario	Section with highest pax load			
	Northbound		Southbound	
	AM	PM	AM	PM
2026 State (BAU_v2) (245-3)	dep from Commonwealth Park (2,097)	dep from Elouera St (3,219)	dep from Ipima St (3,510)	dep from West Basin (2,051)
2026 State (E_v2) (248-3)	dep from Commonwealth Park (2,239)	dep from Elouera St (3,151)	dep from Ipima St (3,452)	dep from West Basin (2,209)
2026 Barton (B_v2) (251-3)	dep from Commonwealth Park (2,102)	dep from Elouera St (3,132)	dep from Ipima St (3,420)	dep from West Basin (2,095)
2026 Capital (E_v2) (254-3)	dep from Commonwealth Park (2,259)	dep from Elouera St (3,127)	dep from Ipima St (3,418)	dep from West Basin (2,257)

Table 3-8 Light rail sections with highest loads, all project scenarios 2036

Model Scenario	Section with highest pax load			
	Northbound		Southbound	
	AM	PM	AM	PM
2036 State (BAU_v2) (246-3)	dep from Commonwealth Park (2,762)	dep from Elouera St (4,043)	dep from Ipima St (4,318)	dep from West Basin (2,818)
2036 State (E_v2) (249-3)	dep from Commonwealth Park (3,008)	dep from Elouera St (3,984)	dep from Ipima St (4,294)	dep from Commonwealth Park (3,124)
2036 Barton (B_v2) (266-3)	dep from Commonwealth Park (2,862)	dep from Elouera St (3,919)	dep from Ipima St (4,212)	dep from MoAD (2,948)
2036 Capital (E_v2) (255-3)	dep from Commonwealth Park (3,009)	dep from Elouera St (3,967)	dep from Ipima St (4,256)	dep from Commonwealth Park (3,160)

Table 3-9 Light rail sections with highest loads, all project scenarios 2046

Model Scenario	Section with highest pax load			
	Northbound		Southbound	
	AM	PM	AM	PM
2046 State (BAU_v2) (247-3)	dep from Albert Hall (3,321)	dep from Elouera St (4,716)	dep from Ipima St (5,040)	dep from Commonwealth Park (3,393)
2046 State (E_v2) (250-3)	dep from Albert Hall (3,634)	dep from Elouera St (4,616)	dep from Ipima St (4,990)	dep from Commonwealth Park (3,745)
2046 Barton (B_v2) (267-3)	dep from Albert Hall (3,431)	dep from Elouera St (4,563)	dep from Ipima St (4,911)	dep from Brisbane Ave (3,594)
2046 Capital (E_v2) (256-3)	dep from Albert Hall (3,643)	dep from Elouera St (4,579)	dep from Ipima St (4,933)	dep from Commonwealth Park (3,796)



4. Commonwealth Park staging option

In addition to the core project scenarios and sensitivity tests, a staging alignment from Alinga St to Commonwealth Park was modelled with two sets of demographics scenarios.

The staging option was run before the full alignment scenarios and as such used an older version of Business as usual demographics (see 4.1.3 Appendix A: for details). An older version of the base case scenario was also run with the older Business as usual demographics to allow for evaluation of the staging option. A project specific demographics scenario – West Basin (WB) – was also used which had population and employment adjusted along the extended light rail corridor.

In the below discussion, the 2036 base case is compared with both staging option scenarios. Overall, the staging options attracted approximately 3,000 more daily light rail boardings than the base case, as shown in Table 4-1.

Table 4-1 Total daily boardings - base case and staging option, 2036

Scenario	Northbound	Southbound	Total
2036 Base (BAU) (187-3)	9,455	9,438	18,894
2036 CommPark (BAU) (225-3)	11,002	10,925	21,927
2036 CommPark (WB) (230-3)	11,254	11,173	22,427

The modelling indicates that the staging options appear to shift boardings and alightings from Alinga St to the new stations located around the City, indicating that existing users who travel to Alinga St in the base case would likely benefit from the extension through greater access to the City.

There were also some new users who would derive benefit from the new stops. However, the demographics assumptions have only a minor impact on boardings and alightings or loadings, with the West Basin scenario having only slightly higher total boardings.

Overall, the staging option results in an increase in public transport trips and a decline in car trips compared to the base case. It is likely that this increase is observed as the staging option does not involve any reduction to bus services and involves an improvement to the existing light rail service. Overall network impacts for the staging options are shown in Table 4-2 and Table 4-3.

Table 4-2 PT trips in Commonwealth Park extension

Variant	Total PT trips	In vehicle passenger hours	In vehicle passenger kms
2036 Base (BAU) (187-3)	138,844	42,163	1,303,734
2036 CommPark (BAU) (225-3)	139,888	42,548	1,308,510
2036 CommPark (WB) (230-3)	139,957	42,385	1,302,164

Table 4-3 Car trips in Commonwealth Park extension

Variant	Total car trips	Person car hours	Total car kms
2036 Base (BAU) (187-3)	1,676,151	437,095	16,427,168
2036 CommPark (BAU) (225-3)	1,675,564	436,776	16,419,076
2036 CommPark (WB) (230-3)	1,672,494	434,938	16,367,480

4.1.1 Boardings and alightings by stop

Figure 4-1 and Figure 4-2 compare northbound and southbound daily boardings for the staging alignment with different demographics scenarios and the base case.

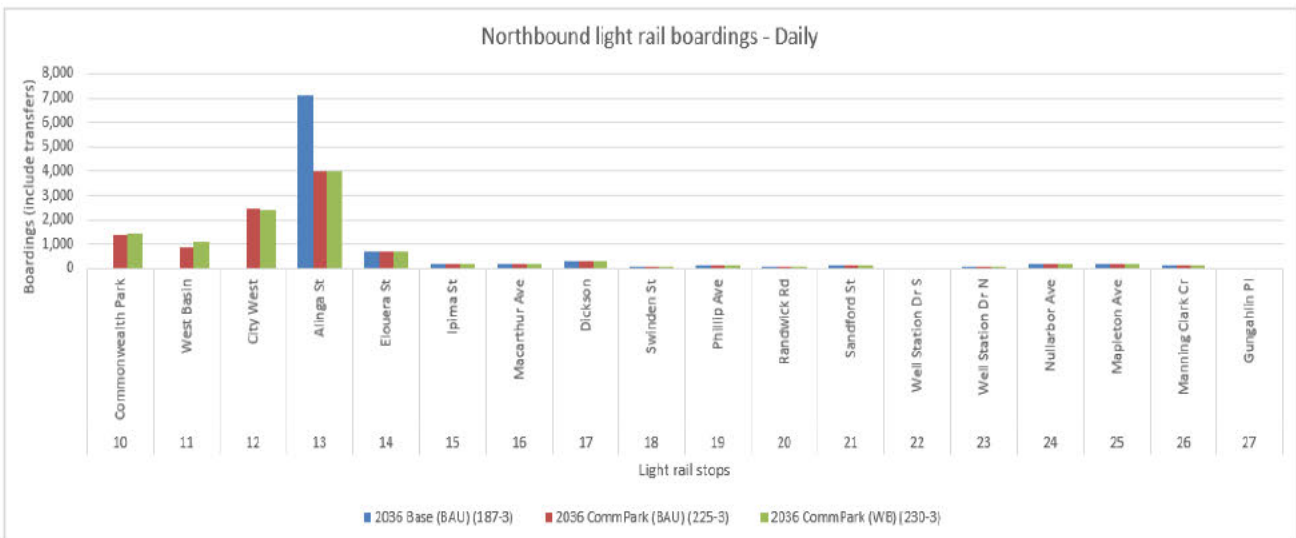


For southbound boardings towards the City, the staging scenarios experience slightly higher boardings than the base case, which may indicate that the additional stops in the City are encouraging a small number of new users to the light rail.

Compared to the 2036 base case, the staging options have just over half the number of boardings at Alinga St in the northbound direction (around 4,000) compared to the base case (around 7,000). However, when the boardings for the staging option at Commonwealth Park, West Basin, City West and Alinga St are considered together, they have around 9,000 boardings – slightly more than the boardings at Alinga St in the base case.

In 2036, the demographics scenarios for the staging option result in only minor differences. Commonwealth Park and West Basin experience more northbound boardings under the West Basin scenario, while City West experiences slightly fewer boardings. In the southbound direction, there are slightly higher boardings for the West Basin scenario at Alinga St and the new stops.

Figure 4-1 Northbound daily light rail boardings by stop - staging scenarios and 2036 base



For southbound boardings towards the City, the staging scenarios experience slightly higher boardings than the base case, which may indicate that the additional stops in the City are encouraging a small number of new users to the light rail.

Figure 4-2 Southbound daily light rail boardings by stop - staging scenarios and 2036 base

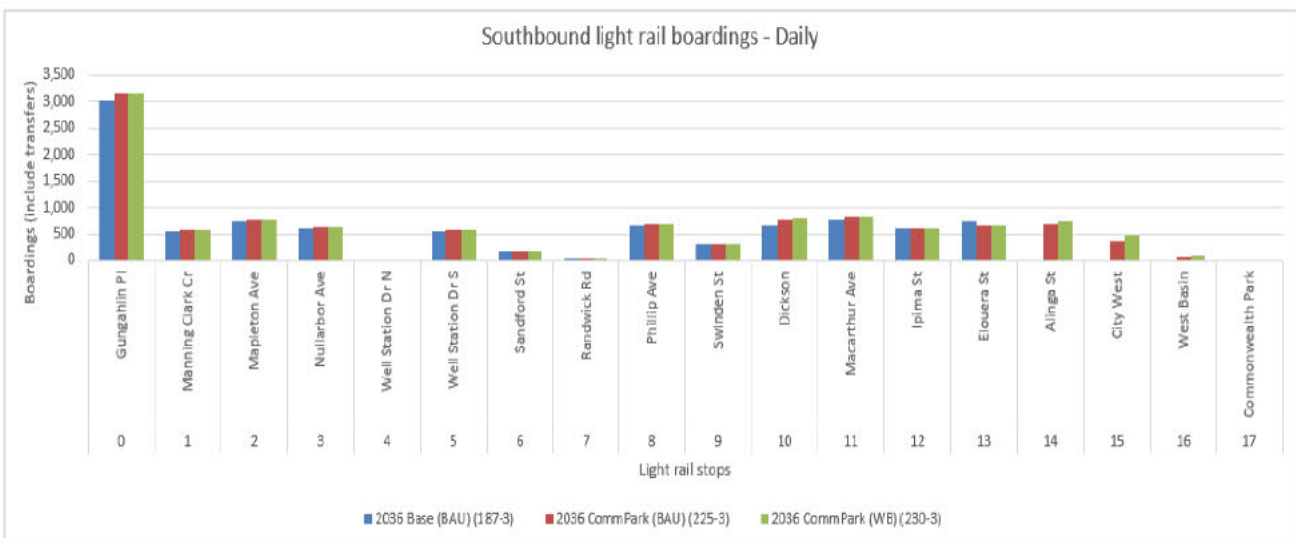




Figure 4-3 and Figure 4-4 show daily alightings for the 2036 base and staging scenarios. A similar pattern to boardings is shown whereby southbound alightings are lower for the staging options than the base case at Alinga St but are accounted for when considering total alightings at Alinga St and the new stops.

Figure 4-3 Northbound daily light rail alightings by stop - staging scenarios and 2036 base

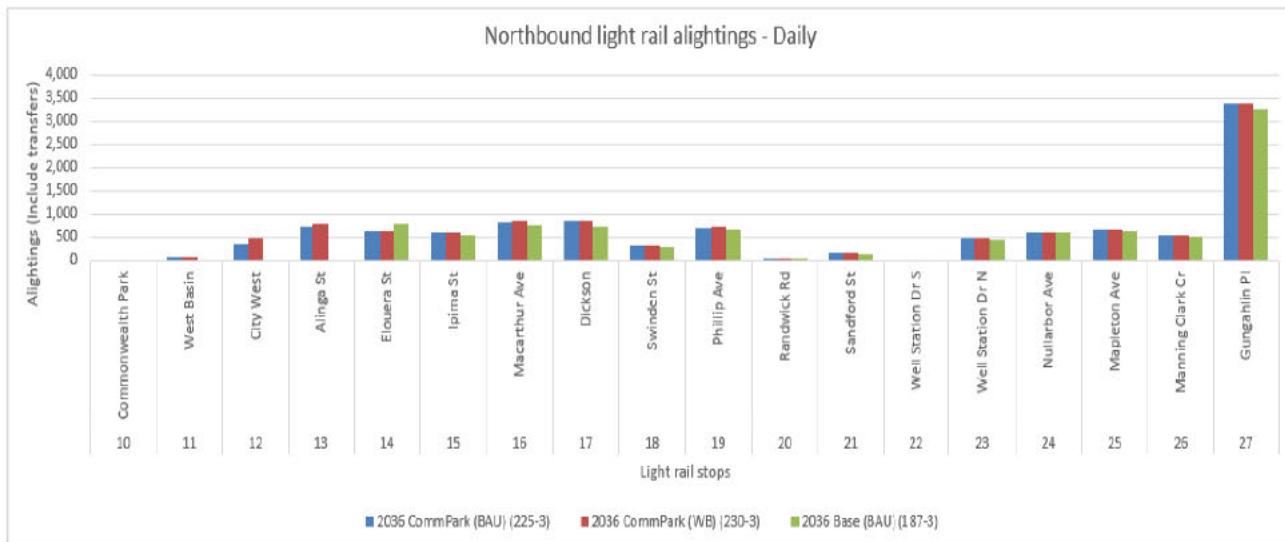
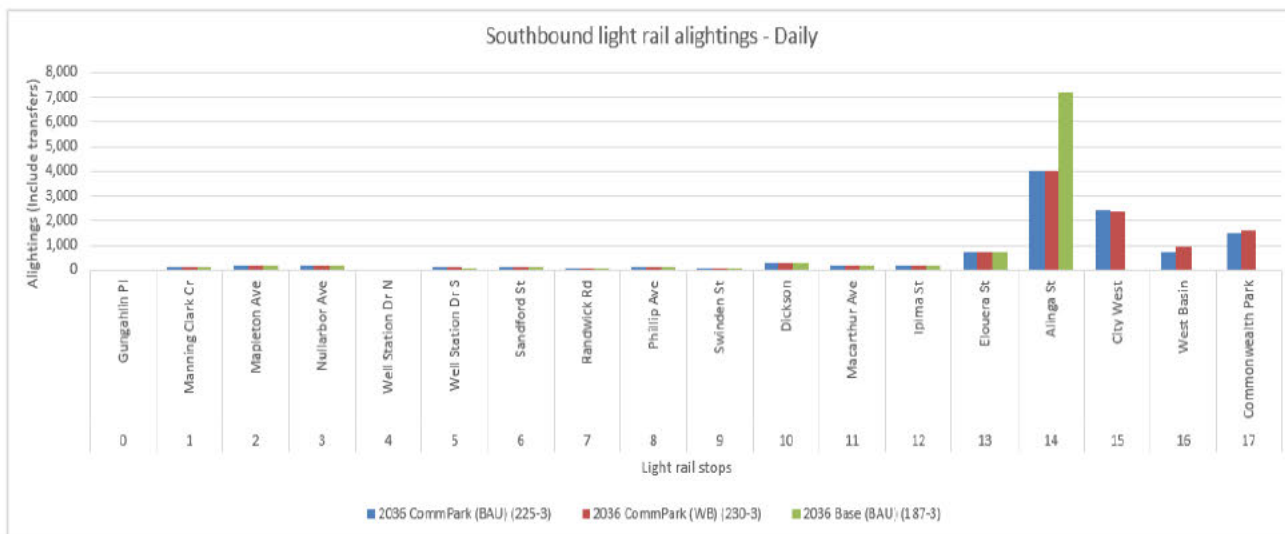


Figure 4-4 Southbound daily light rail alightings by stop - staging scenarios and 2036 base



4.1.2 Boardings by access mode

Figure 4-5 and Figure 4-6 show daily boardings by access mode for the staging option with West Basin demographics.

In the northbound direction, at the new staging option stops walk was the dominant access mode, except at Commonwealth Park had where most passengers transferred from other public transport. The most prevalent access mode for southbound boardings was also walking, except for Gungahlin where there were a large proportion of public transport transfers.

There were only very small changes for the Business as usual demographics scenario.



Figure 4-5 Northbound daily light rail boardings by mode - staging scenario, West Basin demographics

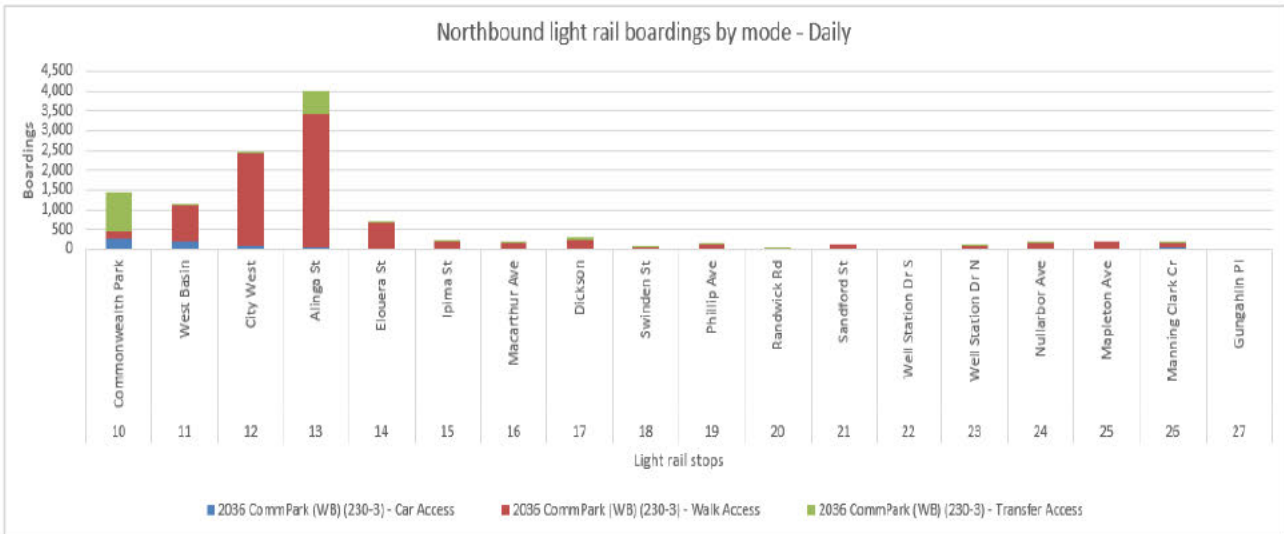
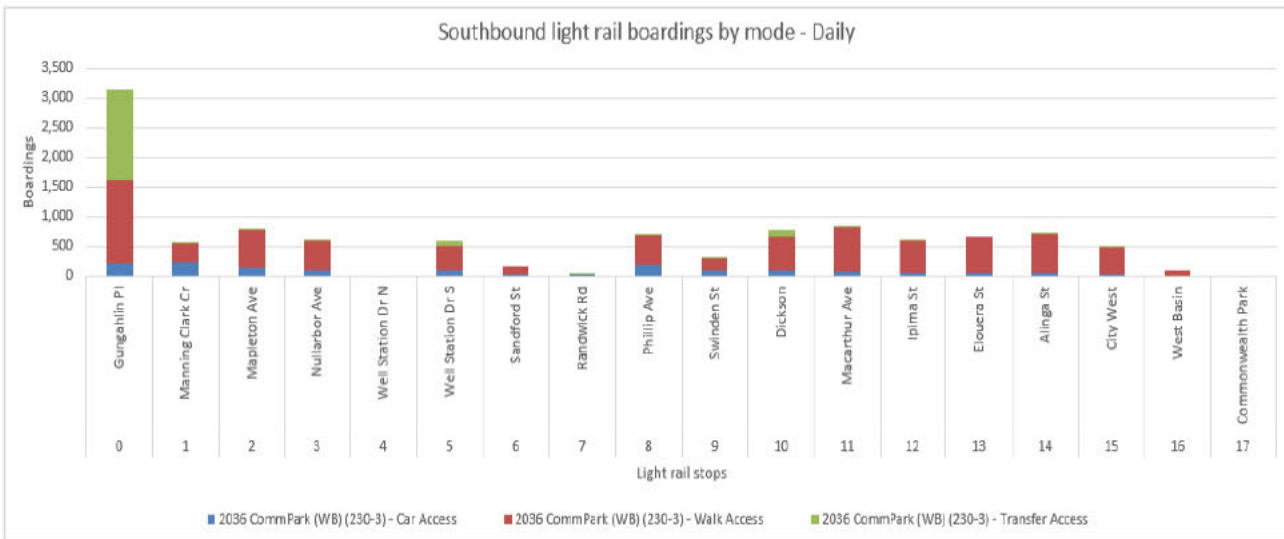


Figure 4-6 Southbound daily light rail boardings by mode - staging scenario, West Basin demographics



4.1.3 Load profiles

Figure 4-7 and Figure 4-8 show AM peak loadings in the northbound and southbound direction for the different demographics scenarios and for the base case in 2036.

This shows that the total loadings in the staging option are slightly higher than in the base case. In the southbound direction, the staging options experience a slow decline in loadings from Elouera St to Commonwealth Park. These loadings are similar for the PM peak where the directions are reversed.

There are only small differences between demographics scenarios. For the new staging stops, the West Basin scenario has slightly higher loadings than the Business as usual scenario in the northbound direction. In the southbound direction there is very little difference between the demographic scenarios.



Figure 4-7 AM-peak northbound loads - staging options and 2036 base

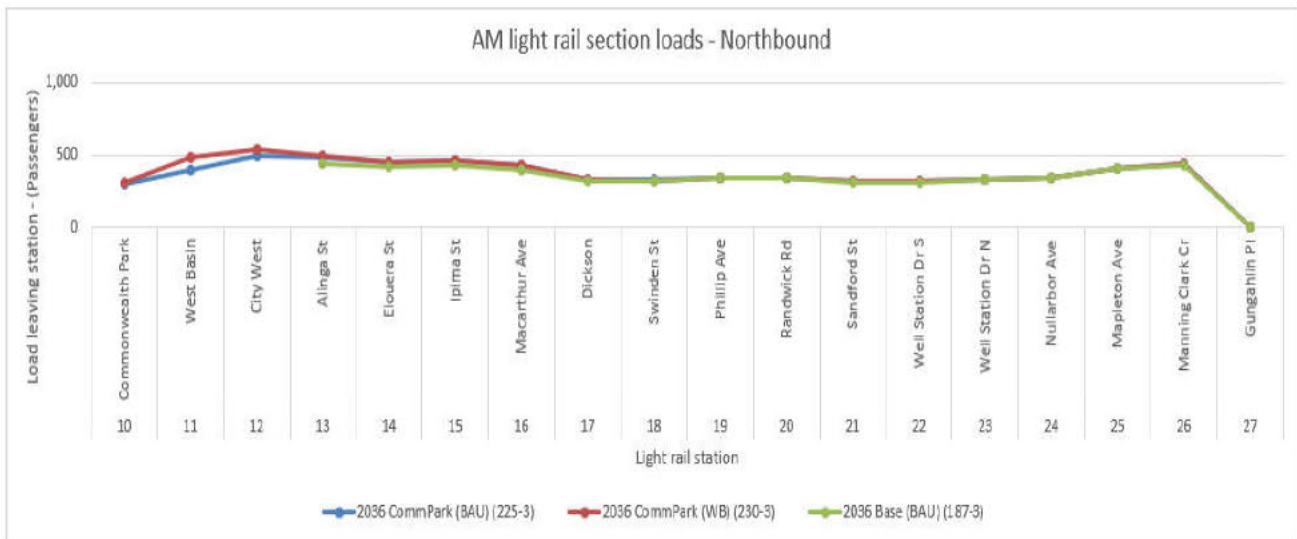
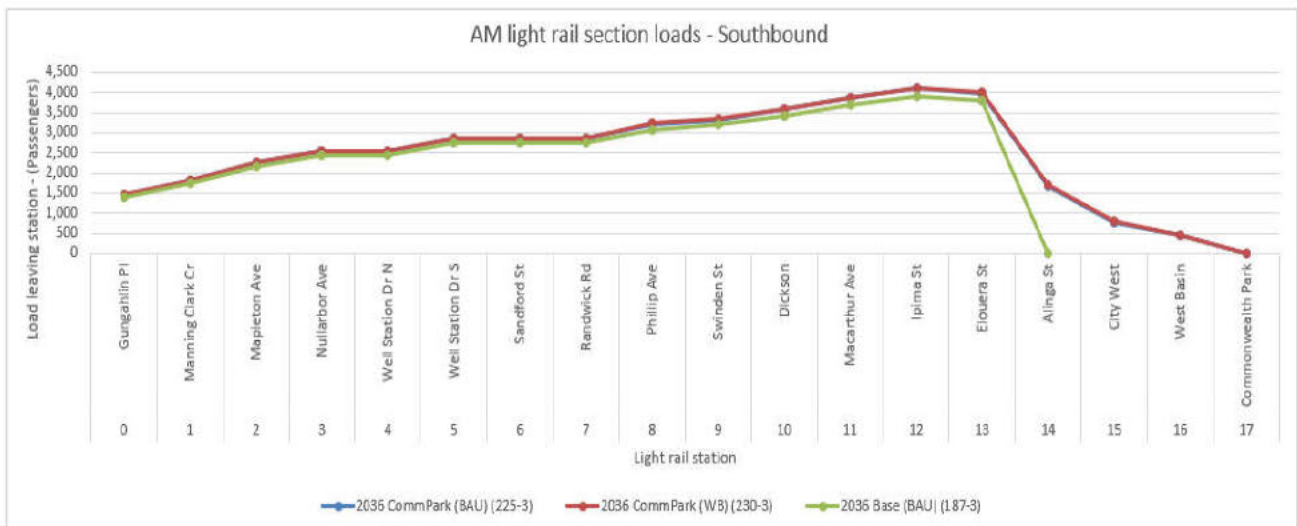


Figure 4-8 AM-peak southbound loads - staging options and 2036 base





Appendix A: Sensitivities

Strategic modelling is based on a set of assumptions that includes the street network, public transport network and demographics. It is recognised that some of these assumptions may not reflect the exact conditions that will exist in the future. Sensitivity testing allows an exploration into the impacts of changes to some of these assumptions.

In the case of this project, sensitivity testing was undertaken for both the bus network and demographics scenarios.

A.1 Bus network

The bus network used for the strategic modelling was an indicative network from 2017. This network was used across all light rail alignments and demographic scenarios to allow for comparison of outcomes across scenarios. In 2019, a new bus network was implemented for Canberra which has some significant differences with the modelled network. Sensitivity testing was conducted for some of these differences.

In Canberra's New Bus Network implemented in 2019, some bus services were identified as having the potential to impact light rail patronage. Specifically, route R7, the rapid bus providing a direct connection between Weston Creek and the City and routes 180, 181, 182, peak express services connecting Tuggeranong Valley to the City. It is expected that the R7 would draw customers away from the City to Woden light rail. In terms of the 180, 181 and 182, these routes would also draw customers away from light rail, however, the number of passengers using them would be constrained by their limited capacity.

Two sensitivity tests were undertaken to assess the potential impacts of these bus services on light rail patronage. The sensitivity tests were run using the 2036 Barton alignment network with an older version of the Parkes-Barton demographics scenario (B_v1). The first sensitivity test was conducted with routes 180-182 being removed from the network. The second sensitivity test was conducted with routes 180-182 and the R7 being removed.

In the first sensitivity test, removal of the 180-182 resulted in 1,700-2,100 passengers shifting away from those routes, and an increase of approximately 1,700 passengers on light rail. In the second sensitivity test, the removal of the R7 resulted in about 1,000 passengers shifting away from that service, with an additional increase of 800 passengers on light rail.

A.2 Demographics

Demographics were developed based on the assumption that land uses would intensify along the corridor. It is uncertain whether and to what degree the projected population and employment densities can be achieved. Therefore, over the course of the project, several different sets of demographics assumptions were applied.

Table 4-4 provides an overview of different demographics scenarios which were applied to the model throughout the project.



Table 4-4 Demographics summary

Demographics scenario	Alignment scenario	Adjustments
Business as usual (BAU)	Base case, CommPark staging option, State Circle	N/A
Parliament-East (E)	State Circle, Capital Circle	Population and employment shifted along the light rail corridor
Parkes-Barton (B)	Barton	Population and employment shifted along the light rail corridor
West Basin (WB)	CommPark staging option	Population and employment shifted along the staging option corridor
Business as usual v2 (BAU_v2)	Base case, State Circle	N/A
Parliament-East v2 (E_v2)	State Circle, Capital Circle	Population and employment shifted along the light rail corridor
Parkes-Barton v2 (B_v2)	Barton	Population and employment shifted along the light rail corridor

The v2 demographics were used for the core project scenarios, discussed in the body of this report. These scenarios coincided with overall higher boardings along the light rail. Figure 4-9 and Figure 4-10 provide a comparison for northbound daily boardings and Northbound AM-peak loads for the State Circle alignment in 2036 under a variety of demographics assumptions to provide an indication of the impacts of the different scenarios on light rail patronage. Note that demographics alone cannot be inferred as being responsible for the change in patronage as the bus network assumptions differed between the first four demographics scenarios and the v2 scenarios.

In the Business as usual v2 and Parliament-East v2 scenarios, the State Circle alignment had higher total boardings. Northbound daily boardings are higher around Woden and along the southern portion of the line and are similar to the boardings from the Business as usual and Parliament-East scenarios. Loadings along the southern portion of the line are significantly higher for the v2 demographics than the original demographics.

Figure 4-9 State Circle boardings by demographics scenarios, 2036

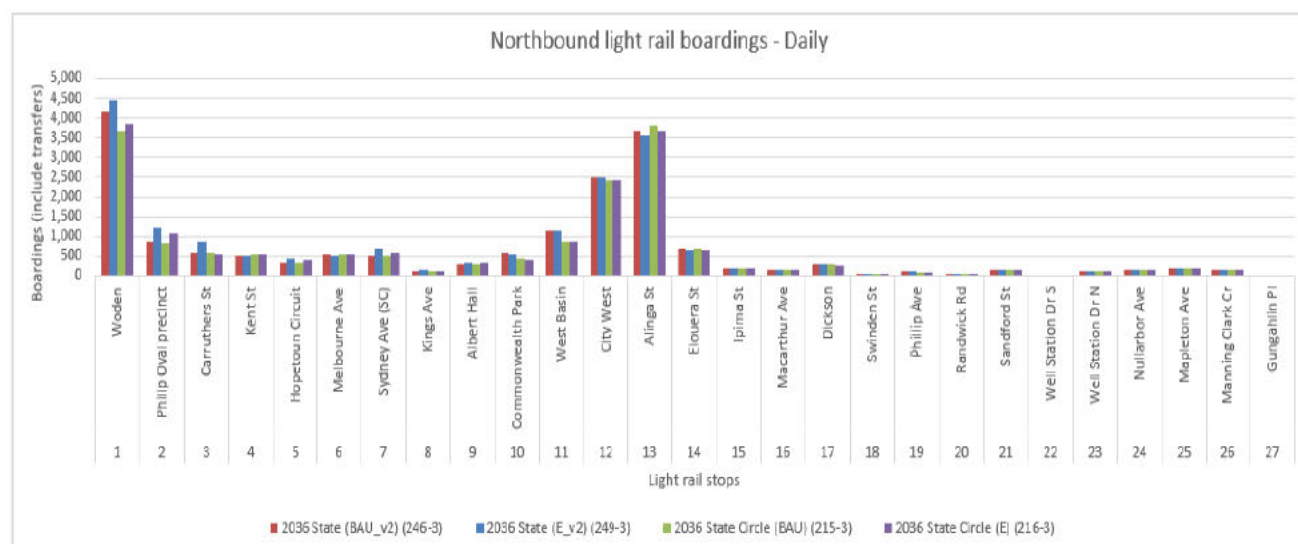




Figure 4-10 State Circle loadings by demographics scenarios, 2036

