3 November 2021

Thomas Watt
A/Director, Eastern District
Place, Design and Public Space
NSW Department of Planning, Industry and Environment

4 Parramatta Square, 12 Darcy Street
Parramatta, NSW 2150

Re: Pyrmont Peninsula Place Strategy Stage 2 transport assessment

Dear Thomas

VIAE Consulting Pty Ltd has been engaged by NSW Department of Planning, Industry and Environment to undertake a supplementary transport assessment to support the changes to planning controls proposed as part of the Pyrmont Peninsula Place Strategy (PPPS). This letter outlines the findings of this supplementary transport assessment including strategic transport modelling and detailed traffic modelling undertaken to assess the impacts of the proposed uplift on two key sites (The Star and UTS) and two sites required for the new Pyrmont metro station and transport interventions associated with the Pyrmont Peninsula Place Strategy.

This letter of advice documents the following:

- The assumptions and inputs to the transport assessment
- The outcomes of the transport modelling exercise in the context of existing transport behaviour
- Quantification of the likely impacts of the proposed changes to planning controls on the two key sites (The Star and UTS) and the two sites required for the new Pyrmont metro station
- Identification and assessment of the merits of transport infrastructure and services opportunities to support the proposed changes to planning controls in the Pyrmont Peninsula.

1. Methodology and inputs

1.1. Modelling methodology

The assessment of the impacts of the proposed changes to planning controls the two key sites (The Star and UTS) and the two sites required for the new Pyrmont metro station have been assessed using the following modelling steps:

1. Update of land use assumptions (population and employment) and assignment of mechanised-mode trips using the Sydney Strategic Transport Model (STM)
2. Detailed public transport assignment using Pyrmont Peninsula Public Transport Project Model (PTPM)
3. Detailed traffic assignment using the Bays Market District Pyrmont area VISSIM traffic model (an operational traffic model).

2036 has been selected as the horizon year for assessment to align with the opening of the planned metro station at Pyrmont and the realisation of development facilitated by the proposed changes to planning controls for the two key sites (The Star and UTS) and the two sites required for the new Pyrmont metro station.

A summary of the steps undertaken as part of the strategic modelling exercise is provided below:

- Develop revised land use forecasts (population and employment) to replace standard TZP19 forecasts for travel zones in the PPPS study area based on the proposed changes to planning controls and including consideration of the uplift available but not yet realised under existing zoning.
- Undertake land use redistribution for revised population and employment forecasts.
- Update STM with Sydney Metro West and PPPS network and service assumptions and run using PPPS land use scenario for 2036
- Update PTPM with Sydney Metro West and PPPS network and services assumptions and run using mechanised mode travel demand generated for 2036 by STM.
- Review strategic travel modelling outcomes and benchmark against previous forecasts used to inform more detailed modelling of the Pyrmont Peninsula road network.

A summary of the steps undertaken as part of the detailed operational traffic modelling exercise is provided below

- Compare growth in future forecast traffic demand to and from the Pyrmont Peninsula between PTPM 2036 scenario and 2033 Pyrmont area VISSIM model.
- Make any adjustments (if required) to the Pyrmont area VISSIM model to account for any significant differences in traffic demand assumptions.

- Run the Pyrmont area VISSIM model with and without the proposed road network interventions identified in the PPPS that have been agreed to carry forward for further investigation.
- Undertake SIDRA intersection modelling for any intersections affected by the proposed road network interventions that are not covered by the extents of the Pyrmont area VISSIM model.

1.2. Land use assumptions

A project-specific land use scenario has been developed for the two key sites (The Star and UTS) and the two sites required for the new Pyrmont metro station, based on land use forecasts developed by DPIE, including staging and timing of these forecasts over the next 20 years.

This project-specific land use scenario accounts for the following forecast changes in land use:

- Growth in residential population based on DPIE main series population projections
- Redevelopment of Sydney Fish Markets and Blackwattle Bay Precinct based on precinct panning undertaken by Infrastructure NSW
- Changes to planning controls for the following sites within the Pyrmont Peninsula Place Strategy study area:
  - The Star Casino hotel expansion
  - Sydney Metro West integrated station developments (eastern and western sites)
  - University of Technology, Sydney (UTS) Aboriginal housing development

The following steps were undertaken to convert 2041 gross floor area (GFA) forecasts of development to population and employment staged at 5-year intervals:

1. Calculate forecast change in residential and employment floor space based on proposed changes to planning controls (zoning and height limits) at a travel zone level.
- Convert floor space changes to changes in population and employment based on the following occupancy assumptions:
  - 65-69 m^2 per employee for entertainment (The Star Casino)
  - 16 m^2 per employee for commercial (Sydney Metro integrated station development)
  - 85 m^2 per residential dwelling and 2.13 persons per dwelling

  Employment forecasts for the following sites was taken directly from their associated planning proposals:
  - Sydney Fish Markets and Blackwattle Bay Precinct

  - UTS Aboriginal Housing

- Forecast the take-up of proposed 2041 population and employment across interim years 2021, 2026, 2031 and 2036 based on take-up rates developed as part of the PPPS.
- Calculate change from standard TZP19 forecast provided by Transport for NSW.

A summary of the forecast employment and population adopted for the PPPS is provided in Table 1 and Table 2 respectively. When compared with the standard TZP19 forecast for 2041 in the same area, the PPPS forecasts:

- 6,458 fewer jobs, representing a 11 per cent decrease below the standard forecast
- 490 more residents, representing a 2 per cent increase above the standard forecast

Table 1 – Pyrmont Peninsula population forecast by travel zone

TZ	Description	2021	2026	2031	2036	2041
78	Star City, Pyrmont Bay Ferry Wharf	133	133	133	133	133
88	Darling Harbour, Novotel, Grand Mercure, Ibis	371	371	371	371	371
89	Harbourside, Darling Harbour	2,333	2,333	2,333	2,333	2,333
108	Exhibition Centre, Darling Harbour	7,192	7,192	7,192	7,192	7,192
151	Pyrmont, Darling Island	4,103	4,103	4,103	4,103	4,103
152	John St Square MLR	3,288	3,288	3,288	3,288	3,288
153	Fish Markets MLR	1,925	2,022	3,113	4,228	5,998
154	Hardwood St	705	705	705	705	705
155	Experiment St	471	471	471	471	471
156	Wentworth Park MLR	1,465	1,465	1,465	1,465	1,465
157	Powerhouse Museum Ultimo	3,505	3,505	3,505	3,505	3,505
159	UTS, Ultimo West	6,625	6,626	6,630	6,635	6,643
160	ABC Ultimo Centre	4,161	4,161	4,161	4,161	4,161
186	Darling Island, Pyrmont Park	3,325	3,325	3,325	3,325	3,325
187	City Star Casino	8,231	8,271	8,715	9,169	9,891
228	Wentworth Park	1,477	1,477	1,477	1,477	1,477
	Pyrmont total employment	***49,310***	***49,447***	***50,987***	***52,561***	***55,060***

Table 2 – Pyrmont Peninsula population forecast by travel zone

TZ	Description	2021	2026	2031	2036	2041
78	Star City, Pyrmont Bay Ferry Wharf	0	0	0	0	0
88	Darling Harbour, Novotel, Grand Mercure, Ibis	509	873	2,050	2,146	2,237
89	Harbourside, Darling Harbour	93	297	954	1,008	1,059
108	Exhibition Centre, Darling Harbour	4	4	4	4	4
151	Pyrmont, Darling Island	401	401	401	401	401
152	John St Square MLR	3,809	3,994	4,592	4,640	4,687
153	Fish Markets MLR	1,768	2,388	4,392	4,555	4,712
154	Hardwood St	1,545	1,545	1,545	1,545	1,545
155	Experiment St	938	938	938	938	938
156	Wentworth Park MLR	3,606	3,732	4,136	4,169	4,201
157	Powerhouse Museum Ultimo	3,799	3,815	3,865	3,869	3,873
159	UTS, Ultimo West	1,088	1,185	1,499	1,525	1,549
160	ABC Ultimo Centre	542	488	313	298	285
186	Darling Island, Pyrmont Park	1,425	1,488	1,689	1,706	1,722
187	City Star Casino	361	386	466	473	479
228	Wentworth Park	2,596	2,596	2,596	2,596	2,596
	Pyrmont total population	***22,486***	***24,130***	***29,442***	***29,874***	***30,288***

1.3. Network assumptions

The following network assumptions were included for assessment as part of the strategic transport modelling (as agreed with Transport for NSW and NSW Department of Planning, Industry and Environment):

- A new metro station at Pyrmont as part of Sydney Metro West (SMW), along with the proposed SMW network and operational assumptions used in the most recent business case modelling (provided by SMW project team).
- Contra-flow bus lane (southbound) on Harris Street and Regent Street between Ultimo Road and Lee Street with new bus stops on Regent Street between Broadway and Lee Street.
- New bus route between Bays metro station and Green Square station with a peak period frequency of 6 services per hour (route shown in Attachment A).
- New bus route between Five Dock metro station and Pyrmont metro station with a peak period frequency of 6 services per hour (route shown in Attachment A).
- Increase in Inner West Light Rail frequency to 12 services per hour

In addition to the strategic model network assumptions, the following road network assumptions were adopted for assessment as part of detailed operational traffic modelling:

- Conversion of Thomas Street to 10 km/hr shared zone in the vicinity of UTS
- New signalised pedestrian crossing on Harris Street between Broadway and Thomas Street
- Rationalisation and relocation of bus stops along Harris Street

The majority of these proposals are not funded or committed for delivery. As a result, these network opportunities should be regarded as initiatives subject to further development, scoping, business case, investigation and investment decisions. The purpose of the transport modelling documented in this letter is to help identify which of these opportunities have sufficient merit to justify further investigation.

2. Strategic model outputs

The following outputs have been reported for the PPPS strategic models:

- Comparison of 2017 and 2036 mechanised mode share from PTPM for the Pyrmont SA2 region
- Forecast patronage for proposed new bus routes
- 30-minute travel catchment for trips to and from Pyrmont SA2 region.
- Comparison of 2017 and 2036 car demand between PTPM and the Bays/Pyrmont VISSIM model

2.1. PTPM mode share

A summary of morning peak mechanised mode share from PTPM for the Pyrmont SA2 region for 2017 and 2036 is shown in Table 3. Modelled PTPM mode share data indicates the following:

- Growth in mechanised-mode trips from Pyrmont would increase by 42 per cent and to Pyrmont by 24 per cent as a result of the proposed land use changes. This is consistent with the forecast growth in jobs in the study area.
- Total trips into and out of Pyrmont via rail, light rail and ferry would increase by 35 per cent. This is consistent with the opening of the metro station at Pyrmont which provides substantially greater access to Pyrmont for workers from Greater Sydney.
- Total trips into and out of Pyrmont via bus would also increase substantially, indicating that the proposed new bus routes would provide significant intermediate transport capacity to and from Pyrmont.
- As a proportion of overall demand, public transport mode share is likely to increase for Pyrmont residents and stay consistent for Pyrmont workers. This generally indicates that current public mode share is largely constrained by public transport provision, particularly to Pyrmont and that a large investment in public transport capacity (i.e. metro) would facilitate ongoing growth in employment at existing public transport usage levels.
- Car trips from Pyrmont are expected to increase by 14 per cent while car trips to Pyrmont are expected to increase by 21 per cent. It should be noted that forecast increased car demand from PTPM is unconstrained by parking and is based on an uncalibrated base car demand. While these trips may be forecast, it is likely that these trips could be further constrained through a reduction in parking rates on the key sites if required.

Overall, growth in public transport trips would be roughly double the growth in car trips in Pyrmont. This indicates that the proposed metro station at Pyrmont would facilitate a significant shift away from private car travel and towards public transport.

Due to the limitations of STM (which provides the mechanised mode demand to PTPM) these forecast are likely to underestimate the proportion of travel that takes place via active transport, which is not explicitly modelled as part of STM or PTPM. This is of particular importance for Pyrmont, which has a large observed active transport mode share, particularly for workers travelling to the Sydney CBD from Pyrmont. Consequently, these mode share forecasts represent a conservative forecast of mechanised trips into and out of Pyrmont. In reality, these number of trips travelling via mechanised mode is likely to be lower, reflecting the elevated role of active transport for Journey to Work trips from Pyrmont.

Table 3 – PTPM mode share for Pyrmont SA2 (morning peak)

Mode	PTPM 2017		PTPM 2036	
	From Pyrmont	To Pyrmont	From Pyrmont	To Pyrmont
Total trips				
Rail, light rail and ferry	2,200	17,000	4,700	21,300
Bus	1,500	3,000	2,200	3,700
Car	5,800	6,400	6,600	7,700
Total Trips	9,500	26,400	13,500	32,700
Proportion of mechanised demand				
Rail, light rail and ferry	24%	65%	35%	65%
Bus	16%	11%	16%	11%
Car	61%	24%	49%	24%

2.2. Public transport patronage

Table 4 shows the forecast boardings and alightings on the two proposed bus routes through Pyrmont:

- Bays to Green Square via Harris Street (Harris Street)
- Five Dock to Pyrmont via Pyrmont Bridge Road (Pyrmont Bridge Road)

The boardings and alightings on these routes shows strong demand for the Bays to Green Square route, but much lower demand on the Five Dock to Pyrmont route. The Bays to Green Square route would fill a missing connection from Bays and Pyrmont Stations to Central, while the Five Dock to Pyrmont route would primarily serve customers that are just outside of the catchment of the Inner West Light Rail, which is a significantly smaller catchment.

Plots of the line loading on these routes is also provided in Attachment B. Overall, these bus patronage forecasts indicate strong justification for the Bays to Green Square route (via a public transport connection over Glebe Island Bridge), however the Five Dock to Pyrmont route is unlikely to have sufficient patronage to justify the challenges of operating this route through Glebe.

Investigations undertaken subsequent to the modelling documented in this letter indicate that Glebe Island Bridge is unlikely to be able to facilitate a public transport connection. This route would still have significant demand between Pyrmont and Green Square and the Bays to Pyrmont link would still be possible by adjusting this route to use Anzac Bridge or via Sydney Metro West when it is completed, indicating

that this bus route would provide a significant benefit to the Pyrmont Peninsula with or without a public transport link at the location of Glebe Island Bridge.

Table 4 – PTPM forecast bus boardings and alightings (3.5 hour morning peak)

Location	PTPM 2036			
	Boardings within Pyrmont SA2	Alightings within Pyrmont SA2	Total boardings	Total alightings
Harris St NB	690	510	1,130	1,130
Harris St SB	990	330	1,360	1,360
Harris St total	1,680	840	2,490	2,490
Pyrmont Bridge Rd EB	0	480	630	630
Pyrmont Bridge Rd WB	50	0	310	310
Pyrmont Bridge Rd total	50	480	940	940

2.3. 30-minute catchment for Pyrmont

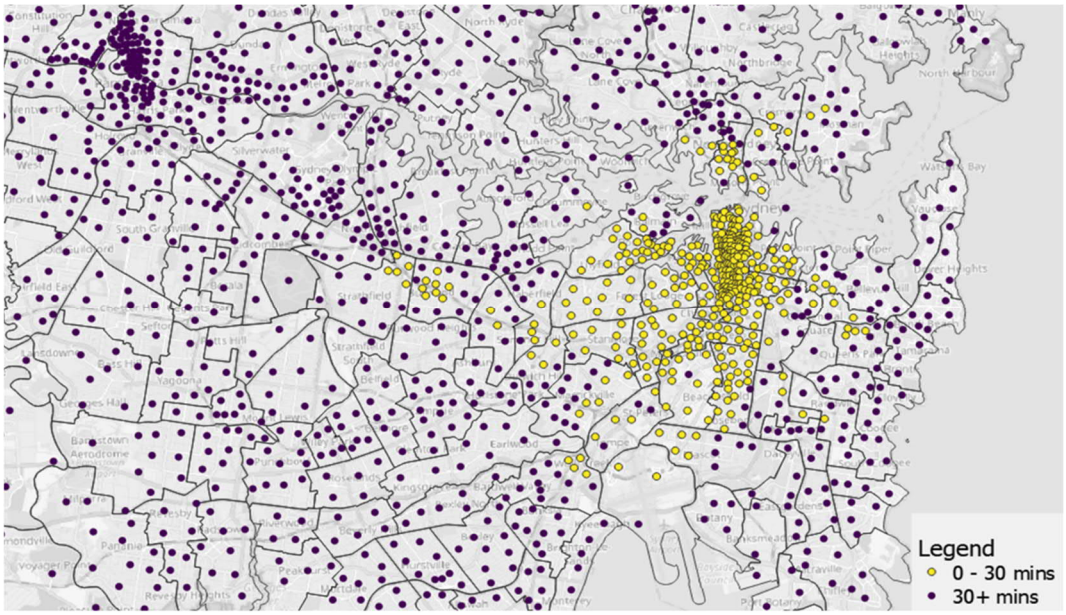
The 30-minute catchment of a precinct, as defined in *Future Transport 2056 (Transport for NSW, 2018)* represents the area that can be reached by public or active transport in 30-minutes or less. This catchment is a way of measuring the concept of the "30-minute city" where people can conveniently access jobs and services within 30 minutes by public or active transport, 7 days a week; one of the key goals of *Future Transport 2056.*

Figure 1 shows the change in the 30-minute catchment of Pyrmont SA2 by public transport from 2017 to 2036. These plots clearly show the increase in catchment size resulting from the new metro station at Pyrmont, with notable changes to access to key centres of Sydney Olympic Park, Chatswood and Parramatta that would otherwise not be accessible in 30 minutes.

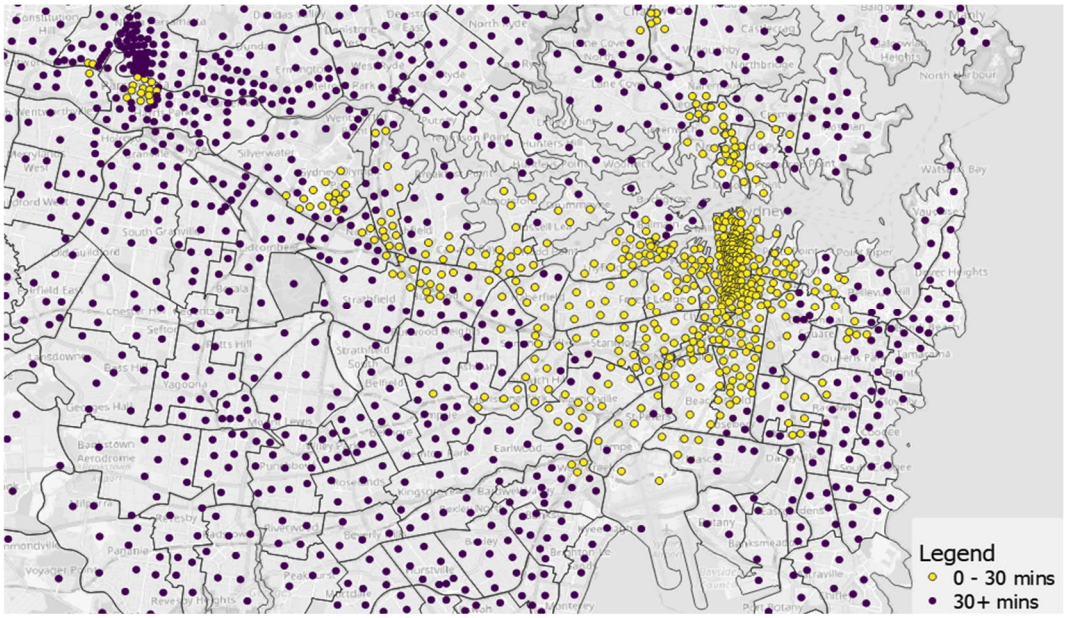
Table 5 shows a breakdown of trips to and from Pyrmont that are inside and outside the 30-minute catchment. These forecasts show that residents living within Pyrmont substantially increase their share of trips that fall within the 30-minute catchment, increasing from half of resident trips to two-thirds of resident trips. For inbound employment trips, this increase is more modest, primarily due to the large increase in employment in Pyrmont, attracting trips from across Greater Sydney that are more easily able to travel to Pyrmont due to the improved rail access provided by Sydney Metro West.

Table 5 – PTPM forecast entries and exits through IWLR and SMW stations (morning peak)

Location	PTPM 2017		PTPM 2036	
	From Pyrmont SA2	To Pyrmont SA2	From Pyrmont SA2	To Pyrmont SA2
PT demand within 30 mins	1,800	3,000	4,300	5,000
PT demand total	3,700	20,000	7,000	25,000
Proportion within catchment	*49%*	*15%*	61%	20%



2017 30-minute catchment



2036 30-minute catchment

Figure 1 – 30-minute public transport catchment to and from Pyrmont

2.4. VISSIM car demand comparison

Table 6 shows a comparison of the growth in car travel demand between 2017 and 2036 for PTPM and the Pyrmont/Bays Precinct VISSIM traffic model (provided by Transport for NSW) for the Pyrmont SA2 region. This comparison indicates the following:

- When accounting for the differences in base traffic demand, 2036 VISSIM traffic generation from Pyrmont is approximately 500 vehicle trips higher than PTPM.
- Similarly, accounting for the same differences in base demand, PTPM attraction of car trips is approximately 1,000 trips lower than the VISSIM demand. This indicates that a combination of the employment forecast and inclusion of a metro station at Pyrmont would reduce car trips to Pyrmont from previous assumptions used to inform the VISSIM model traffic growth forecasts.

Table 6 – Comparison of PTPM and VISSIM car demand for Pyrmont SA2 (morning peak)

Model	From Pyrmont SA2 to Pyrmont SA2	From Pyrmont SA2 to External	From External to Pyrmont SA2
PTPM	200	750	1,180
VISSIM*	260	1,260	2,120

*VISSIM model demand projected *pro-rata* from 2033

3. Operational traffic model outputs

As outlined in Section 1.1, the Pyrmont area VISSIM model has been used as the basis for operational traffic modelling of the road network interventions identified in the PPPS. A plot of the extents of the Pyrmont area VISSIM model is provided in Figure 2. As the Pyrmont area model does not extend to the intersection of Harris Street and Broadway, analysis of the impacts of the proposed road network changes on Harris Street has been supplemented by SIDRA modelling of this intersection.

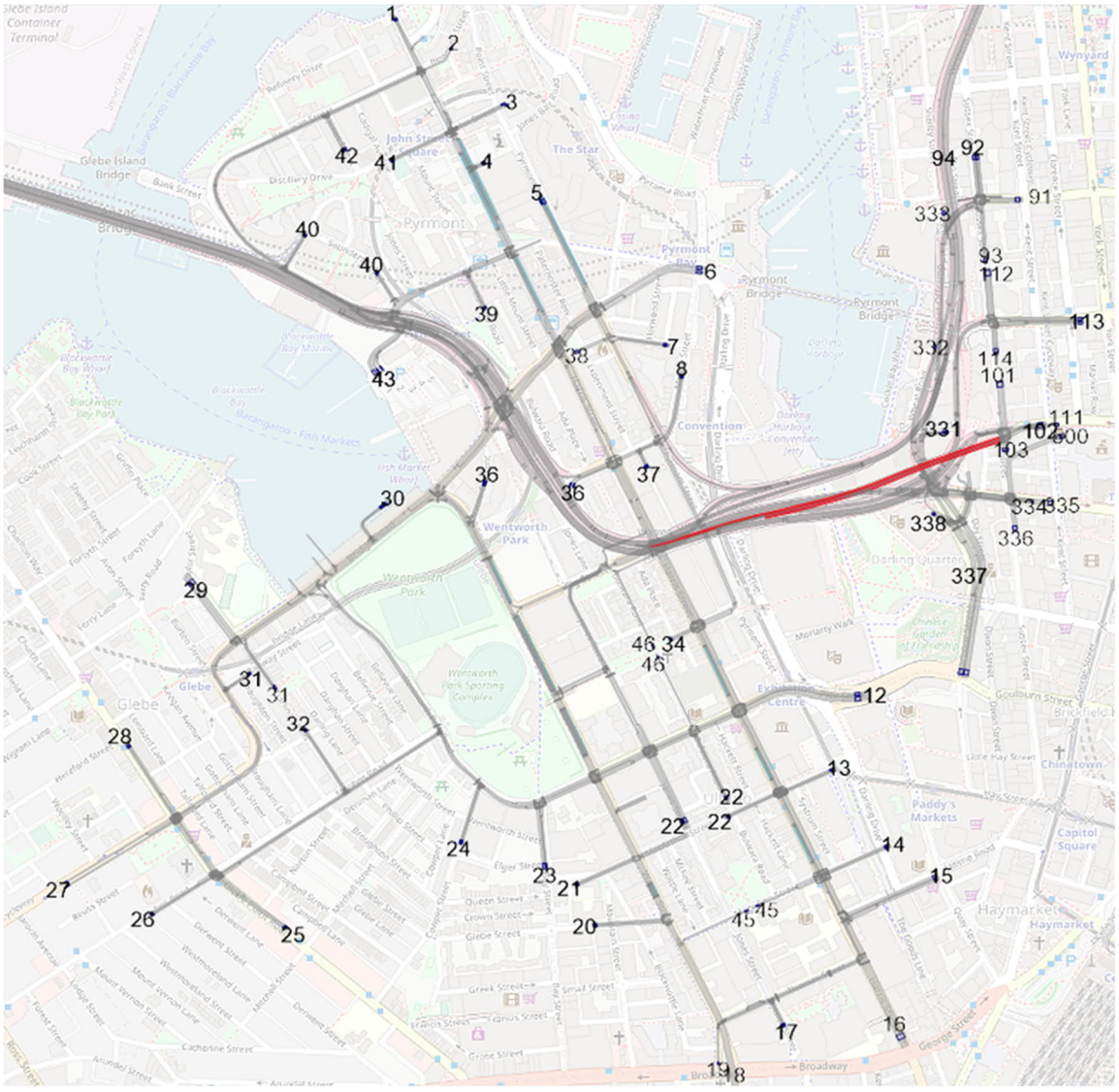


Figure 2 – Pyrmont area VISSIM model extents

Based on the comparison of forecast future traffic demand between PTPM and the Pyrmont area VISSIM model presented in Section 2.4, the traffic demand that is currently in the 2033 Pyrmont area model is higher than the forecast increase associated with the two key sites (The Star and UTS) and the two sites required for the new Pyrmont metro station. In order to provide a conservative assessment of the impacts of proposed road network interventions, the 2033 Pyrmont area model demands have been adopted as the basis for further detailed assessment of these

interventions. Consequently, the operational traffic model performance identified in this section represents a worst-case assessment of the road network performance under the proposed changes to planning controls; future network performance is likely to be better than the modelled performance presented here.

3.1. Modelled VISSIM network performance

The following scenarios have been modelled using the Pyrmont area VISSIM model:

- **Base year**: 2017 demand with existing network arrangements
- **Future Do Minimum scenario**: 2033 demand with existing network arrangements
- **Future Interventions scenario**: 2033 demand with additional road network interventions identified as part of the Pyrmont Peninsula Place Strategy

The following performance measures have been extracted from these modelled scenarios for morning and evening peak periods:

- **Network statistics** including Vehicle hours of Travel (VHT), Vehicle Kilometres of Travel (VKT), average network speed and unreleased traffic demand
- **Travel times** along the following routes:
  - Harris Street
  - Wattle Street
  - Pyrmont Bridge Road
- **Intersection Levels of Service** for the following intersections:
  - Pyrmont Bridge Rd/Western Distributor
  - Pyrmont Bridge Rd/Harris St
  - Fig St/Wattle St
  - Fig St/Harris St/Western Distributor
  - William Henry St/Wattle St
  - William Henry St/Bulwara Rd
  - William Henry St/Harris St
  - Harris St/Mary Anne Street
  - Harris St/Ultimo Rd
  - Harris St/Thomas St

A summary of the performance of the Pyrmont Peninsula road network and the impacts of the proposed road network interventions is presented below.

3.1.1. Network statistics

A summary of the modelled general network statistics for the Pyrmont Peninsula is presented in Table 7.

Table 7 – Summary of VISSIM network statistics

Scenarios	VKT (kms)	VHT (hours)	Speed (km/h)	Total Demand (trips)	Unreleased Demand (trips)
Morning peak					
2017 Base	102,454	4,245	24.1	48,131	2,715
2033 Do-Minimum	165,262	7,207	22.9	57,113	1,362
2033 Project Case	164,452	7,253	22.7	57,113	1,468
Evening peak					
2017 Base	104,677	4,613	22.7	51,400	4,701
2033 Do-Minimum	170,294	6,293	27.1	60,184	1,433
2033 Project Case	170,597	6,322	27.0	60,184	2,048

Analysis of the modelled network statistics indicates the following:

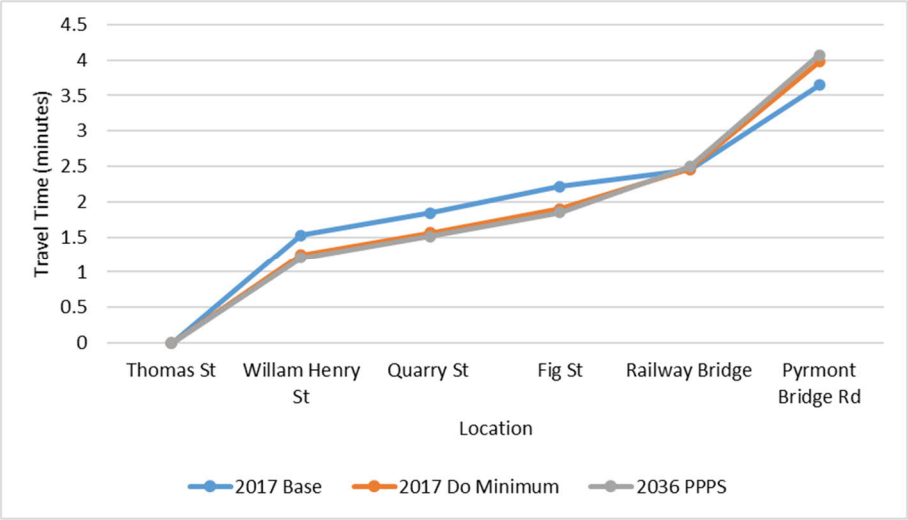
- Average network speed is forecast to decrease into the future for the morning peak and increase into the future for the evening peak. This increase in network speed is primarily a result of differences in the coding of the road network under the future scenarios, which include longer approaches to Anzac Bridge and Western Distributor. After accounting for these differences, average speed in the evening peak is also likely to increase in the Pyrmont Peninsula into the future.
- The proposed road network interventions would not result in a significant change in network speed across the Pyrmont Peninsula.
- Unreleased traffic demand would not increase significantly in the morning peak but increase in the evening peak as a result of the proposed road network interventions. Increased unreleased demand in the evening would be primarily on Pyrmont Bride Road east of Union Street and Pier Street east of Harris Street. These increases are due to increased bus volumes and delays on Harris Street that cause small decreases in the available green time for movements across Harris Street.

3.1.2. Travel times

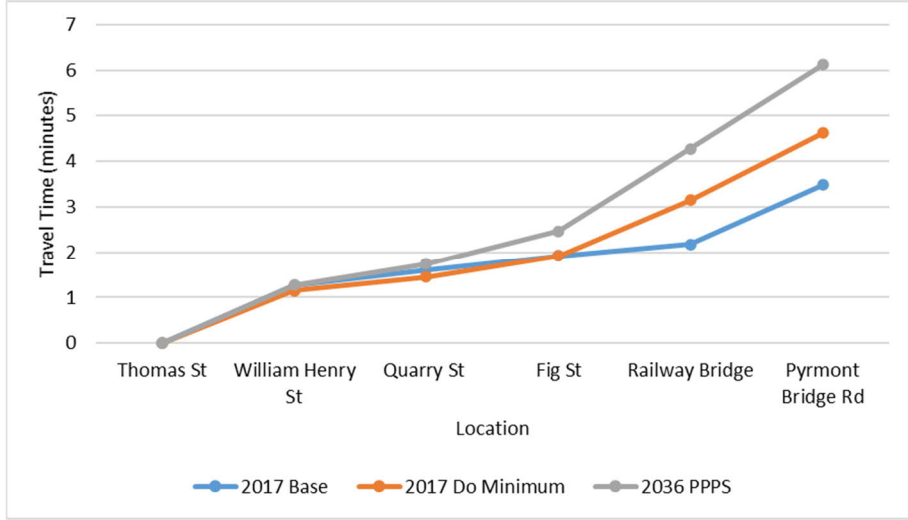
Time-distance graphs showing travel times along the key routes through Pyrmont Peninsula are shown in Figure 3 to Figure 5. Analysis of the modelled travel times shows the following:

- Travel times along Wattle Street would not be significantly impacted by the proposed changes to the road network, largely because the proposed changes do not extend to any direct works on Wattle Street, which functions as part of a one-way pair with Harris Street. The changes to evening peak travel times are related to increased eastbound travel times along Pyrmont Bridge Road.
- Travel times on Harris Street would remain largely unchanged as a result of the proposed network changes. The small differences in modelled travel times are within the margin of variance between model runs.
- Travel times on Pyrmont Bridge Road would increase from existing travel times but would be largely unaffected by the proposed road network changes in the morning peak. Eastbound travel times in the evening peak would increase as a result of the proposed changes, largely due to increased bus volumes along Harris Street that would decrease in the available green time for movements across Harris Street

It is noted that the Pyrmont area VISSIM model does not include the intersection of Harris Street and Wattle Street, and as such doesn't reflect the full impacts of the proposed contra-flow bus lane on Harris Street between Lee Street and Thomas Street. The impacts of this proposal are examined in greater detail in Section 3.2.

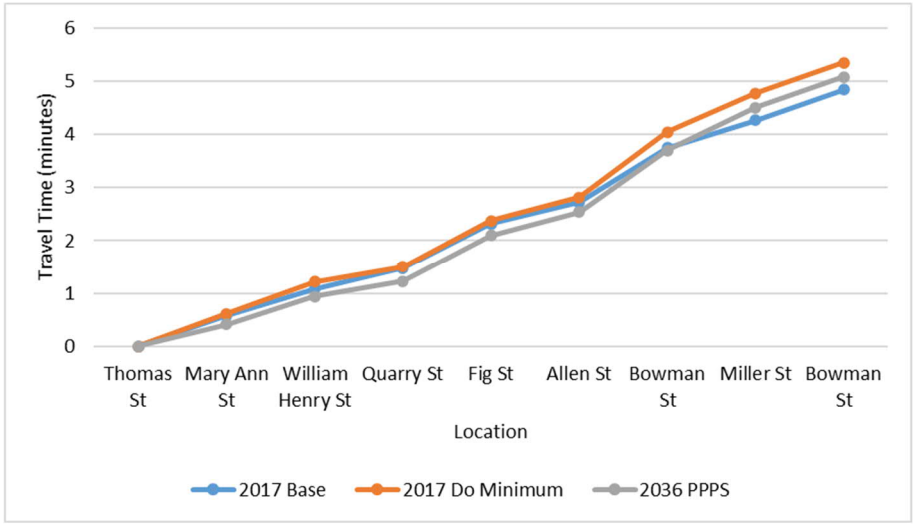


Morning peak

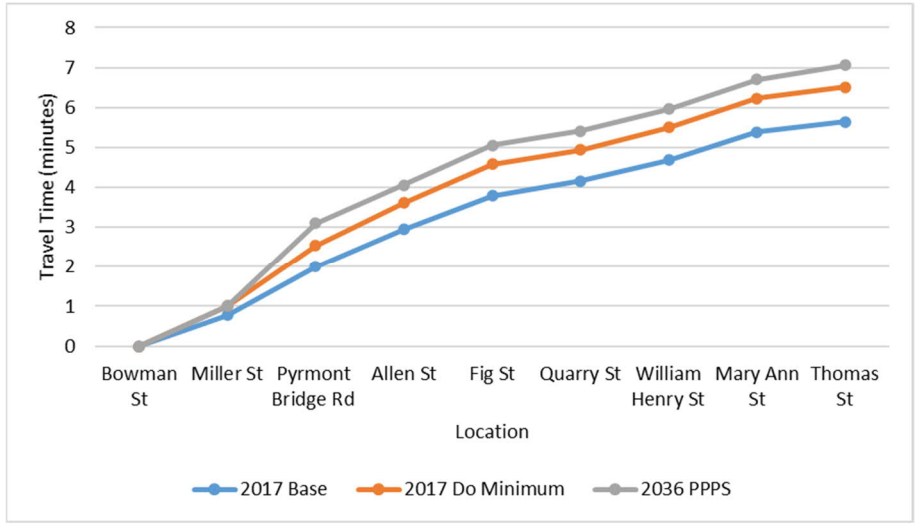


Evening peak

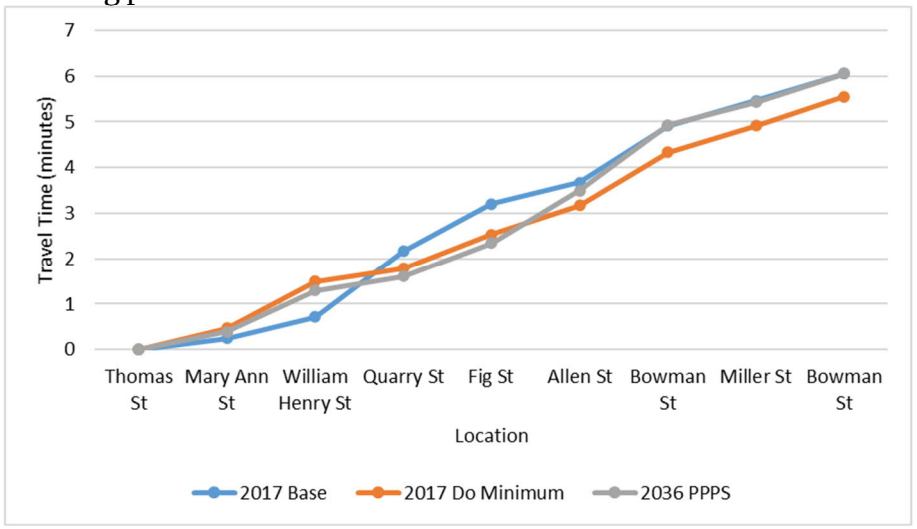
Figure 3 – Wattle Street modelled travel time comparisons



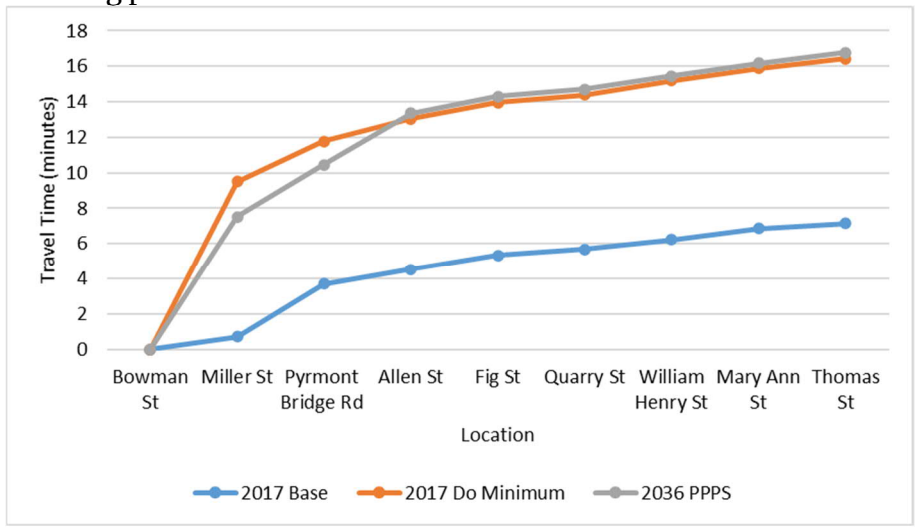
Morning peak northbound



Morning peak southbound

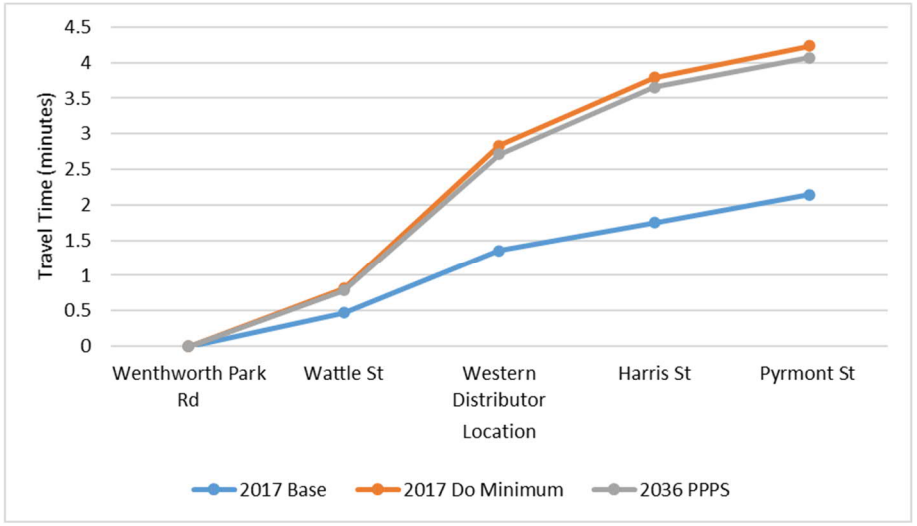


Evening peak northbound

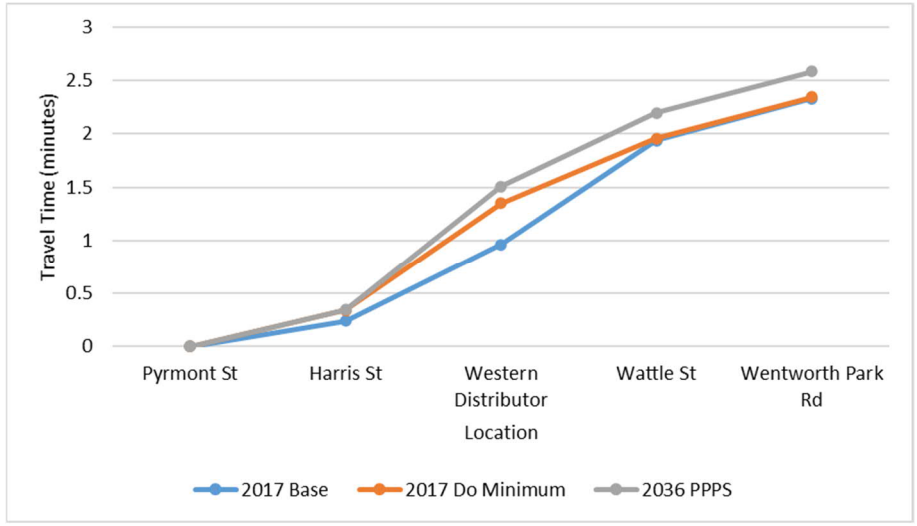


Evening peak southbound

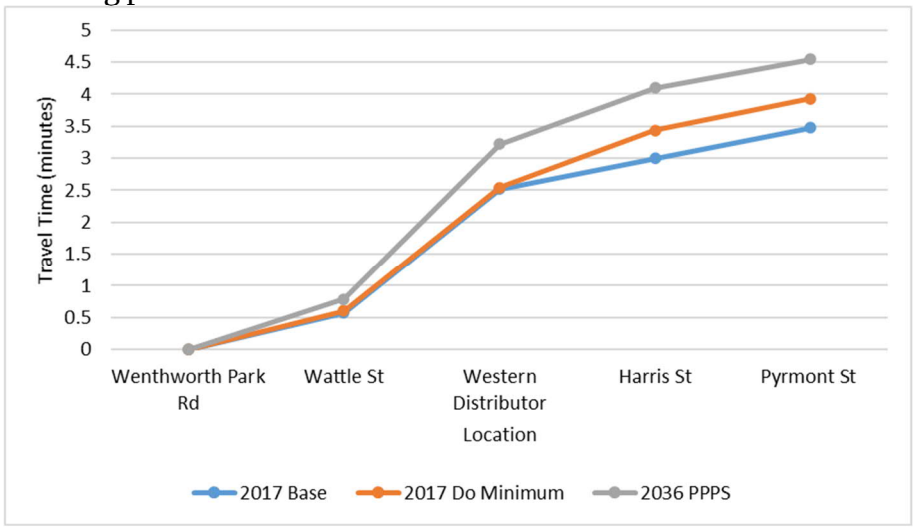
Figure 4 – Harris Street modelled travel time comparisons



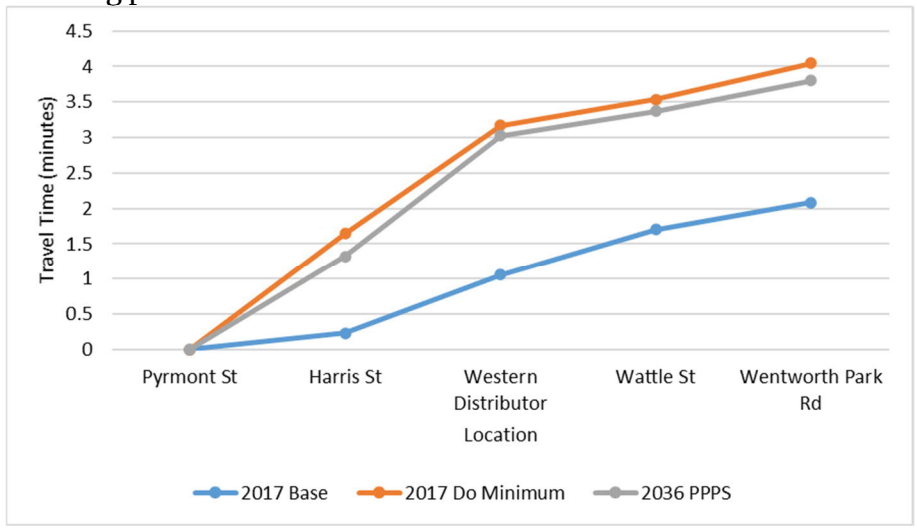
Morning peak eastbound



Morning peak westbound



Evening peak eastbound



Evening peak westbound

Figure 5 – Pyrmont Bridge Road modelled travel time comparisons

3.1.3. Intersection Level of Service

The Level of Service of an intersection is defined by the average delay for vehicles travelling through the intersection during the peak period. For priority-controlled intersections and roundabouts, the delay for the highest-delay movement is used and for signalised intersections, the weighted average delay for all movements is used. A summary of the Level of Service criteria for intersections is provided in Table 8. Level of Service D is defined as acceptable operation, with intersections performing at Level of Service E or worse requiring treatment or upgrade.

Table 8 – Level of Service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabouts	Give Way and Stop Signs
A	<14	Good operation	Good operation
	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
B	29 to 42	Satisfactory	Satisfactory, but with accident study required
C	43 to 56	Operating near capacity	Near capacity and accident study required
D	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control	At capacity, requires other control modes
E	>70	Unsatisfactory	Unsatisfactory
F	<14	Good operation	Good operation

A summary of the modelled average delay and Level of Service for the key intersections in the Pyrmont Peninsula is shown in Table 9 and Table 10. Analysis of modelled intersection operation shows the following:

- Intersection delays are forecast to increase from the base year to 2033, particularly along Pyrmont Bridge Road. This is a consequence of increased traffic volumes associated with redevelopment of the Sydney Fish Markets site as well as broader increases in traffic demand across the peninsula. Much of this additional traffic demand would use the existing interchange with the Western Distributor at Pyrmont Bridge Road, which is currently at capacity and likely to continue to perform at capacity into the future.

- Intersection operations along Fig Street would not be substantially impacted by the proposed road network changes and would continue to operate satisfactorily into the future.
- Intersection operation along William Henry Street would not be substantially impacted by the proposed road network interventions, however the intersection of William Henry Street and Bulwara Road is forecast to operate unsatisfactorily in both future scenarios. This is a consequence of the lack of detail in this part of the model; in reality this traffic would likely be distributed across a number of intersections and not result in high delays at this single location.
- Intersection delays along Harris Street are likely to remain unchanged as a result of the proposed interventions and would still operate satisfactorily in the future. Further examination of intersection operation at Harris Street and Broadway is provided in Section 3.2

Overall, modelling of the proposed road network interventions within the scope of this study indicates that these changes will have a minimal impact on the operation of key intersections in the Pyrmont Peninsula, however some key intersections including the Western Distributor interchange at Pyrmont Bridge Road would continue to operate at unsatisfactory levels of delay into the future.

Table 9 – Morning peak modelled intersection Level of Service

Intersection	2017 Base		2033 Do Minimum		2033 PPPS	
	Av Delay	LoS	Av Delay	LoS	Av Delay	LoS
Pyrmont Bridge Rd/Western Distributor	73	F	85	F	84	F
Pyrmont Bridge Rd/Harris St	24	B	42	C	45	D
Fig St/Wattle St	7	A	6	A	6	A
Fig St/Harris St/Western Distributor	44	D	34	C	34	C
William Henry St/Wattle St	35	C	43	D	42	C
William Henry St/Bulwara Rd	7	A	40	C	35	C
William Henry St/Harris St	24	B	32	C	29	C
Harris St/Mary Anne Street	16	B	17	B	17	B
Harris St/Ultimo Rd	7	A	10	A	11	A
Harris St/Thomas St	4	A	8	A	9	A

Table 10 – Evening peak modelled intersection Level of Service

Intersection	2017 Base		2033 Do Minimum		2033 PPPS	
	Av Delay	LoS	Av Delay	LoS	Av Delay	LoS
Pyrmont Bridge Rd/Western Distributor	75	F	131	F	126	F
Pyrmont Bridge Rd/Harris St	37	C	81	F	89	F
Fig St/Wattle St	37	C	17	B	28	B
Fig St/Harris St/Western Distributor	62	E	41	C	43	C
William Henry St/Wattle St	35	C	49	D	49	D
William Henry St/Bulwara Rd	10	A	67	E	63	E
William Henry St/Harris St	32	C	55	D	44	D
Harris St/Mary Anne Street	8	A	13	A	14	A
Harris St/Ultimo Rd	21	B	42	C	43	C
Harris St/Thomas St	3	A	10	A	13	A

3.2. SIDRA intersection modelling

SIDRA intersection modelling of the intersection of Harris Street and Broadway has been undertaken to supplement the operational traffic modelling undertaken using VISSIM.

SIDRA modelling has been based on traffic and pedestrian counts undertaken at this intersection in 2019, prior to the COVID-19 pandemic. Growth in traffic volumes has been sourced from the following models:

- Pyrmont Peninsula Public Transport Project Model (PTPM)
- Pyrmont area VSSIM model

These model sources provide conflicting forecasts for traffic growth along Harris Street. While the PTPM model forecasts 45% growth in traffic volumes southbound along Harris Street, the Pyrmont area VISSIM model forecasts no growth on this approach from 2017 to 2033. In reality, southbound traffic volumes on Harris Street are constrained by upstream intersections at Fig Street, William Henry Street and Ultimo Road, allowing for some growth although likely less than the PTPM forecast would indicate.

In order to provide a conservative estimate of the potential growth in traffic volumes on this corridor, the following growth assumptions have been adopted for the 2033 SIDRA models of the Harris Street and Broadway intersection:

- Harris Street north: 23% growth for the morning and evening peak (average of PTPM and VISSIM growth)
- Broadway east: 28% growth for morning and evening peak (sourced from PTPM)
- Broadway west: 10% growth for morning and evening peak (sourced from PTPM)

A summary of modelled intersection performance under the proposed bus lane arrangement is shown in Table 11, with detailed SIDRA model outputs provided in Attachment C. SIDRA modelling indicates that the intersection of Harris Street and Broadway would operate satisfactorily under the proposed bus lane arrangement, however the reduced capacity on the northern approach would increase delays and queue lengths on Harris Street. Maximum queue lengths would increase by 60m in both peak periods, extending approximately halfway between Thomas Street and Ultimo Road. This indicates that the proposed contra-flow bus lane could be implemented without a significant impact on the surrounding state road network and within minimal queue impacts to the Western Distributor off-ramp at Harris Street.

Table 11 – Intersection performance summary for Harris Street and Broadway

Scenario	Morning Peak		Evening Peak	
	Av Delay	LoS	Av Delay	LoS
2019 Base	25	B	26	B
2033 Do Minimum	26	B	28	B
2033 Pyrmont Peninsula Place Strategy	29	C	39	C

4. Summary and recommendations

Strategic transport modelling and operational traffic modelling of the population and employment uplift associated with the two key sites (The Star and UTS) and the two sites required for the new Pyrmont metro station shows the following:

- The forecast uplift in residential population is broadly consistent with the TPZ19 forecast, however the employment forecasts are lower than the standard forecast by 10 per cent.
- When accounting for the difference in base demand, the car trip generation associated with proposed changes in planning controls are comparable to the VISSIM model for trips generated by residential development in Pyrmont and lower for trips attracted to employment in Pyrmont. This indicates that forecast traffic demand generated by the proposed changes in planning controls would be lower than currently assumed in the 2033 VISSIM model, likely in part due to the inclusion of a new Metro station.
- Modelled public transport mode share indicates that Inner West Light Rail and Sydney Metro West would carry a significant majority of trips into and out of Pyrmont during the morning peak, notably 62 per cent of mechanised mode demand into Pyrmont. When accounting for differences in 2017 base model shares from STM, this is likely to be higher than modelled.
- Forecast patronage on new bus routes through the study area shows that there would be strong demand for the Bays to Green Square route via Pyrmont Metro Station and Harris Street and that implementation of this route should be further pursued as an opportunity. The proposed Five Dock to Pyrmont route would have significantly less demand and should not be further pursued in light of the challenges in accommodating this route through Glebe.
- Subsequent investigations indicate that Glebe Island Bridge is unlikely to be able to accommodate public transport in the future. The Bays to Green Square route would still have significant demand between Pyrmont and Green Square and the Bays to Pyrmont link would still be possible via adjusting the proposed bus route to use Anzac Bridge or Sydney Metro West, indicating that this bus route would provide a significant benefit to the Pyrmont Peninsula if truncated to Pyrmont metro station.

- Operational modelling of the proposed road network changes indicate that these changes would have minimal impact on the performance of the road network across Pyrmont and would not significantly impact the operation of higher order roads such as the Western Distributor while facilitating improved public transport services between Pyrmont and Green Square.
- The introduction of a contra-flow bus lane along Harris Street and Regent Street would increase delays on Harris Street on approach to Broadway, however the intersection would continue to operate satisfactorily and any increase in queues would be contained locally with minimal impact on the higher order roads surrounding the Pyrmont Peninsula.

Overall, transport modelling of the forecast development that would be possible under the proposed changes to planning controls, along with other planned significant development in the Pyrmont Peninsula under existing planning controls, indicates that the performance of the transport network in Pyrmont by 2036 would be broadly consistent with previous analysis undertaken by Transport for NSW.

Key transport opportunities that have been validated as part of this modelling that would support increased population and employment across the Pyrmont Peninsula (subject to Council's Stage 2(b) implementation work) include:

- Sydney Metro West station at Pyrmont
- Increased frequency of the Inner West Light Rail to 12 services per hour
- A new bus route from Bays metro station to Green Square Station via Harris Street and Regent Street with a frequency of at least 6 services per hour
- Bus priority infrastructure to support the proposed bus route including a public transport connection at the current location of Glebe Island Bridge and a contra-flow bus lane on Harris Street and Regent Street between Thomas Street and Lee Street
- A cycle lane along Jones Street Between Broadway and Wentworth Park light rail stop.

The majority of these proposals are not funded or committed for delivery; however, they would support growth in population and employment, maintaining existing high public and active transport use and minimise the need for car travel allowing the future transport network to perform satisfactorily under the proposed land use changes. Consequently, these opportunities could be be further developed and implemented to manage the impacts of the proposed land use changes on the transport network surrounding Pyrmont.

Critically, the construction of a metro station at Pyrmont would substantially increase both the size of the 30-minute catchment of Pyrmont to include other major centres including Parramatta Olympic Park and Chatswood while also increasing the proportion of travel to and from Pyrmont that occurs within the 30-

minute catchment. This is in line with the goals of *Future Transport 2056*, and supports the concept of the 30-minute city for the Eastern City and would minimise the need for new workers to drive to Pyrmont.

Yours sincerely

Director – VIAE Consulting Pty Ltd

Thomas Watt
3 November 2021

Attachment A – Assumed bus routes

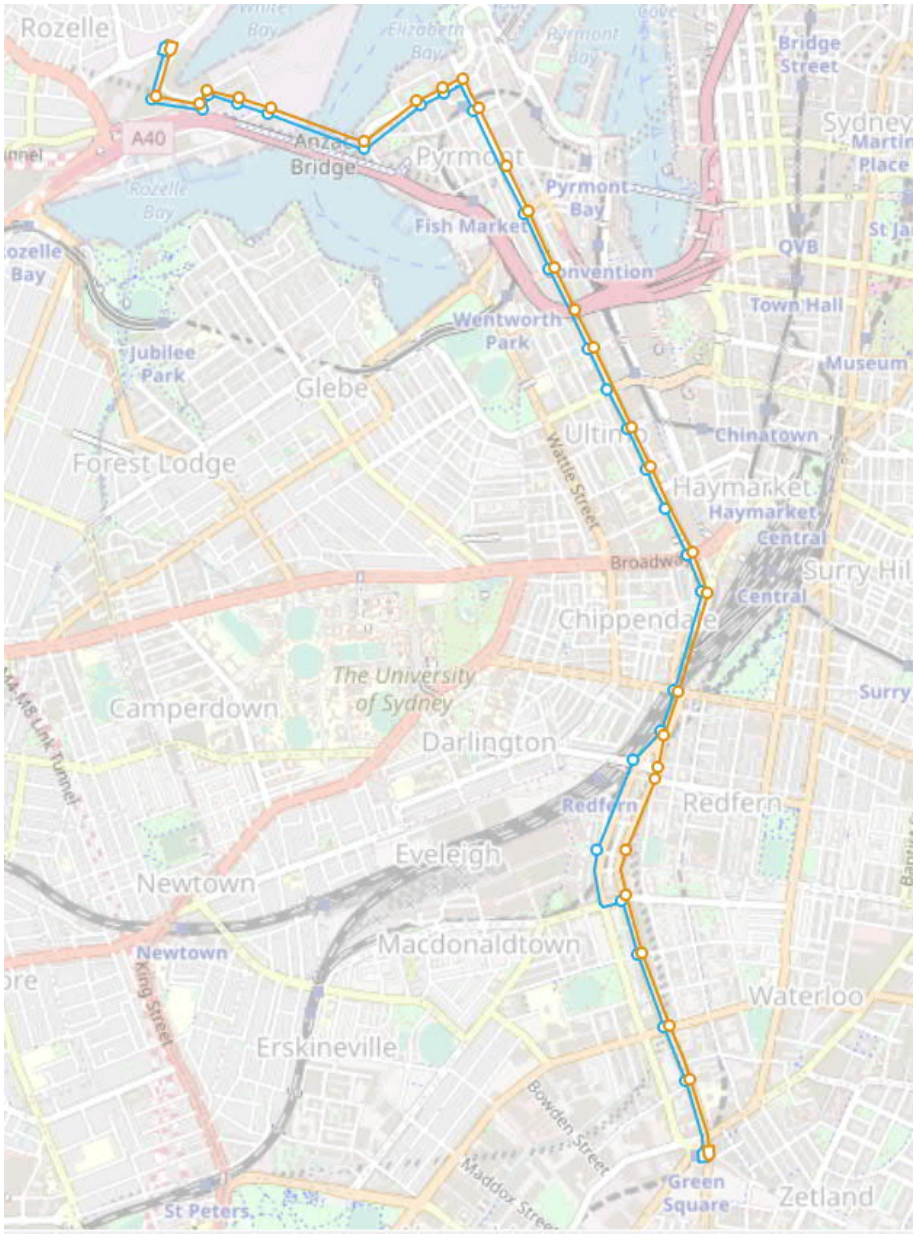


Figure 6 – Bays to Green Square proposed bus route

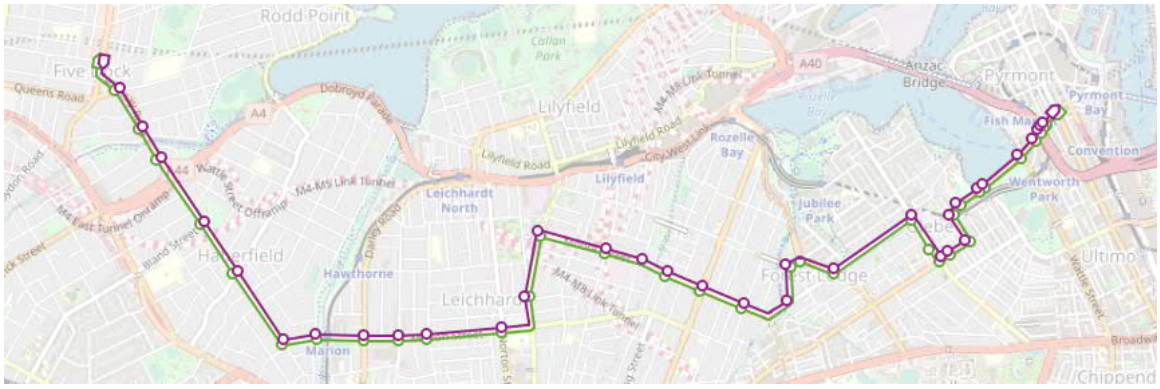


Figure 7 – Five Dock to Pyrmont proposed bus route

Attachment B – Forecast public transport line loads

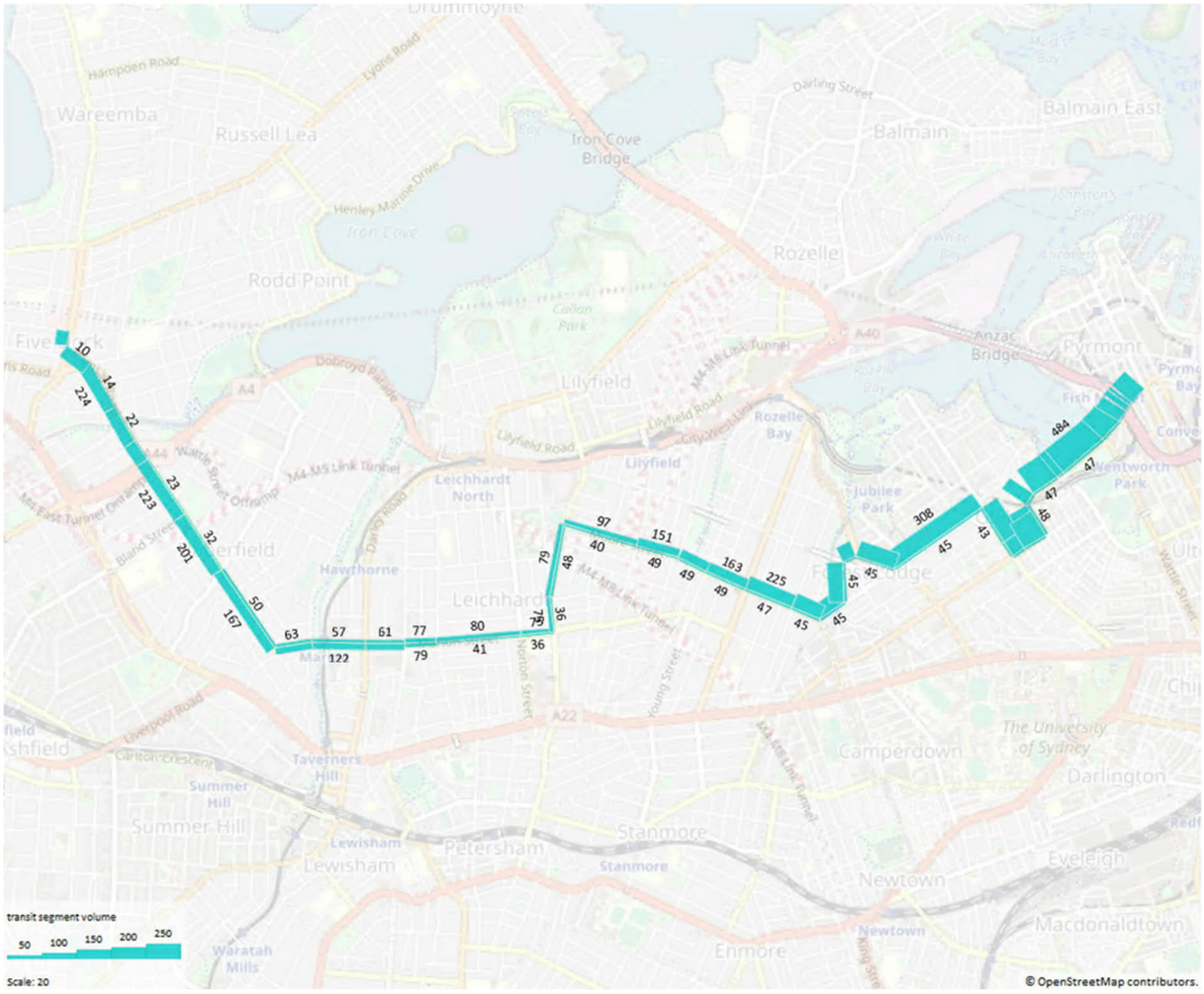


Figure 8 – Five Dock to Pyrmont bus patronage (passengers over 3.5 hours)

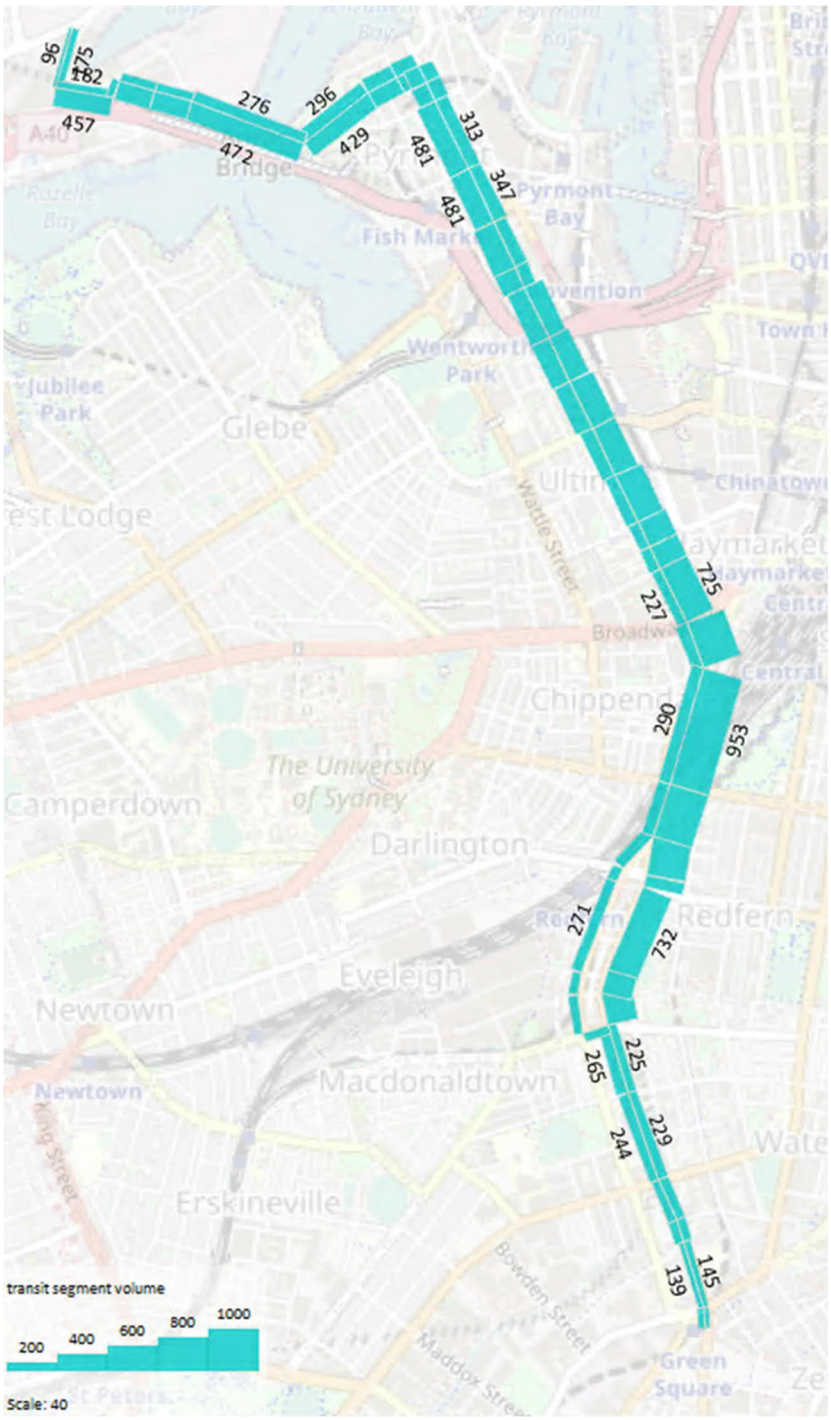


Figure 9 – Bays to Green Square bus patronage (passengers over 3.5 hours)

Attachment C – SIDRA Intersection outputs