CITY OF HOBART

AGENDA

City Infrastructure Committee Meeting

Open Portion

Wednesday, 28 April 2021

at 5:15 pm
via Zoom

THE MISSION

Working together to make Hobart a better place for the community.

THE VALUES

The Council is:

People	We care about people – our community, our customers and colleagues.
Teamwork	We collaborate both within the organisation and with external stakeholders drawing on skills and expertise for the benefit of our community.
Focus and Direction	We have clear goals and plans to achieve sustainable social, environmental and economic outcomes for the Hobart community.
Creativity and Innovation	We embrace new approaches and continuously improve to achieve better outcomes for our community.
Accountability	We are transparent, work to high ethical and professional standards and are accountable for delivering outcomes for our community.

ORDER OF BUSINESS

Business listed on the agenda is to be conducted in the order in which it is set out, unless the committee by simple majority determines otherwise.

APOLOGIES AND LEAVE OF ABSENCE

City Infrastructure Committee Meeting (Open Portion) held Wednesday, 28 April 2021 at 5:15 pm.

This meeting of the City Infrastructure Committee is held in accordance with a Notice issued by the Premier on 3 April 2020 under section 18 of the *COVID-19 Disease Emergency (Miscellaneous Provisions) Act 2020*.

COMMITTEE MEMBERS
Harvey (Chairman)
Lord Mayor Reynolds
Deputy Lord Mayor Burnet
Behrakis
Ewin

Apologies:

Leave of Absence: Nil.

NON-MEMBERS
Zucco
Briscoe
Sexton
Thomas
Dutta
Sherlock
Coats

1. CO-OPTION OF A COMMITTEE MEMBER IN THE EVENT OF A VACANCY

2. CONFIRMATION OF MINUTES

The minutes of the Open Portion of the City Infrastructure Committee meeting held on Wednesday, 24 March 2021, are submitted for confirming as an accurate record.

3. CONSIDERATION OF SUPPLEMENTARY ITEMS

Ref: Part 2, Regulation 8(6) of the *Local Government (Meeting Procedures) Regulations 2015*.

Recommendation

That the Committee resolve to deal with any supplementary items not appearing on the agenda, as reported by the Acting General Manager.

4. INDICATIONS OF PECUNIARY AND CONFLICTS OF INTEREST

Ref: Part 2, Regulation 8(7) of the *Local Government (Meeting Procedures) Regulations 2015*.

Members of the Committee are requested to indicate where they may have any pecuniary or conflict of interest in respect to any matter appearing on the agenda, or any supplementary item to the agenda, which the Committee has resolved to deal with.

5. TRANSFER OF AGENDA ITEMS

Regulation 15 of the *Local Government (Meeting Procedures) Regulations 2015*.

A Committee may close a part of a meeting to the public where a matter to be discussed falls within 15(2) of the above regulations.

In the event that the Committee transfer an item to the closed portion, the reasons for doing so should be stated.

Are there any items which should be transferred from this agenda to the closed portion of the agenda, or from the closed to the open portion of the agenda?

6. REPORTS

6.1 Hobart Transport Strategy 2030 Implementation Framework File Ref: F21/31967

Report of the Manager City Mobility and the Director City Planning of 23 April 2021 and attachment.

Delegation: Committee

REPORT TITLE: **HOBART TRANSPORT STRATEGY 2030 IMPLEMENTATION FRAMEWORK**

REPORT PROVIDED BY: Manager City Mobility
Director City Planning

1. Report Purpose and Community Benefit

1.1. This Hobart Transport Strategy 2030 Implementation Framework (HTSIF):

(i) builds upon a legacy of investments in mobility within and surrounding Hobart

(ii) responds to the Hobart City Deal planning and investments

(iii) positions the City of Hobart for an increase in sustainable travel patterns in accordance with the Hobart Transport Strategy 2030

1.2. This HTSIF is presented to the committee in response to the Minutes of the City of Hobart Council meeting 8 October 2018, in relation to File Reference F18/92490 Item 14. Motion Item Part 3:

'The actions contained in the draft strategy be reviewed in light of the feedback received and a further report be provided.'

1.3. City of Hobart's City Mobility business is comprised of:

(i) Safe management of the road network in accordance with Section 30 of the *Local Government (Highways) Act* (1982) by exercise of select powers from the Tasmanian Commissioner for Transport including:

(a) Kerbside parking time limits and management

(b) Linemarking

(c) Signage

(ii) Medium (10 years) to long term (20 years) strategic transport planning for:

(a) Pedestrian network

(b) Cycling and micromobility network

(c) Local road network including function, character and kerbside allocations (street parking, commercial loading zones)

(d) Integration with Tasmanian Government managed transport systems such as public transport, State highways and arterial roads and intelligent transport systems

1.4. This report responds to the request of the Council (F18/92490 8 October 2018) to review the actions proposed.

1.5. A review was undertaken by the City of Hobart City Planning Division led by the City Mobility Unit. It is proposed that:

(i) HTSIF should be presented in ways in which the community and businesses can readily understand the activities of the City of Hobart Council in its planning and management of transport systems in the city.

2. Report Summary

2.1. HTSIF (Draft 21 April 2021) is included in this report at **Attachment A.** The Framework includes 2 key arrangements as follows:

(i) 5 new Hobart Transport Zones are proposed to provide a policy structure to the land use and transport interface in the city:

a. HTZ1 Hobart Destinations: Zone 1 identifies the key national and/or state significant destination locations within the Hobart Local Government Area. These locations require tailored transport access and parking solutions which take account of the tourism and events economy.

b. HTZ2 Hobart Communities: Zone 2 identifies Hobart's Local Area Mobility Catchments, where residential amenity is a priority.

c. HTZ3 Hobart Local Retail Precincts: Zone 3 identifies Hobart's Local Retail Precincts and surrounding pedestrian catchment.

d. HTZ4 Hobart Regional Connectors: Zone 4 identifies the main strategic arterials roads which service the region.

e. HTZ5 Hobart Multi-function Corridors: Zone 5 identifies Hobart's local arterial network where local movements for a range of different modes will be balanced within the available local government road network.

The new transport zones will provide a geographical basis for the land use planning and integration of development with the transport network. As the City of Hobart is the land use authority within the local government area, the definition of transport zones within the city will inform transport network design and performance to complement the land use vision for the city; and

(ii) 4 new Implementation Platforms (Stratagems for the planning and management of assets) to provide both direction and desired environmental outcomes for Council's City Mobility and wider business, and for the successful operations of the transport network in support of Hobart's community and economy.

The four new Implementation Platforms are outcomes based including:

a. Informed Trips

b. City Deal Alignment

c. Great Streets

d. Connected Communities

2.2. As per 1.5 (i) of this report, the City Mobility, with support from a range of internal and external consultants and stakeholders has developed this Implementation Framework (HTSIF).

2.3. This HTSIF provides for a Framework where the City's decisions around land use and transport integration and management of public assets, have high legibility, and provides for long term outcomes in current activities and projects.

2.4. The HTSIF Draft (21 April 2021) has been prepared in response to City of Hobart Council meeting 8 October 2018, in relation to File Reference F18/92490 Item 14. Motion Item Part 3 information and for select stakeholder consultation.

3. Recommendation

That:

1. That the report be received and noted for information.

2. That the Committee notes the intention to undertake select stakeholder consultation on the Draft Hobart Transport Strategy Implementation Framework before formal consideration of its adoption.

4. Background

4.1. In 2015, City of Hobart embarked upon a major strategic transport planning study. The process was initiated via broad community and stakeholder consultation. The consultation resulted in the *Hobart Transport Strategy 2018-2030 Engagement Report* and the *Hobart Transport Strategy Draft (Sept 2018)* which were received and noted at:

- City Infrastructure Committee (19 Sept 2019); and
- City of Hobart Council meeting (8 October 2018).

4.2. At the Council meeting on 8 October 2018, the City of Hobart Council resolved as follows:

14. Draft Transport Strategy - Engagement Report
File Ref: F18/92490

Ref: Open CIC 6.1, 19/09/2018

That 1. The report of the Manager Traffic Engineering and the Director City Infrastructure titled *Draft Transport Strategy - Engagement Report* marked as item 6.1 of the Open City Infrastructure Committee agenda of 19 September 2018 be received and noted.

2. The Council adopt the 9 themes and position statements in the draft strategy.

3. The actions contained in the draft strategy be reviewed in light of the feedback received and a further report be provided.

Figure 1 *City of Hobart Council Minutes 8 October 2018 resolution*

4.2. As shown in Figure 1, the Council approved the Themes and Position Statements included in the accompanying City of Hobart Transport Strategy Draft (Attachment C of the City of Hobart City Infrastructure Committee Agenda 19 September 2018).

4.3 In addition, the Council resolved that the Actions proposed in the *City of Hobart Transport Strategy Draft* included in the Agenda papers, be reviewed in light of feedback received.

4.4 The feedback received included:

i. Review of all actions for alignment with Council's Vision and strategies

4.5 Further to the direction of Council on 8 October 2018, the Hobart City Deal was declared on 24 February 2019. HTSIF also responds to this major context change.

5. Proposal and Implementation

5.1. The HTSIF (Draft 21 April 2021 at Attachment A) is a Framework to describe Council's proposed platforms for Implementation.

5.2. HTSIF is aimed at:

i. Complementary and parallel transport planning and delivery processes and outcomes with the Hobart City Deal

ii. Spatial definition of city amenity outcomes in terms of the proposed Hobart Transport Zones (HTZ)

5.3. 4 Implementation Platforms have been included to group actions on the basis of outcomes, including:

5.3.1. Informed trips

5.3.2. City Deal alignment

5.3.3. Great Streets

5.3.4. Connected Communities

5.4. The Implementation Platforms will perform 2 functions:

i. Outcomes based business planning for City of Hobart across its programs; and

ii. Clear messaging for the community and other stakeholders

6. Strategic Planning and Policy Considerations

The City of Hobart Council has developed and delivered a planning and policy context for this *Hobart Transport Strategy 2030 Implementation Framework* including:

Vision

Hobart: *A community vision for our island capital* (30 August 2019)

https://www.hobartcity.com.au/Council/Strategies-and-plans/Hobart-A-community-vision-for-our-island-capital?BestBetMatch=vision|d13b95b2-5146-4b00-9e3e-a80c73739a64|4f05f368-ecaa-4a93-b749-7ad6c4867c1f|en-AU

10 Year Strategic Plan

City of Hobart Capital City Strategic Plan 2019-2029

https://www.hobartcity.com.au/Council/Strategies-and-plans/Capital-city-strategic-plan-2019-2029

Annual Plan

City of Hobart Annual Plan 2020-21

https://www.hobartcity.com.au/files/content/public/council/strategies-and-plans/annual-plan/city-of-hobart-annual-plan-2020-21_final.pdf

Transport Strategy

City of Hobart Transport Strategy Themes

https://www.hobartcity.com.au/files/content/public/council/strategies-and-plans/city-of-hobart-transport-strategy-2018-30/transport-strategy-themes-doc.pdf

The themes as adopted by Council (October 2018) have been considered and the four Implementation Plans have been designed to as follows:

i. To respond to Council's Strategic Plan

ii. To include only actions for which the City of Hobart is responsible

6.1. In order to meet the desired outcomes for these vision and planning documents, the City of Hobart has developed this Hobart Transport Strategy Implementation Framework which is a response to a number of Council's strategic objectives:

Strategic Plan Section	Strategic Plan Outcome
5.1	An accessible and connected city environment helps maintain Hobart's pace of life.
5.2	Hobart has effective and environmentally sustainable transport systems.
5.3	Technology serves Hobart communities and visitors and enhances quality of life.
5.4	Data informs decision-making.

7. Financial Implications

7.1. Funding Source and Impact on Current Year Operating Result

7.1.1. Nil for Financial Year 2021-2022.

7.1.2. Individual actions will be developed as Projects, based on this Implementation Framework.

Projects will be considered on a case by case basis, and approved by the Council in accordance with Council's project planning, budgetary and delivery processes.

8. Legal, Risk and Legislative Considerations

8.1. City of Hobart's transport planning, asset and services business is required to prepare a long term strategic plan in accordance with the *Tasmanian Local Government Act Part 7 Administration Division 2 – Plans and report.*

8.2. In accordance with *City of Hobart's Capital City Strategic Plan 2019-2029* Extract Page 12, the Hobart Transport Strategy is an 'Informing Strategy' as part of Council's planning and reporting requirements outlined at *Tasmanian Local Government Act Part 7 Administration Division 2 – Plans and report 70B Long-term strategic asset management plans.*

8.3. A key risk for the acceptance of the Implementation Framework is its alignment and integration with strategies and investment by other transport agencies.

8.4. This report recommends to undertake select stakeholder consultation to eliminate or inform decisions around identified risks.

9. Environmental Considerations

9.1. The City of Hobart Council declared a climate change emergency on 17 June 2019.

9.2. The need for reductions in greenhouse gas emissions from the transport sector is becoming increasingly important as public policy plays catch up with scientific knowledge.

9.3. HTSIF is focussed on:

9.3.1. Providing the facilities to encourage further active transport take up i.e. an aspirational target of 35% Mode share to active travel (walking and cycling) for Journey to Work Trips by 2030 for the Hobart Local Government Area.

10. Social and Customer Considerations

10.1. HTSIF is required to meet the requirements described in Section 6.0 of this report.

11. Marketing and Media

11.1. No media nor marketing is proposed at this stage.

12. Community and Stakeholder Engagement

12.1. This report requests that the City of Hobart City Infrastructure Committee receive and note the Hobart Transport Strategy 2030 Implementation Framework and to approve the report for Select Stakeholder consultation.

12.2. Proposed stakeholders include:

12.2.1. Tasmanian Government

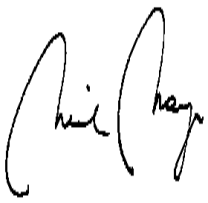
12.2.2. Public Transport operators

12.2.3. Peak industry associations

13. Delegation

13.1. That as a duly constituted committee of the City of Hobart, the City Infrastructure Committee notes the intention to undertake select stakeholder consultation on the Draft *Hobart Transport Strategy 2030 Implementation Framework (Draft 21 April 2021)*.

As signatory to this report, I certify that, pursuant to Section 55(1) of the Local Government Act 1993, I hold no interest, as referred to in Section 49 of the Local Government Act 1993, in matters contained in this report.

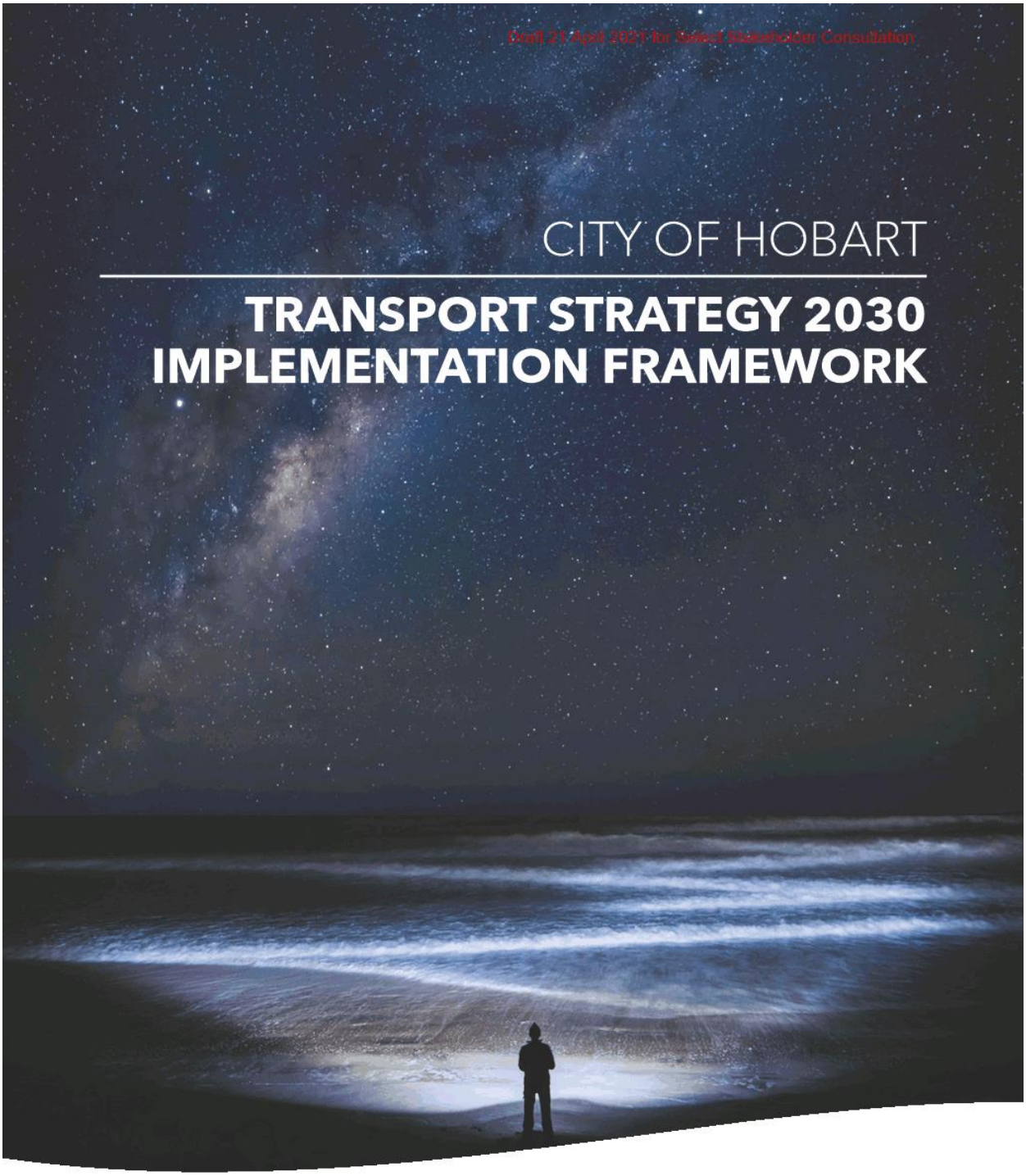


Louisa Carter
MANAGER CITY MOBILITY

Neil Noye
DIRECTOR CITY PLANNING

Date: 23 April 2021
File Reference: F21/31967

Attachment A: HTSIF - Draft for Select Stakeholder Consultation ⇩



SUSTAINABLE HOBART

City of HOBART

VISION STATEMENT

Hobart *breathes*.

Connections between nature, history, culture, businesses and each other are the heart of our city.

We are brave and caring.

We resist mediocrity and sameness.

As we grow, we remember what makes this place special.

We walk in the fresh air between all the best things in life.

ACKNOWLEDGEMENT OF COUNTRY

The City of Hobart acknowledges the palawa people as the traditional and ongoing Custodians of lutruwita (Tasmania). The City of Hobart pays its respects to the Elders past, present and future, as we work towards the community's vision for future Hobart.

CONTENTS

MOVING FORWARD TOGETHER


Draft 21 April 2021 for Select Stakeholder Consultation

LORD MAYOR'S MESSAGE

On behalf of the Council, I am pleased to present the City of Hobart ...

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Draft 21 April 2021 for Select Stakeholder Consultation

HOBART TRANSPORT STRATEGY 2030

MOVING FORWARD TOGETHER

TRANSPORT STRATEGY 2030 THEMES

On 8 October 2018, the City of Hobart Council endorsed the following themes and position statement as the Hobart Transport Strategy 2030:

THEME 1
Making Decisions based on Up-to-date, relevant data

THEME 2
Integrating Transport and Land use planning to deliver the best economic, social and environmental outcomes

THEME 3
Recognising walking as the most fundamental mode of transport

THEME 4
Supporting more people to ride bicycles

THEME 5
Increase participation in great public transport and reducing congestion in the city

THEME 6
Smart Parking for Residents, Visitors and Businesses

THEME 7
Freight by Road, Port and Air

THEME 8
Managing our transport network

THEME 9
Developing Partnerships with Stakeholders

To achieve these themes, the following Implementation Platforms have been designed:

PLATFORM 1: INFORMED TRIPS
- Real time information
- Intelligent transport systems
- Knowledge networks

PLATFORM 1

PLATFORM 2: CITY DEAL ALIGNMENT
- Shared governance
- Mobility choices
- Cluster economies
- New funding streams for a growing city

PLATFORM 2

PLATFORM 3: GREAT STREETS
- Network efficiency
- Integrated investments
- Customer experience
- City enterprise (Mobility as a service)

PLATFORM 3

PLATFORM 4: CONNECTED COMMUNITIES
- Community connectedness
- Local Area Mobility Plans
- Mobility Markets

PLATFORM 4

Figure 1 Hobart Transport Strategy Implementation Structure

In implementing the Transport Strategy 2030, Council will rely upon the processes outlined in its Community Engagement Framework.

ABOUT THIS FRAMEWORK

The focus areas and all individual actions are guided by the "pillars" of *Hobart: A Community Vision for Our Island Capital and the Capital City Strategic Plan 2019–29*, which together guide the City of Hobart's work.

Pillar 1: Sense of place
Pillar 2: Community inclusion, participation and belonging
Pillar 3: Creativity and culture
Pillar 4: City economies
Pillar 5: Movement and connectivity
Pillar 6: Natural environment
Pillar 7: Built environment
Pillar 8: Governance and civic involvement

These eight pillars were chosen as part of a large body of strategic work, by a representative community panel.

We are deeply grateful to the members of the Hobart community who gave so much of their time to take part in debating, writing and creating a strategic vision for our city.

This *Hobart Transport Strategy 2030 Implementation Framework* complements the City's other key strategies and action plans, which together seek to deliver sustainable and smart outcomes.

On 8 October 2018, the City of Hobart Council adopted 9 Themes and accompanying Position Statements as the Hobart Transport Strategy 2030.

The City Deal represents a major context change since 2018, and this Hobart Transport Strategy 2030 Implementation Framework supports the key initiatives in transport investment. The Hobart City Deal proposes to offer an increased choice of trips types to travellers within Greater Hobart, with a core focus on public transport.

THIS PLAN CONTAINS FOUR IMPLEMENTATION PLATFORMS INCLUDING:

PLATFORM 1

PLATFORM 1: INFORMED TRIPS

Initiatives to provide people with real time information on trip related options and timing.

PLATFORM 2

PLATFORM 2: CITY DEAL ALIGNMENT

Intergovernmental and shared development of the Greater Hobart Transport Vision, and delivery of integrated investments within the City of Hobart Local Government Area.

PLATFORM 3

PLATFORM 3: GREAT STREETS

Great Streets are places people want to be and where the economy thrives. Platform 3 includes initiatives to move around the city in more sustainable ways, and to provide for major transport movements including new transit corridors.

PLATFORM 4

PLATFORM 4: CONNECTED COMMUNITIES

Hobart's communities operate as part of a regional network of communities which are attractive, creative and diverse. With a local focus, Hobart will be better prepared for the changes in the economy, culture and climate. This Hobart Transport Strategy 2030 Implementation Framework is focused on investment in local trips and sustainable travel which will deliver the maximum lifestyle benefits to residents of Hobart and its' visitors.

Figure 3 Overview of Hobart Transport Strategy 2030 Implementation Platforms

EXECUTIVE SUMMARY

HOBART IS GROWING AND IT IS CHANGING.

A key advantage of the growth anticipated to 2030 is the potential for the city to develop to maximise the resilience and liveability of this unique city. This will mean managing and directing growth rather than absorbing it.

The transport system in Hobart has to date been reliant on private vehicle trips and the associated investment in road space and carparking.

Now, for the city to grow in a resilient way, the transport investments will need to focus on those mobility choices which help the city to diversify travel options. This Hobart Transport Strategy Implementation Framework provides for a co-ordinated suite of opportunities within the governance remit of the City of Hobart.

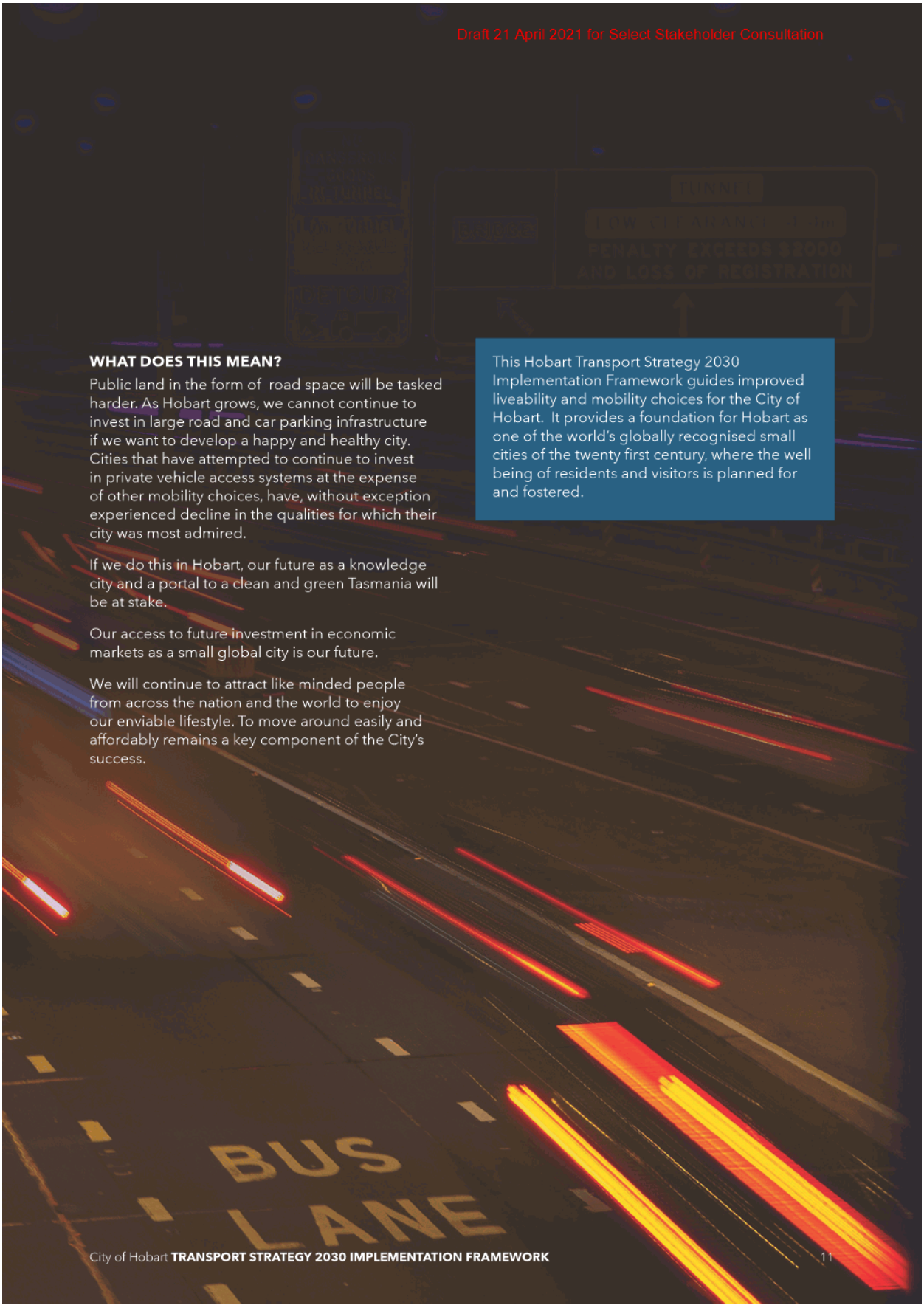
The Central Business District itself is an administration, health, education and tourism hub. The city will also grow into its role as an attractive capital city where opportunities in the arts, research, science, agri-technologies and allied health are enabled. All these parts of the economy have diverse needs. when it comes to the form of travel, the time trips are taken and the number of people moving around.

The Hobart Vision is an important moment in the city's planning. As a large engagement exercise, the community of Hobart sought investments in public transport and active travel. This was the resounding feedback.

In this Hobart Transport Strategy 2030 Implementation Framework, City of Hobart has planned for and delivered a range of policies and projects promoting these mobility choices for:

- Walking
- Cycling and new technologies
- Public transport
- Local access and parking
- Support of the city's economy in terms of tourism and events

Investment in intelligent transport systems around travel behaviour and information for regional movements will be guided by the Hobart City Deal and the Tasmanian Government.



WHAT DOES THIS MEAN?

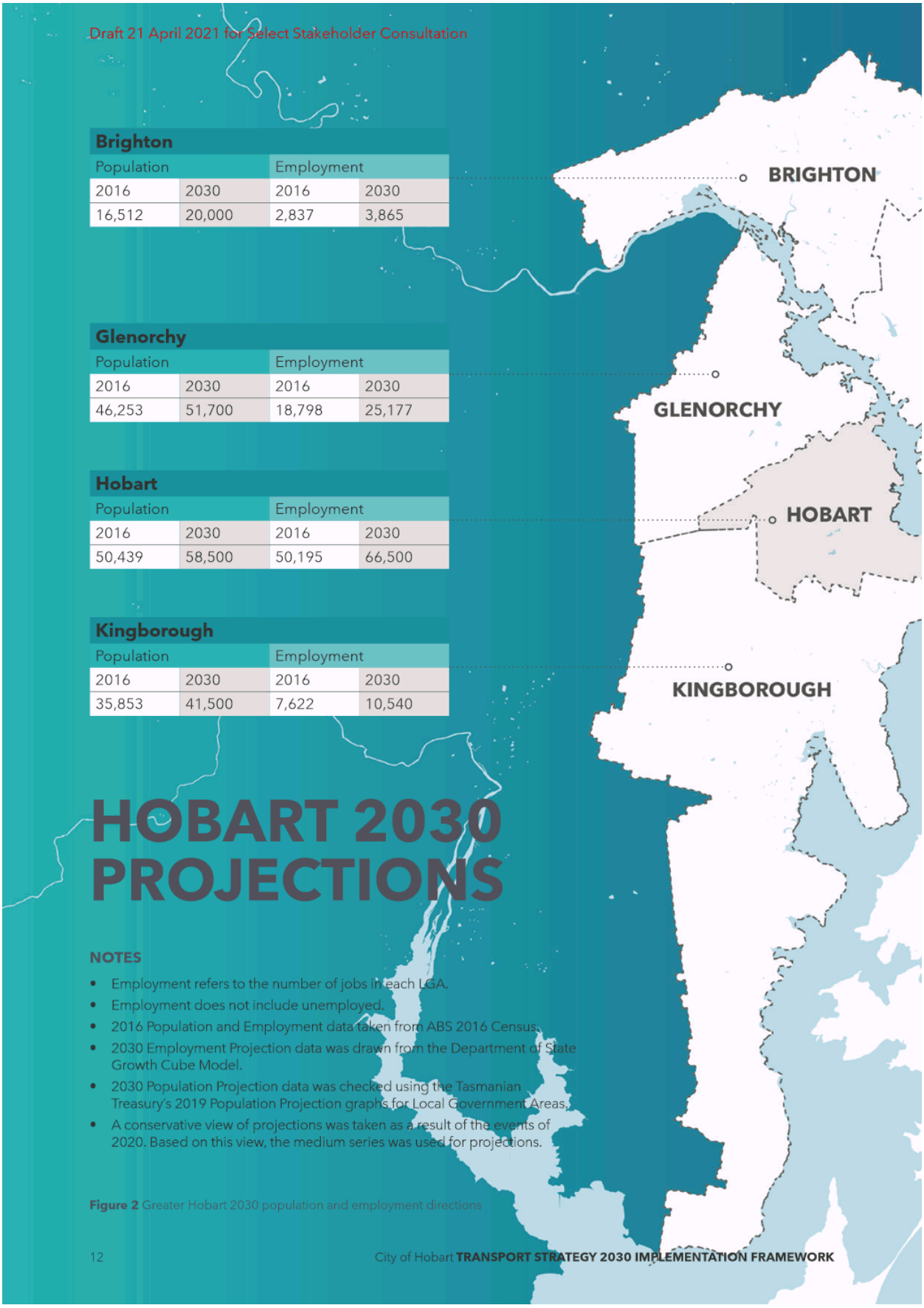
Public land in the form of road space will be tasked harder. As Hobart grows, we cannot continue to invest in large road and car parking infrastructure if we want to develop a happy and healthy city. Cities that have attempted to continue to invest in private vehicle access systems at the expense of other mobility choices, have, without exception experienced decline in the qualities for which their city was most admired.

If we do this in Hobart, our future as a knowledge city and a portal to a clean and green Tasmania will be at stake.

Our access to future investment in economic markets as a small global city is our future.

We will continue to attract like minded people from across the nation and the world to enjoy our enviable lifestyle. To move around easily and affordably remains a key component of the City's success.

This Hobart Transport Strategy 2030 Implementation Framework guides improved liveability and mobility choices for the City of Hobart. It provides a foundation for Hobart as one of the world's globally recognised small cities of the twenty first century, where the well being of residents and visitors is planned for and fostered.



Brighton

Population		Employment	
2016	2030	2016	2030
16,512	20,000	2,837	3,865

Glenorchy

Population		Employment	
2016	2030	2016	2030
46,253	51,700	18,798	25,177

Hobart

Population		Employment	
2016	2030	2016	2030
50,439	58,500	50,195	66,500

Kingborough

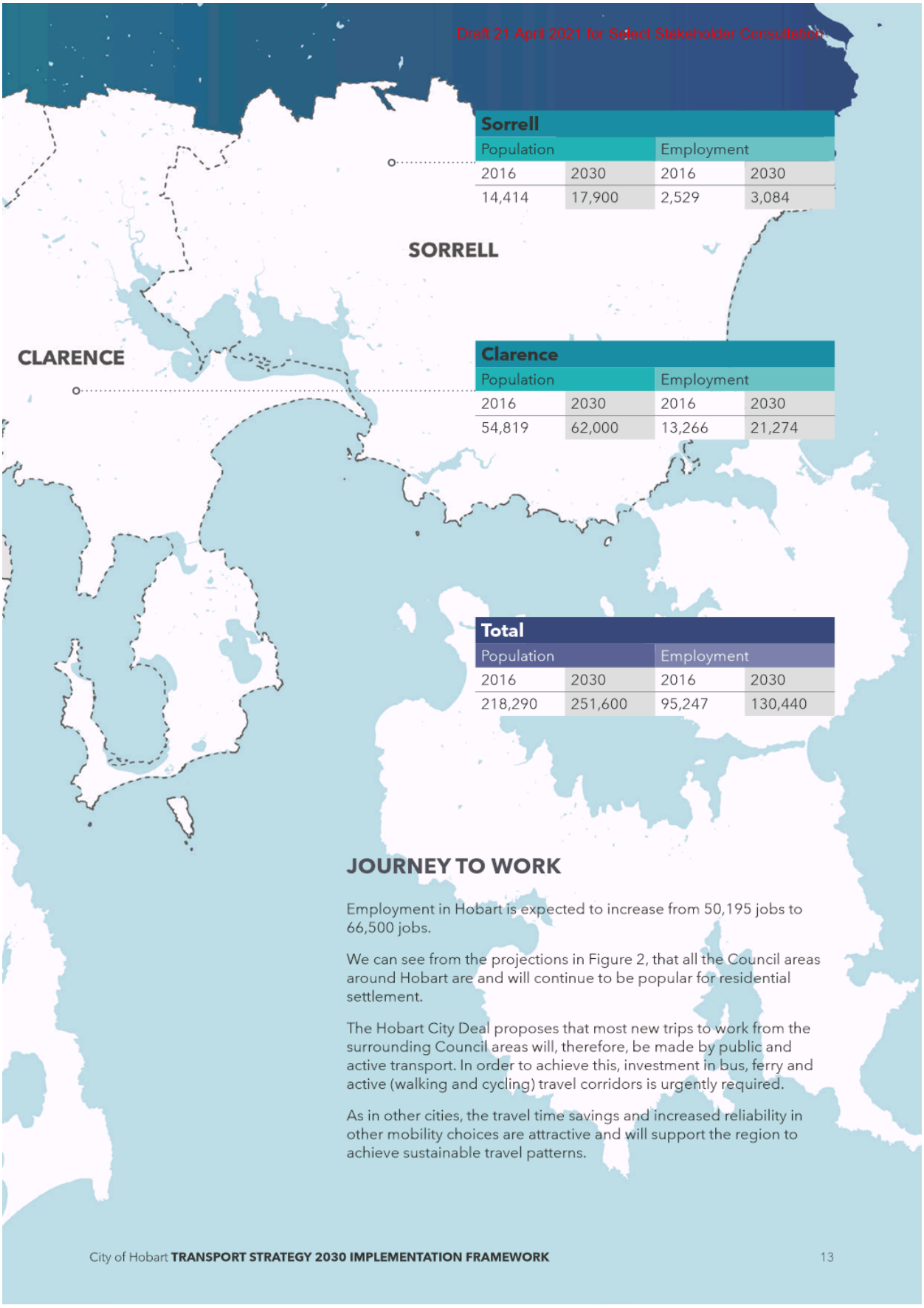
Population		Employment	
2016	2030	2016	2030
35,853	41,500	7,622	10,540

HOBART 2030 PROJECTIONS

NOTES

- Employment refers to the number of jobs in each LGA.
- Employment does not include unemployed.
- 2016 Population and Employment data taken from ABS 2016 Census.
- 2030 Employment Projection data was drawn from the Department of State Growth Cube Model.
- 2030 Population Projection data was checked using the Tasmanian Treasury's 2019 Population Projection graphs for Local Government Areas.
- A conservative view of projections was taken as a result of the events of 2020. Based on this view, the medium series was used for projections.

Figure 2 Greater Hobart 2030 population and employment directions



Sorrell			
Population		Employment	
2016	2030	2016	2030
14,414	17,900	2,529	3,084

Clarence			
Population		Employment	
2016	2030	2016	2030
54,819	62,000	13,266	21,274

Total			
Population		Employment	
2016	2030	2016	2030
218,290	251,600	95,247	130,440

JOURNEY TO WORK

Employment in Hobart is expected to increase from 50,195 jobs to 66,500 jobs.

We can see from the projections in Figure 2, that all the Council areas around Hobart are and will continue to be popular for residential settlement.

The Hobart City Deal proposes that most new trips to work from the surrounding Council areas will, therefore, be made by public and active transport. In order to achieve this, investment in bus, ferry and active (walking and cycling) travel corridors is urgently required.

As in other cities, the travel time savings and increased reliability in other mobility choices are attractive and will support the region to achieve sustainable travel patterns.

PLANNING FOR THE FUTURE

We inherited a great city from those who came before us.

Now it's our turn and we have to step up.

The Hobart City Deal has been adopted by the Greater Hobart Councils and the Tasmanian Government, and in relation to transport policy and investment, the Hobart City Deal has committed to the following:

- That an increasing proportion of regional trips from surrounding areas into Hobart Local Government Area will be made by public transport (bus/high occupancy vehicle and ferry).
- City of Hobart intends to support this initiative by providing for policies and actions which balance the competing demands of different transport options within the public land available for local road use, particularly from adjoining Council areas.
- With 25% of Journey to Work trips for Hobart residents made via walking or cycling (2016), City of Hobart proposes to significantly enhance active travel facilities and priority within the city. As shown in Figure 4 Hobart operational transport emissions 2030, we also need to encourage public transport providers to migrate bus fleets to electric vehicles, and for more people to catch those buses.

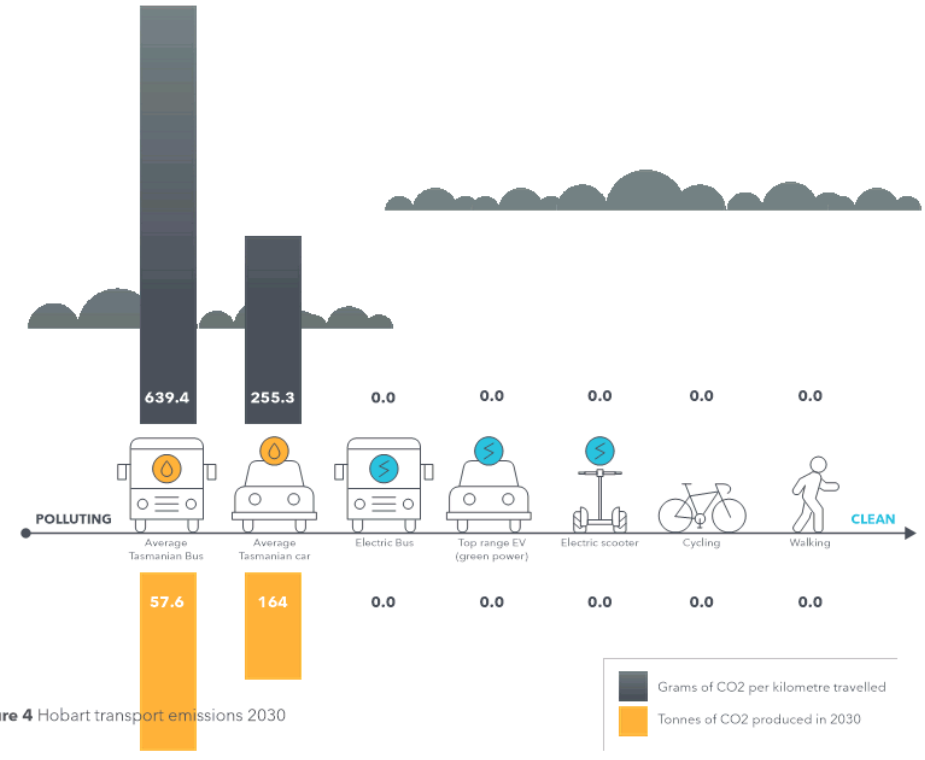


Figure 4 Hobart transport emissions 2030

POLICY CONTEXT

City of Hobart Transport Strategy 2018-2030 Engagement	2016-2018
Tasmanian Government Hobart Transport Vision	January 2018
A Community Vision for Our Island Capital	July 2018
9 Themes and associated Position Statements adopted by Council	8 October 2018
Healthy Tasmania Community Forum	August 2019
Hobart City Deal and other context changes	2019-2020
Hobart Transport Strategy 2030 Implementation Platforms	2021-2030

The context of the Hobart Transport Strategy 2030 Implementation Framework is review and reform of the Hobart transport system in alignment with other parallel planning processes:

TRANSPORT SYSTEM TRANSFORMATION

HOBART CITY DEAL

Southern Metropolitan Plan for Greater Hobart

Major Land Use Projects Integration
- Central Hobart Precincts Plan
- Kingston Redevelopment Plan
- Greater Glenorchy Plan

Transport Vision
- Clarence City Council City Heart Project
- UTAS Masterplan
- Royal Hobart Hospital Masterplan

Southern Tasmania Regional Land Use Strategy Review
- Greater Hobart Transport Vision
- Greater Hobart Public Transport Corridor and Network Planning Review
- **Hobart Transport Strategy 2030** (Oct 2018)
- **Hobart Transport Strategy 2030 Implementation Framework** integrated into *Hobart Long Term Infrastructure Plan update*
- Hobart Local Schedule Provisions

Figure 5 Project policy context

PROJECT DELIVERY CONTEXT

HOBART CITY DEAL

Hobart City Deal initiatives and transport investments

City of Hobart local policies and investments
- Central Hobart Precincts Plan
- Local Area Mobility Plans
- Connected Hobart

PROJECT DELIVERY
Council will identify policies and investments to support community well being via sustainable transport planning.

FROM COUNTRY TOWN TO LIVEABLE CITY
Council will collaborate with the community and other stakeholders to manage the transformation of Hobart's transport system to balance regional movements with city amenity.

Figure 6 Project delivery context

Draft 21 April 2021 for Select Stakeholder Consultation

GUIDE TO THE FRAMEWORK

Hobart is a renowned heritage city constrained by the hills and the river. The city needs a bespoke solution for its transport system that is suitable to protect and enhance these values.

Five new Hobart Transport Zones are proposed to inform the the planning and management of the land use and transport systems. Road space allocation will be evaluated on the basis of efficient use of road space. For example, a public transport corridor can move 1800 persons per hour per road space lane, compared with only 600-700 persons per lane in private vehicles.

More efficient use of road space will provide suitable freight access to and through the city in support of the economy of the entire region.

The Hobart Transport Strategy 2030 Implementation Framework is based on balancing the amenity of Hobart Communities with regional transport connections. In order to achieve this, decisions around utilisation of available road space will be made in accordance with Figure 7.

HOBART TRANSPORT ZONES

This Hobart Transport Strategy 2030 Implementation Framework includes the following policy settings:

- Proposal for new Hobart Transport Zones (HTZ) which will define the function of road space within the local government area.
- Review demand for car parking in key destinations and pricing of supply accordingly
- Review of planning scheme parking rates

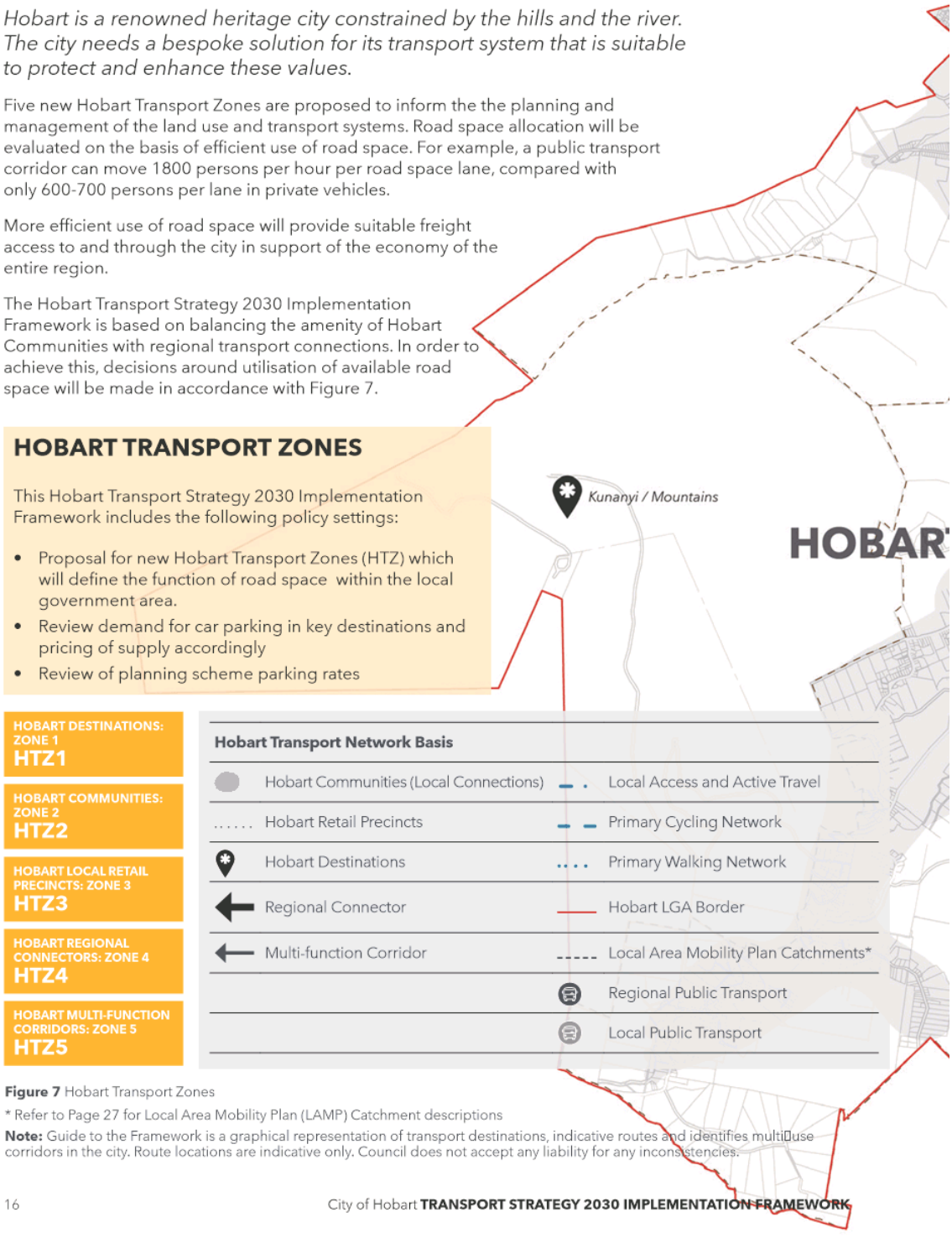
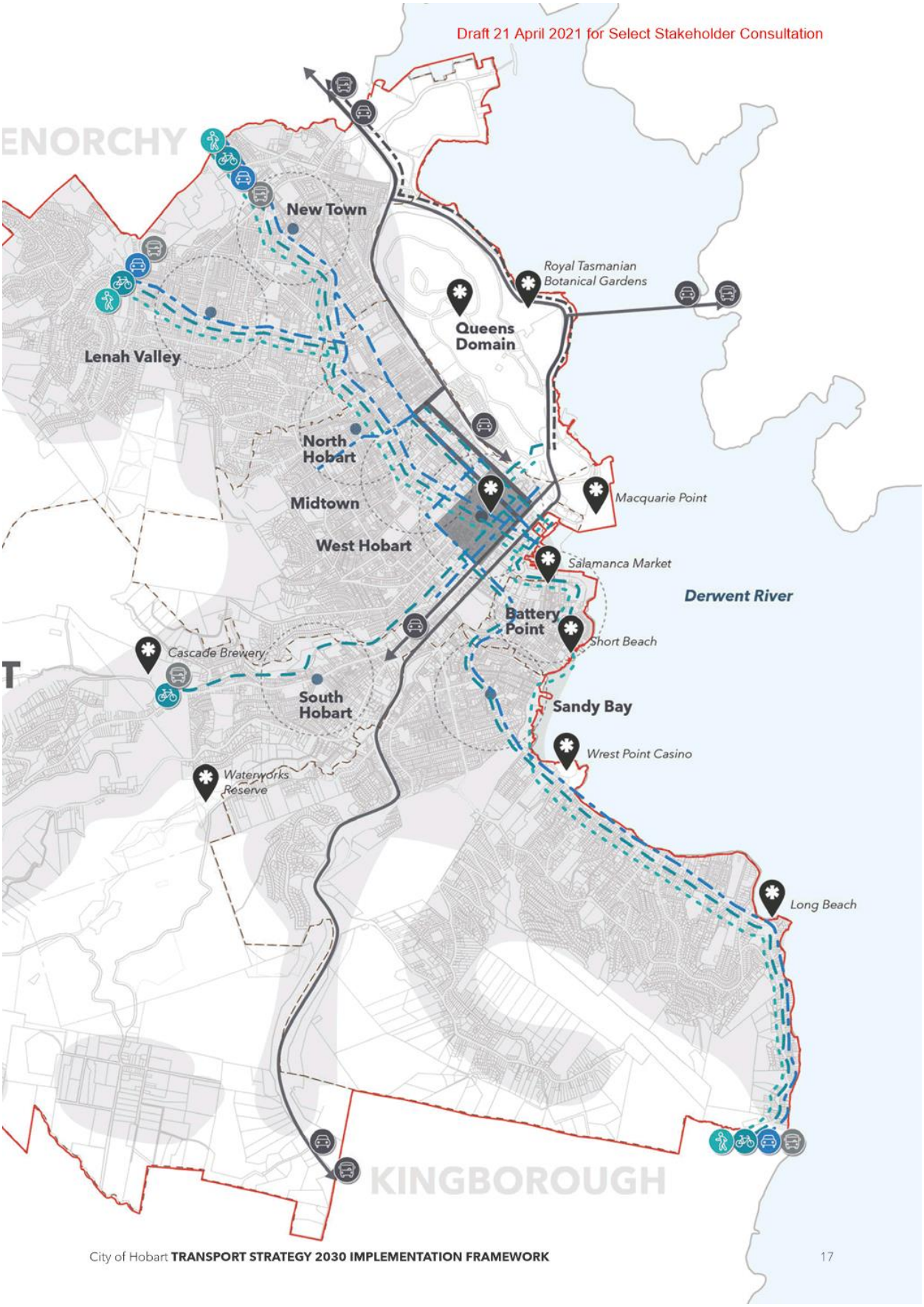


Figure 7 Hobart Transport Zones

* Refer to Page 27 for Local Area Mobility Plan (LAMP) Catchment descriptions

Note: Guide to the Framework is a graphical representation of transport destinations, indicative routes and identifies multi□use corridors in the city. Route locations are indicative only. Council does not accept any liability for any inconsistencies.


Draft 21 April 2021 for Select Stakeholder Consultation
ENORCHY
New Town
Lenah Valley
Royal Tasmanian Botanical Gardens
Queens Domain
North Hobart
Midtown
West Hobart
Macquarie Point
Salamanca Market
Derwent River
Battery Point
Short Beach
Cascade Brewery
South Hobart
Sandy Bay
Wrest Point Casino
Waterworks Reserve
Long Beach
KINGBOROUGH

TRANSPORT IN HOBART 2030

Hobart is the centre of administration, services and recreational activity for the region. It is also the gateway to the State and is known and loved across Australia and the world.

When compared with other local regions, Hobart travel patterns reflect the trend in the central areas of Australian cities where populations often carry higher levels of income and education.

As the centre for community services and lifestyle, Hobart is the health and care centre for the region. It is important that access is affordable, equitable and dignified for all Tasmanians and visitors.

This Hobart Transport Strategy Implementation Framework provides for a complementary strategy to the City Deal by promoting Council's ongoing investment in active travel.

In Hobart, active travel is already at world class standards (25% of daily trips), particularly for walking.

Investment in micromobility and cycling infrastructure is a major opportunity for Hobart as a valley city.

The weakest travel system is the public transport system. This can be addressed with better service frequencies, facilities and fleets.

Council is working with the Tasmanian Government and other stakeholders to support the transformation of public transport services as envisaged in the Hobart City Deal.

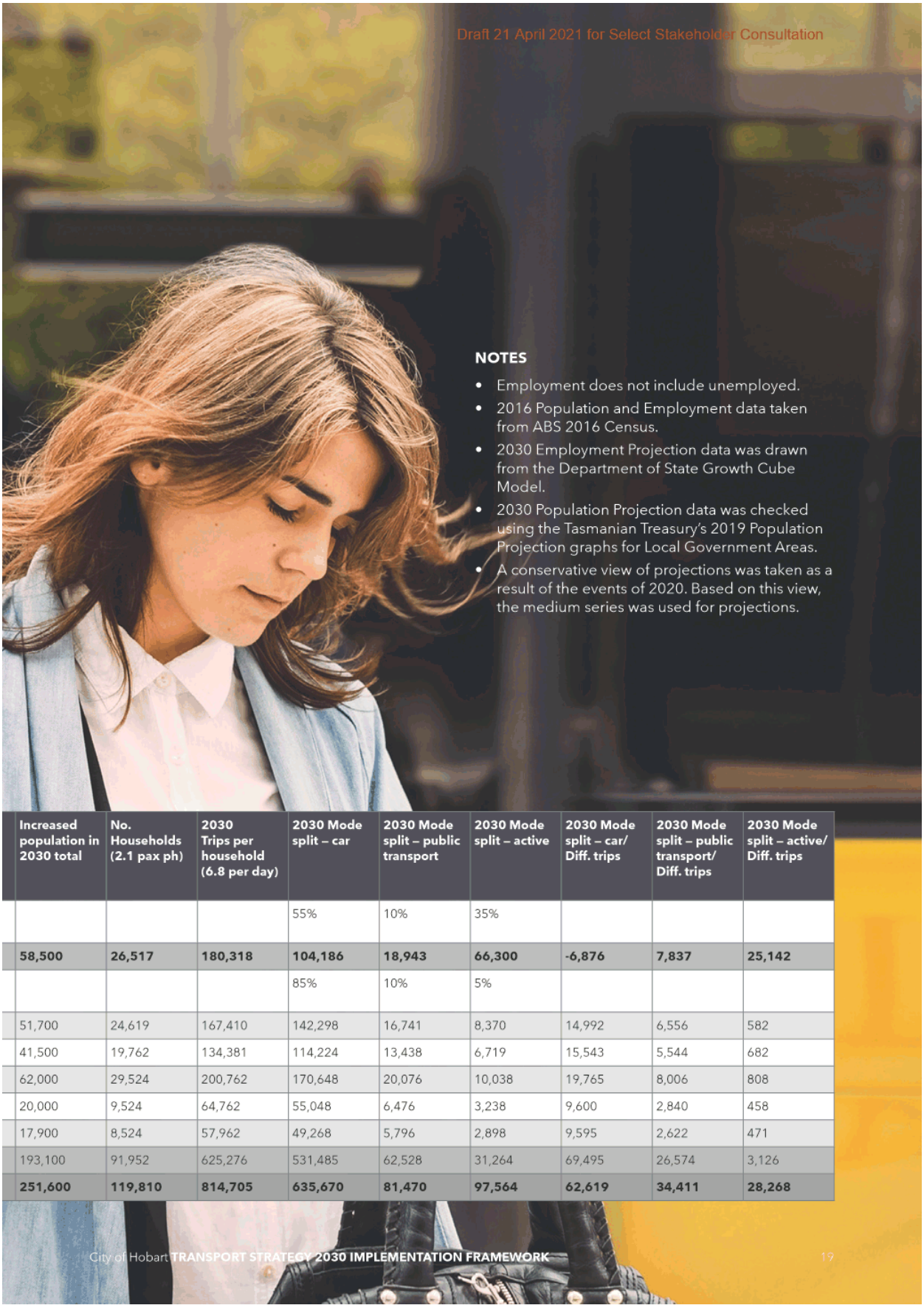
City of Hobart intends to exceed the performance of the region for sustainable travel patterns including the following mode splits for daily weekday travel for Hobart residents:

- Public Transport 10% (was 6.8% in 2016)
- Cycling and micromobility 10% (was 5% in 2016)
- Walking 25% (was 25% in 2016)

Refer to Figure 8 below.

Figure 8 Household population trips by transport mode in 2016 and 2030 for Greater Hobart

	2016 Population	No. Households (2.1 persons per household)	2016 trips per household (6.8 per day)	Mode split – car	Mode split – public transport	Mode split – active	2030 Increase	2041 estimated population
Hobart mode split percentage				68%	6.8%	25.2%		
City of Hobart	**50,439**	**24,019**	**163,326**	**111,062**	**11,106**	**40,832**	**8,061**	**60,934**
Greater Hobart (remainder) mode split percentage				88%	6.8%	5.2%		
Glenorchy City	46,253	22,025	149,772	127,306	10,184	7,788	5,447	54,675
Kingborough	35,853	17,073	116,095	98,681	7,894	6,037	5,647	42,895
Clarence	54,819	26,104	177,509	150,883	12,071	9,230	7,181	64,916
Brighton	16,512	7,863	53,467	45,447	3,636	2,780	3,488	22,266
Sorrell	14,414	6,864	46,674	39,673	3,174	2,427	3,486	19,309
Surrounding Region Total	167,851	79,929	543,518	461,990	36,959	28,263	25,249	204,061
Greater Hobart Total	**218,290**	**103,948**	**706,844**	**573,052**	**48,065**	**69,421**	**33,310**	**264,995**



NOTES

- Employment does not include unemployed.
- 2016 Population and Employment data taken from ABS 2016 Census.
- 2030 Employment Projection data was drawn from the Department of State Growth Cube Model.
- 2030 Population Projection data was checked using the Tasmanian Treasury's 2019 Population Projection graphs for Local Government Areas.
- A conservative view of projections was taken as a result of the events of 2020. Based on this view, the medium series was used for projections.

Increased population in 2030 total	No. Households (2.1 pax ph)	2030 Trips per household (6.8 per day)	2030 Mode split – car	2030 Mode split – public transport	2030 Mode split – active	2030 Mode split – car/ Diff. trips	2030 Mode split – public transport/ Diff. trips	2030 Mode split – active/ Diff. trips
			55%	10%	35%			
58,500	**26,517**	**180,318**	**104,186**	**18,943**	**66,300**	**-6,876**	**7,837**	**25,142**
			85%	10%	5%			
51,700	24,619	167,410	142,298	16,741	8,370	14,992	6,556	582
41,500	19,762	134,381	114,224	13,438	6,719	15,543	5,544	682
62,000	29,524	200,762	170,648	20,076	10,038	19,765	8,006	808
20,000	9,524	64,762	55,048	6,476	3,238	9,600	2,840	458
17,900	8,524	57,962	49,268	5,796	2,898	9,595	2,622	471
193,100	91,952	625,276	531,485	62,528	31,264	69,495	26,574	3,126
251,600	**119,810**	**814,705**	**635,670**	**81,470**	**97,564**	**62,619**	**34,411**	**28,268**

PLATFORM 1: INFORMED TRIPS

People will make better trip making decisions with the better information.

In other cities, to get somewhere, you think, what is the easiest way to get there?

This first platform of this Hobart Transport Strategy 2030 Implementation Framework, *Informed Trips* relates to information, both in real time and for planning of journeys.

Many trips might be taken in other ways than driving and parking your car. Knowing where you want to go, googling it, finding that it's so easy and cheaper to walk, cycle or catch public transport – means that we can travel in ways that suit the trip.

Hobart hosts 1.2 million visitors a year (nearly 3500 additional persons in Hobart every day). Concentrated in particular destination locations, this additional tourism and business population is an important basis to the local economy.

Parking in the city will be priced so that you understand, when it's busy in town, you will have to pay a bit more if you want to drive your car. But that won't mean it won't be easy to get there. At the end of your arm, your phone will let you know, when the bus is coming, where it is now, and you will have shelter and real time information whilst you wait.

Providing information about transport options is a key plank to the efficient use of the road space that we have.

What will change is that you will know how easy it is to move in the city.

Mobility is a service to get from a to b, and so, instead of congesting our roads with more cars, we need to provide more information about transport options. You will know where and when to catch the bus, how to walk the most interesting or shortest journey, how safe and convenient it is, and that in terms of total personal and community costs, you will know how you are contributing to the sustainable management of the city.

If your phone told you that your proposed trip would be more affordable than any other way to go where you wanted to, would take less time and would be more sustainable, if you were looking for it, you should be able to find that information easily.

This kind of transport knowledge is actually par for the course internationally. It is available all across the world, and City of Hobart has a major program to make transport and other information available to its citizens and visitors.

Hobart is also an event city in both summer and winter. In order to position Hobart better as a tourism destination, mobility in the city needs to be planned for people who want to visit key places, and need wayfinding and information on how to get there.

PLATFORM 2:
CITY DEAL ALIGNMENT

The Hobart City Deal was agreed by the Australian Federal, State and Greater Hobart governments in 2019 and offers a unique opportunity to deliver a coordinated plan for the region including:

DIRECT INTERNATIONAL FLIGHTS AT HOBART AIRPORT

Enhance the Hobart Airport's role as a direct international gateway, and its connection to the Antarctic and Southern Ocean.

GATEWAY TO THE ANTARCTIC AND SOUTHERN OCEAN

Solidify Hobart's world class standing as a gateway to the Antarctic and Southern Ocean to attract business, research, tourism and other economically beneficial activity.

GREATER HOBART TRANSPORT VISION

Establish a reliable, sustainable and cost effective transport system with a focus on active and public transport as well as efficient private car travel.

AFFORDABLE HOUSING/ URBAN RENEWAL

Deliver a diverse range of affordable housing options close to work, play, transport and services.

STRATEGIC COLLABORATION AND GOVERNANCE

The City Deal will be supported by all partners through legislative and cooperative governance arrangements.

SMART, LIVEABLE AND INVESTMENT READY CITY

Investing in people, technology and emerging opportunities to support Hobart to continue to provide job and business opportunities.

KEY FEATURES FOR THE REGION

The City Deal has a significant impact on the long term shape of Greater Hobart. Significant land use changes through the ability to look at Greater Hobart with a new governance model, urban renewal opportunities as well as renewed investment in public transport will give Hobart a competitive edge.

THE CITY DEAL

The Hobart City Deal is a unique opportunity which will be achieved through alignment with the Tasmanian Government and adjoining Councils.

The Hobart City Deal is predicated on cooperation. The City Deal Transport Vision will deliver economic advantages for the making a of great 21st century city: a clean, green, safe and prosperous City.

In response, City of Hobart seeks transport investments which enhance its historic city e.g. like other university cities of the world, we want a walkable gracious city, one where the inheritance we have gained from the past is made better by what we are doing now.

Key features of the City Deal for Hobart include:

- Responding to the challenge where regional private vehicle trips impact on the City of Hobart's quality of life
- Managing the major arterial corridors into the Hobart Central Business District and laying the foundations for the 21st century CBD we plan to make
- Investing in Hobart's complementary pedestrian and cycling networks to create a striking and liveable city which values its heritage, architecture, walkability and sustainability.

This Hobart Transport Strategy 2030 Implementation Framework is about planning for the future, and these aspirations are the foundation of how will be become the small global city we envisage.

Real time trip information will be available to the public including the fostering and implementation of Mobility as a Service (MaaS) in collaboration with the Tasmanian Government and other stakeholders.

With the appropriate information and planning in place, the City will be able to provide and integrate the information it has available (including bike routes and walking facilities), as well as to participate in or initiate travel change behaviour programs which enable the community to live in a connected sustainable Hobart.

PLATFORM 3: GREAT STREETS

The Hobart Road Network Hierarchy (HRNH) documents the purpose of each of the streets in the city. In response, our street design approach is about providing Great Streets for some of the HRNH. These will be great places to be, whichever their function.

Great Street design allows the surrounding land uses to prosper. Great Streets can include people places on multi-function corridors, such as retail precinct areas. This Hobart Transport Strategy 2030 Implementation Framework will reflect the intentions and aspirations of the Hobart Network Operations Plan.

Commercial streets or High Streets in Hobart's centres encourage vibrant business and retail environments, where people want to come together as urban communities. Hobart's Great Streets will not be places where historic shopping strips are separated by fast moving private vehicle traffic at great volumes. They will be destinations valuing Hobart's heritage and for developing local cultural, recreational, food, music and art scenes.

Hobart's Great Streets will foster health benefits for both residents and visitors in the city as the initiative will deliver significant investments in a walkable Hobart.

To put it simply, we will invest in the city's wayfinding, footpaths and street tree planting, lighting and security as a priority.

PLATFORM 4:
CONNECTED COMMUNITIES

Hobart still has the remnants of old 'City surrounded by urban villages;' structure. However, this has becomes eroded by new land use forms and the lower amenity of some arterial road connections.

It is the intent of this Hobart Transport Strategy 2030 Implementation Framework to reinvigorate this economically and socially sustainable city form by investment in Hobart's suburban Retail Precincts, as the basis of strong and healthy communities.

Coupling sustainable travel behaviour with walkable access to basic community needs and connections, Hobart's Primary Walking and Cycling Networks will foster community neighbourhood living and travel patterns. Everybody should have a choice to ride a bike safely to key local services such as school, child care, local shopping, local sport, cafés, restaurants and bars.

Everybody should also have frequent and reliable transit options to the central activity area and some other major locations (University, Hospital etc) which are legible and integrated well with the urban form and travel options in the city. These supportive initiatives will generally be delivered by the Tasmanian Government as part of the Hobart City Deal.

Each of our Retail Precincts currently has a program to improve local walking, footpaths, pedestrian crossings and bike riding facilities. The Framework proposes continued and enhanced investment in active travel infrastructure is complimented by improvements in public transport services, facilities, fleet and information. These combined initiatives will allow Hobart to join the great cities around the world in creating sustainable transport system both for regional and local connections..

By localising our planning and project responses through this platform of Connected Communities, we can target effective and bespoke interventions in each area to serve our communities well.

This framework builds on the work which the Council has been pursuing over many years, through previous strategies and plans. We are now in a position to connect more completely and capitalise on the other three platforms of this Hobart Transport Strategy 2030 Implementation Framework (Informed Trips, City Deal Alignment and Great Streets) via investment in local transport catchments.

The key initiative within the Connected Communities Platform will be the development of Local Area Mobility Plans (LAMPs). The LAMPs will be developed with local communities, and will describe local connections and identify future investment projects in local mobility.

IMPLEMENTATION PROCESS

This Hobart Transport Strategy 2030 Implementation Framework articulates four platforms to enhance liveability and mobility in the city including:

PLATFORM 1:
INFORMED TRIPS

PLATFORM 2:
CITY DEAL ALIGNMENT

PLATFORM 3:
GREAT STREETS

PLATFORM 4:
CONNECTED COMMUNITIES

This combination of initiatives will deliver both places and movement systems and knowledge which suit Hobart, making tailored local environments and providing for interlinkages with surrounding Council areas for all transport modes.

In order to articulate the City's structure for transport decision making and investment, **five new Hobart Transport Zones** will inform the planning and development in Hobart.

Individual actions will be developed based on this Implementation Framework, will be considered on a case by case basis, and approved by the Council in accordance with Council's project planning, budgetary and delivery process.

Draft 21 April 2021 for Select Stakeholder Consultation

IMPLEMENTATION FRAMEWORK ON A PAGE

Function/Definition	
LOCATION	

HOBART TRANSPORT ZONES

HOBART DESTINATIONS: ZONE 1 HTZ1	Identifies the key nationally renowned destination locations within the Hobart Local Government Area. These locations require tailored transport access and parking solutions which take account of the tourism and events economy.
HOBART COMMUNITIES: ZONE 2 HTZ2	Identifies Hobart's Local Area Mobility Catchments, where residential amenity is a priority.
HOBART LOCAL RETAIL PRECINCTS: ZONE 3 HTZ3	Identifies Hobart's Local Retail Precincts and surrounding walkup catchment.*
HOBART REGIONAL CONNECTORS: ZONE 4 HTZ4	Identifies the main strategic arterial roads which service the region.
HOBART MULTI-FUNCTION CORRIDORS: ZONE 5 HTZ5	Identifies Hobart's local arterial network where local movements for a range of different modes will be balanced within the available local government road network.

Hobart Retail Precincts

City of Hobart's Local Retail Precincts are our neighbourhood centres. They are pedestrian-focussed high streets providing for the daily needs of the local community. The City of Hobart will engage with local stakeholders to manage and develop these locations, to strengthen their role in community life and local economies via this Hobart Transport Strategy Implementation Framework and the associated Local Area Mobility Plans (LAMPs). Retail Precincts are located at South Hobart, Sandy Bay, Midtown, North Hobart, Lenah Valley and New Town.

Implementation	Projects
PLANNING & MANAGEMENT	PLATFORM PROJECTS APPROVED INDIVIDUALLY BY COUNCIL

PLATFORMS	PROJECTS
PLATFORM 1: INFORMED TRIPS	• Mobility as a service • Local area mobility markets • Hobart transport systems performance monitoring report
PLATFORM 2: CITY DEAL ALIGNMENT	• Transport Network Operating Plan • Parking policy • CBD parking inventory • Centres kerbside allocation study • Hobart Transit Centre and ferry service integration
PLATFORM 3: GREAT STREETS	• Great Streets design manual • Primary walking network implementation • Primary cycling network implementation • Micromobility policy • Street tree policy implementation • Retail Precincts implementation • Major development sites transport access and management policy
PLATFORM 4: CONNECTED COMMUNITIES	• Local Area Mobility Plans (LAMPs) • Hobart Municipal Emergency Management Plan (Transport component) • Vulnerable Road User Program • BlackSpot program • Council's capital works program for transport assests management

Local Area Mobility Plans Catchments

North	West	Central	East	Battery Point	Queens Domain	
• Lenah Valley • Newtown • Mount Stuart	• North Hobart • West Hobart	• Hobart Central	• Sandy Bay • Dynnryne • Mt Nelson • Tolmans Hill	• Battery Point	• Queens Domain • Glebe	• Wellington Park

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6.2 Campbell Street and Argyle Street Bicycle Connections File Ref: F21/18075; F19/151923

Report of the Senior Transport Engineer and the Director City Planning of 23 April 2021 and attachments.

Delegation: Council

REPORT TITLE: **CAMPBELL STREET AND ARGYLE STREET BICYCLE CONNECTIONS**

REPORT PROVIDED BY: Senior Transport Engineer
Director City Planning

1. Report Purpose and Community Benefit

1.1. This report provides an update of bicycle facility planning in the City of Hobart on Argyle Street, Campbell Street, and linking bicycle facilities on Liverpool Street and Bathurst Street.

1.1.1. The Council previously considered a report on this matter and resolved to undertake consultation with key stakeholders at its 16 December 2019 meeting.

1.1.2. Some delays have occurred due to the COVID-19 event.

1.2. This report presents the Council with a report on the engagement undertaken and presents a further developed concept design which has incorporated key feedback.

1.2.1. Additional detailed reporting on traffic modelling is also provided along with other specialist reviews.

1.3. The community benefit of further developing dedicated bicycle facilities in the City of Hobart, in these locations, is to complete key sections of the City of Hobart's adopted Principal Bicycle Network Plan, improve the connectivity of bicycle infrastructure, create safer environments for vulnerable road users (bicycle riders) and accommodate the increased presence of the University of Tasmania's staff and students and other residents, workers and visitors within the City along with the further development of infrastructure to create a more liveable city.

2. Report Summary

2.1. The Hobart Principal Bicycle Network Plan was adopted by the (then) Hobart City Council in 2008 and projects to implement the plan and related bicycle facilities have been progressively undertaken by the Council since that time.

2.1.1. The Council at its 16 December 2019 meeting resolved that:

1. *The initial concept design for bicycle facilities on Argyle Street, Campbell Street, Liverpool Street and Bathurst Street, including sections of separated cycleways is provided as Attachment A to item 6.4 of the Open City Infrastructure Committee agenda of 11 December 2019 be used as the basis to commence public engagement with key stakeholders in early 2020.*

(i) That consultation occur with relevant stakeholders, in particular, property owners, land owners, residents and lease holders of the affected streets.

(ii) The facilities be trialled for a one year period.

2. A further report detailing the proposal be provided to the Council following the public engagement with key stakeholders.

3. A report be provided on the feasibility of introducing priority car pool and bus lanes on Campbell and Argyle Streets.

2.2. During 2020, the City of Hobart undertook the key stakeholder engagement for the concept bicycle facility.

2.2.1. The engagement was undertaken and documented by the City of Hobart engagement team.

2.2.2. The engagement report is provided as **Attachment A**.

2.2.3. A summary of officer responses to key issues raised is attached to the engagement report.

2.3. During 2020, and in collaboration with officers of the Department of State Growth (Transport Division), further work has been undertaken to refine the traffic modelling and concept design.

2.3.1. Detailed traffic modelling and recommendations for implementation are provided in the GHD report, **Attachment B**.

2.3.2. Junction geometry assessment has been undertaken by GHD and is provided as **Attachment C**.

2.4. The traffic studies and observations undertaken indicate there is road network capacity to accommodate the concept design, using pre-COVID traffic volumes for analysis.

2.5. An independent review of the concept design and road user safety has been undertaken by engineering specialists, CDM Research, and is provided as **Attachment D**.

2.6. The concept design for bicycle facilities on Argyle Street, Campbell Street, Liverpool Street and Bathurst Street, including sections of separated cycleways has been refined with reference to key recommendations and substantive issues raised and is provided as **Attachment E.**

2.7. Providing bicycle facilities on the Argyle Street and Campbell Street corridors along with the linking facility sections on Liverpool Street and Bathurst Street, further capitalises on the investments the Council has made in providing bicycle facilities up to the edges of the City core on these streets and the associated connections provided by the Rose Garden Bridge, the Bridge of Remembrance and on the Hobart Waterfront.

2.8. The City of Hobart's recently adopted Strategic Plan includes a strategy to develop safe paths, streets and separated cycleways.

2.9. The Hobart City Deal has a range of initiatives relating to modal shift and provision of improved active transport facilities in Hobart. The progress of this project is being reported through the City Deal reporting arrangements.

2.10. Other key Tasmanian Government positions in the Health and Wellbeing space (Tasmania Statement), along with accepted recommendations from the recently released PESRAC report support practical actions such as this proposed active transport projects.

2.11. The Tasmanian Government (Department of State Growth) has requested project applications for funding, in particular for bicycle projects, in its recent call for submissions for the Vulnerable Road User Program (2021 –Round 3).

2.11.1. The City of Hobart has submitted details of this project to the Department of State Growth to ascertain its funding suitability and nominate the project for funding should it meet the relevant criteria.

2.12. The incorporation of feedback into the concept design has seen modifications to kerb bulbings and other civil works to improve junction layouts, safety and efficiency. In order to provide the Department of State Growth with a realistic project cost estimate a detailed base cost, P50 and P90 cost estimation exercise has been undertaken by consultants GHD and is provided as **Attachment F**.

2.12.1. The concept of deterministic cost estimation for projects has become more developed in the past decades and Guidance Note 3B, from the Australian Government (Department of Infrastructure, Regional Development and Cities) provides commentary on the provision of cost estimates at various project phases. The document is available here:

https://investment.infrastructure.gov.au/files/cost_estimation_guidance/Guidance-Note-3B-Version-1.0.pdf

2.12.2. In short, the approach to estimating contingencies and an estimate range in the concept planning phase acknowledges that there may be insufficient information to undertake a more detailed assessment at various stages in the project lifecycle. As such planning estimates can be “ranged by generating several estimates:

2.12.2.1. The base cost is the best prediction of the quantities and current rates for the known scope.

2.12.2.2. The P50 cost is the Project cost with sufficient contingency to provide 50 per cent likelihood that this cost would not be exceeded.

2.12.2.3. A P90 cost is the Project cost with sufficient contingency to provide 90 per cent likelihood that this cost would not be exceeded.

2.12.3. The GHD project estimations, for the concept design incorporating additional works as noted above are:

2.12.3.1. Base Cost Estimate - $ 633, 205

2.12.3.2. P50 Cost Estimate – $ 1,379,205

2.12.3.3. P90 Cost Estimate - $ 1,725,205

2.13. The project proposal involves the use of parking clearways. The City of Hobart has been using 'No Stopping" and other parking controls to manage road space for many years. The Department of State Growth has begun enforcing "Clearways" established on Macquarie Street and Davey Street by way of physically removing non-compliant vehicles to ensure network operations.

2.13.1. The City of Hobart has the requisite authority to not only issue fines for non-compliance with parking signage but also to remove vehicles from designated "Clearway" zones.

2.13.2. Discussions have been had with DSG, tow truck operators and the Tasmania Police. A pathway to provide for vehicle removal services (towing) is available through the Tasmania Police tow truck operators list.

2.13.3. Details of the arrangements required to action Clearway vehicle removal, including the fees and charges associated are being finalised.

2.14. The project proposal, due to the parking clearways and the removal of some car parking spaces to improve safety outcomes and address traffic flow has the potential to change Council revenue from parking charges.

2.14.1. It is recommended that the Council expand its metered parking operations in appropriate areas (such as un-metered parking spaces in the adjacent *Wapping* precinct) and review the fees, charges and operating hours for paid parking in the area to offset these revenue impacts.

2.15. A further report is still to be provided on the feasibility of introducing priority car pool and bus lanes on Campbell and Argyle Streets. Whilst such lanes are technically feasible, of issue is the current route structure of the Metro bus operation and the current relatively low frequency of buses for all but a few blocks of Campbell and Argyle Street adjacent to the Royal Hobart Hospital.

2.15.1. Mid-block space to create priority car pool and bus lanes is possible with the removal of car parking from both sides of a street. Generally the larger issue relates to provision of turning lanes and through lanes at junctions along with the movement across priority lanes by general traffic.

2.15.2. Future public transport route arrangements for servicing the ongoing development in Hobart form part of the wider discussions being advanced through the Central Hobart Precincts Plan work.

2.15.3. A further report on the feasibility of introducing priority car pool and bus lanes can be provided following further Central Hobart Precinct Plan work and engagement.

3. Recommendation

That:

1. The report be received and noted.

2. Subject to a successful grant funding proposal, the Argyle Street, Campbell Street, Liverpool Street and Bathurst Street trial bicycle facilities, as generally described in Attachment E to this report, be installed.

3. Should a planning approval be required due to the archaeology overlay (or another trigger) the General Manager be authorised to lodge such an application.

4. Appropriate public information resources to explain the function and reasoning for the new facilities be created and form part of the trial.

5. The City of Hobart develops the arrangements to support and undertake clearway towing and vehicle removal operations, recoup costs and levy appropriate fines;

6. A review of parking charges, operating hours and un-metered spaces in the area surrounding the project be undertaken, and appropriate changes be implemented to offset any revenue impacts.

4. Background

4.1. The Hobart Principal Bicycle Network Plan was adopted by the (then) Hobart City Council in 2008 and projects to implement the plan and related bicycle facilities have been progressively undertaken by the Council since that time.

4.1.1. Other key planning documents supporting the implementation of bicycle facilities on the corridors proposed in this project include the:

4.1.1.1. Hobart Regional Arterial Bicycle Network Plan

https://www.cyclingsouth.org/index.php/component/k2/item/download/5_12998a166aa58b141fce7bbfd91ff9f1

4.1.1.2. Tasmanian State Governments Principal Urban Arterial Cycling Network plans

https://transport.tas.gov.au/?a=112631

4.2. A key focus of the Hobart City Deal is the completion of active transport facilities to improve cycling safety and uptake of active transport. The City deal has a defined action in this space:

"*Identifying projects to complete the active transport network in the CBD and Greater Hobart Area." (Hobart City Deal –Implementation Plan, pg12).*

4.3. Providing bicycle facilities to complete the Argyle Street and Campbell Street corridors further capitalises on the investments the Council has previously made in providing bicycle facilities up to the edges of the City core on these two streets.

4.4. The completion of the Bridge of Remembrance and the Brooker Bridge (Rose Garden Bridge) provide bicycle connections to the Hobart Queens Domain, its associated facilities and the Intercity Cycleway which can be linked to the City centre.

4.5. Connected networks are generally seen as more valuable when encouraging behaviour change and take up of active transport modes as opposed to isolated sections of facilities and infrastructure.

4.6. The announcement by the University of Tasmania in respect of its land and building purchases to further increase its presence in the City centre with both student accommodation and teaching facilities suggests further active transport linkages need to be developed to cater for the associated transport demand. A further briefing on the UTAS Masterplan for elected members is scheduled for 17 May 2021.

4.7. The City of Hobart has declared a "Climate Emergency" and providing physical infrastructure to encourage more people to ride bicycles is a practical way for the City of Hobart to support the reduction of transport related vehicle emissions – a major source of emissions in Tasmania.

4.8. The City of Hobart's recently adopted Strategic Plan includes a strategy to develop safe paths, streets and separated cycleways.

4.9. Both Campbell Street and Argyle Street have been closely monitored over the past 3 years during the construction of the Royal Hobart Hospitals new 'K' block facility and associated lane closures.

4.9.1. Traffic observations, study and reporting completed by consultants GHD has indicated that there is sufficient spare capacity in the road network to introduce the proposed bicycle facilities.

4.9.2. The initial concept design which has been developed has a version of separated bicycle facilities (separated cycleways) for much of the installation trial.

4.9.3. The use of clearways, and parking controls, which are currently in place in the City of Hobart, with towing of offenders currently occurring on State Growth controlled roads, provides a superior management tool for road space. The modelling indicates that only two blocks of Campbell Street, between Collins Street and Davey Street will require clearway operation for the proposed trial project, to operate at PM peak times. Other sections could be operated as clearways either for consistency or for other management objectives in the future (IE limiting the side friction caused by parking and un-parking of vehicles).

4.9.4. Outside of peak hours there is considerable excess capacity (un-used road space) in the Hobart road network.

4.10. Engagement work, for the concept proposal, undertaken through the previous Council resolution has now occurred and is documented in this report.

5. Proposal and Implementation

5.1. It is proposed that the Council approve the installation of the trial bicycle facilities on Argyle Campbell, Liverpool and Bathurst streets, in general accordance with the concept design as generally shown in **Attachment E.**

5.1.1. Further final detail design of junction treatments is required (for example: kerb bulbing alterations and traffic signal pole location adjustments) to be undertaken once the decision to proceed with the trial has been ratified.

5.2. It is further proposed that in support of this trial, and traffic management arrangements around the City of Hobart, the make the appropriate arrangements to support the towing and removal of vehicles in Clearways along with the appropriate fees and charges regime.

5.3. The implementation of the trial bicycle facilities, should Council so resolve, be undertaken in such a way that sections which can be easily implemented, such as sections of Argyle, Liverpool and Bathurst streets, be undertaken whilst final bulbing designs in other areas are completed.

5.4. The implementation of the project be subject to the requisite capital construction and works funding being available through a Tasmanian or Australian government grant.

5.5. Advice has been sought in regards to the requirement for planning approval for the project. *The Hobart Interim Planning Scheme* (HIPS) exempts minor upgrades from requiring planning approval pursuant to clause 6.2.3 and 6.2.4.

5.5.1. Notwithstanding the exemptions, works requiring excavation are caught by the archaeology overlay of the HIPS. The relocation of traffic signal poles in several locations will need to be considered with an appropriate archaeological impact assessment. It is possible that such an assessment could trigger a requirement for planning approval, which is discretionary for archaeology.

5.5.2. Should further work and investigation require such an approval the appropriate application will be lodged.

6. Strategic Planning and Policy Considerations

6.1. The project sits within the area of the City of Hobart Vision's, Pillar 5: Movement and Connectivity.

6.1.1. Outcome

Hobart has effective and environmentally sustainable transport systems.

Strategy 5.2.7

Support and encourage more people to ride bicycles through the development of safe paths and streets, separated cycleways, end-of-journey facilities and related infrastructure.

6.2. The Argyle and Campbell Street corridor has been identified on the Councils Principal bicycle network plan, the Hobart Regional Arterial bicycle network plan and the Tasmanian State Government's Principal Urban Cycling Network Plan

6.3. The Council, has adopted the Themes and position statements in the Transport Strategy in 2018. Theme 4 –Supporting more people to ride bicycles has a position statement which is, "*Bicycle riding has the potential to transform the City of Hobart's transport task by providing for short and medium distance trips. The City of Hobart will develop a strong network of safe paths and streets where people regardless of age or ability can comfortably cycle.*"

6.4. The proposal is cognisant of, and complimentary to, the University of Tasmania's southern transformation plans where the support of staff and student travel by sustainable and active modes will be critical to the integration of new tertiary education facilities into the Hobart CBD.

6.5. The Tasmanian State Government has, through the Premier's Health and Wellbeing Council, has issued the *Tasmania Statement*.

6.5.1. The *Tasmania Statement* is available here on the DPAC website: http://www.dpac.tas.gov.au/__data/assets/pdf_file/0008/477773/Tasmania_Statement.pdf

6.5.2. The statement commits government to "*working together to improve the health and wellbeing of Tasmanians*."

6.5.3. It also recognises that "*We have an opportunity as Tasmania grows, to plan our communities in a way that creates healthy, liveable and connected spaces*."

6.6. Also of note is the recently released (March 2021) PESRAC (Premiers Economic and Social Recovery Advisory Council) report and recommendations to assist in advancing Tasmania in a post COVID-19 world.

6.6.1. The PESRAC Final report and recommendations are available on the website here: https://www.pesrac.tas.gov.au/reports

6.6.2. Of particular relevance to this active transport project are the report's recommendations 38 through 42 which detail sustainability and environment actions.

6.6.3. This active transport project has a strong alignment with those recommendations.

6.6.4. Particular reference is made to Recommendation 42:

The State Government should strongly promote the idea that all Tasmanians are responsible for our environmental performance and have a part to play in achieving the strategy. Everyone is responsible and everyone should contribute through their actions.

7. Financial Implications

7.1. Funding Source and Impact on Current Year Operating Result

7.1.1. Since the Council considered a report on this matter to undertake the trial and undertake the key stakeholder engagement, the COVID-19 event and subsequent budget impacts has reduced the available funds within the 10 year capital works budget.

7.1.2. The Tasmanian and Australian governments have committed additional funds to various road safety and vulnerable road user programs along with a specific allocation for bicycle support projects which align with the Hobart City Deal.

7.1.3. The concept design has been the subject of a base cost, P50 and P90 cost estimation by consultants GHD.

7.1.4. The GHD project estimations, for the concept design incorporating additional works as noted previously are:

7.1.4.1. Base Cost Estimate - $ 633, 205

7.1.4.2. P50 Cost Estimate – $ 1,379,205

7.1.4.3. P90 Cost Estimate - $ 1,725,205

7.1.5. The Government funding program has been informed of the project and the cost estimation work.

7.1.6. It is likely that capital and construction cost funding will be available from a grant funding program.

7.1.7. Given the detail design work required to implement any or all of the concept design facilities, it is unlikely that works can commence in the 2020-21 financial year.

7.1.8. There is as such no impact on the current year's financial result.

7.2. Impact on Future Years' Financial Result

7.2.1. The project has been the subject of funding enquiries to the Tasmanian Government. Capital and construction costs would need to be funded through a successful grant.

7.2.2. The current concept design requires the removal of 15 metered parking bays across the 1.7km length of bicycle facility.

7.2.3. The current concept design also includes clearways at AM and PM peak times and this would reduce the revenue from parking fees and infringements.

7.2.4. The original concept design has been significantly resolved with the further traffic and junction modelling by GHD. The GHD modelling report indicates that only the lower two blocks of Campbell Street between Collins Street and Davey Street require a PM clearway.

7.2.5. This is a significant reduction in the parking impacts however the original "worst case" revenue impacts are documented here to ensure that should the Council resolve to implement the full clearway extents, for whatever reason in the future, that impact is understood now.

7.2.6. An estimate prepared by the City of Hobart parking unit for the annual gross revenue forgone for the original concept clearways in Argyle Street and Campbell Street has been prepared based on data available from the first four months of 2019.

7.2.6.1. Meter Income: $42,300 per annum.

7.2.6.2. Fine Income: $12,300 per annum.

7.2.7. The estimated combined forgone revenue for Campbell Street and Argyle Street clearways is therefore $54,600 per annum.

7.2.8. A clearway operation on Bathurst Street has an estimated combined forgone revenue of $5,000 per annum.

7.2.9. The parking spaces removed have a combined meter income and fine income of approximately $100,000.

7.2.10. It is also noted that removed parking generally just leads to higher utilisation in parking elsewhere in the city's parking stock, which offsets revenue impacts.

7.2.11. It is noted that Council does not have an accepted mechanism for evaluating the economic benefit of the proposal. Such assessments generally include the improved liveability, and mobility opportunities along with reputational benefits, especially for the support and promotion of inner city living, education, business and active transport health benefits. Many of these benefits accrue to developers or health authorities.

7.2.12. It is recommended that the Council expand its metered parking operations in appropriate areas (such as un-metered parking spaces in the adjacent *Wapping* precinct) and review the fees, charges and operating hours for paid parking in the area to offset the identified final revenue impacts.

7.3. Asset Related Implications

7.3.1. The resultant trial bicycle facility, as with all transport infrastructure (roads, bridges, culverts etc) will be depreciated and maintained over time.

7.3.2. The principal civil works are modifications to existing kerb and channel (kerb bulbings) which are current Council assets and as such would have no material impact on asset maintenance schedules.

7.3.3. The coloured surface treatments will be the principle items which will require asset maintenance.

8. Legal, Risk and Legislative Considerations

8.1. The proposed trial bicycle facilities comprise of a range of road and traffic management devices. Such facilities seek to improve the safety and amenity for vulnerable road users.

8.1.1. Most Council projects carry risk, and the Council's risk register and review process documents and minimises risks to the extent possible within the competing functions of a City.

8.1.2. The City of Hobart has delegation to install various traffic management devices, with the Transport Commission still providing direction for speed limits, traffic signals and other "non-standard" traffic management devices. Ongoing discussions with the Department of State Growth have been occurring to manage the approvals issues.

8.2. Legal and legislative considerations for this proposal relate principally to clearway vehicle removal and towing of vehicles, along with the recovery of associated fees and charges from vehicle owners.

8.2.1. The City of Hobart, as the road manager, has the ability to tow vehicles away that are parked in marked and signed clearway zones.

8.2.2. It is anticipated that arrangements for towing vehicles would be similar to those in operation on Macquarie Street in Hobart, where the Department of State Growth is the road manager. Towed vehicle locations and towing fees may vary subject to final arrangements.

8.2.3. Details of those arrangement are detailed here:

https://www.transport.tas.gov.au/roads_and_traffic_management/managing_the_roads/towaway_zones_on_macquarie_street

9. Environmental Considerations

9.1. The implementation of bicycle facilities can assist in the uptake of bicycle riding and a subsequent reduction in motor vehicle use and related harmful exhaust emissions from internal combustion engine powered vehicles.

9.2. The need for reductions in greenhouse gas emissions from the transport sector is becoming increasingly important as public policy plays catch up with scientific knowledge. Providing the facilities to encourage further active transport take up will become increasingly important in the next decade.

9.3. Mention has been made in section 6 of this report of the strong alignment active transport projects such as this have in supporting the Tasmanian State Governments Environment and Sustainability positions.

10. Social and Customer Considerations

10.1. Development of bicycle infrastructure will support movement of people in the City of Hobart and contribute to a more liveable city in the future.

10.1.1. As the City population grows it will be important to support active transport modes, especially in the vicinity of UTAS campuses.

10.2. Providing for individuals transport choices, especially in the micro-mobility space is important in managing transport demand in a growing city.

10.3. It is predictable that that this bicycle facility project will attract negative responses from some people in the community. Some commentators have described the objections to bicycle infrastructure as a form of tribalism and noted quite reasonably that such “us and them” polarisation based on a choice of transport mode is unhelpful, especially in growing cities which need to change transport habits.

10.3.1. The trial project, should Council resolve so, will have an accompanying social media and public education and awareness campaign.

11. Marketing and Media

11.1. Media opportunities during the engagement will be considered by the Council communications unit.

11.1.1. It is noted that the project is being reported as part of the Hobart City Deal, and it is probable that media opportunities would be sought.

12. Community and Stakeholder Engagement

12.1. This report provides the Council with a report on the key stakeholder engagement process and activities. The engagement report is provided as **Attachment A**

12.2. The engagement has been undertaken in conjunction with the City of Hobart’s specialist engagement unit, in line with Council resolution relating to the engagement arrangements.

12.3. Ongoing conversations with some key stakeholders have occurred including:

12.3.1. Officers of the Department of State Growth.

12.3.2. The City of Hobart’s Active Travel Committee (HATC).

12.3.3. The property owner of 2 Melville Street.

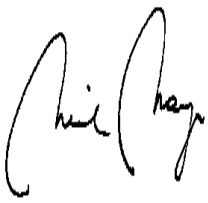
12.4. Responses from officers to the issues raised during the engagement are provided as a separate addendum at the end of the engagement report.

12.5. Some concept design changes have occurred as a result of feedback received from some stakeholders, such as sight distance improvements at Scots Memorial Church access points and alterations to kerb bulbings and parking.

13. Delegation

13.1. The matter is referred to Council for the relevant decisions.

As signatory to this report, I certify that, pursuant to Section 55(1) of the Local Government Act 1993, I hold no interest, as referred to in Section 49 of the Local Government Act 1993, in matters contained in this report.



Stuart Baird
SENIOR TRANSPORT ENGINEER

Neil Noye
DIRECTOR CITY PLANNING

Date: 23 April 2021
File Reference: F21/18075; F19/151923

Attachment A: Engagement Report ⇩
Attachment B: GHD Traffic Modelling and Analysis Report ⇩
Attachment C: GHD Junction Geometry Report ⇩
Attachment D: CDM Research Concept Design Review ⇩
Attachment E: Concept Drawings Incorporating Relevent Feedback ⇩
Attachment F: GHD Concept Cost Estimate (Base-P50-P90) ⇩

ENGAGEMENT SUMMARY REPORT - v3 (Draft)

Proposed Trial of Bicycle Lanes

(Argyle, Campbell, Bathurst and Liverpool Streets)

24 August 2020

YOUR SAY HOBART

yoursay.hobartcity.com.au

Prepared by

City of HOBART

Project Background

The City of Hobart, in consultation with the Department of State Growth, has developed preliminary concept designs for a proposed trial implementation of bicycle lanes along sections of Argyle Street, Campbell Street, Liverpool Street and Bathurst Street.

The proposed trial bicycle lanes aim provide an important missing link in the City's current bicycle lane provisions. A connected network of bicycle paths and lanes will support more people to ride bikes to, through and around the city for work, study, shopping and recreation.

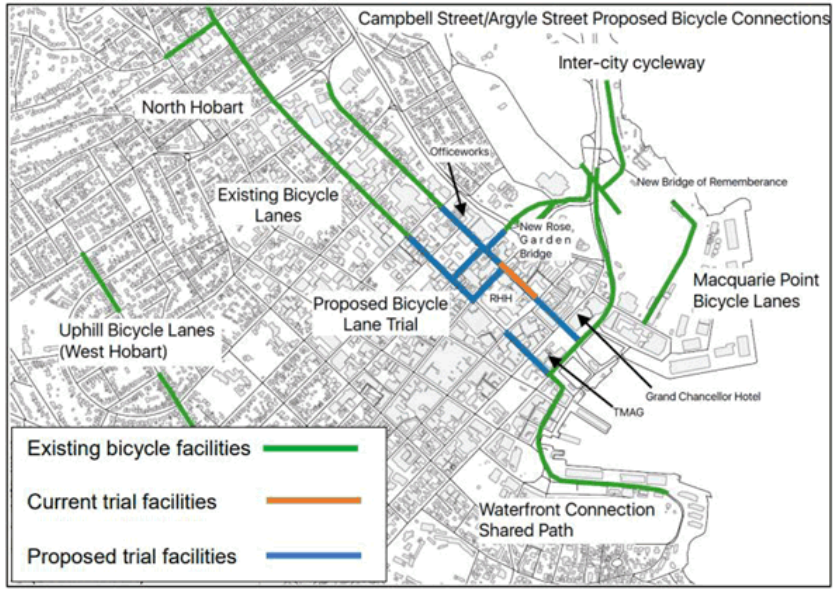
The proposed trial of new bicycle lanes will connect the existing on-road bicycle lanes on Argyle and Campbell Streets, the Rose Garden Bridge and Queens Domain, the InterCity Cycleway and Sullivans Cove.

In December 2019, the Council resolved that the initial concept design for the proposed trial bicycle lanes be used as the basis to commence consultation with relevant stakeholders, in particular, property owners, land owners, residents and lease holders of the affected streets; and that the facilities be trailed for a one year period. A further report is to be provided to the Council following the engagement with key stakeholders before any final decision around the implementation of the trial.

Consultation with relevant stakeholders was delayed with the onset of the COVID19 pandemic and subsequent disruption between March-May 2020. Consultation opened on 8 June 2020 with an information pack sent to owners and occupiers of properties adjacent to the proposed trial bike lanes. The initial feedback period ran for three weeks up until the 30 June 2020.

During this time, direct contact was also made with related stakeholders including Metro, RedDecker and RACT. Face to face meetings and phone calls also took place with several owners and occupiers who wanted to speak directly about the proposal. Stakeholder meetings and ongoing discussions were held during June and July 2020.

This report summarises the engagement work undertaken, and the feedback received. It is intended that this summary report be used to help inform Council about range of feedback received by stakeholders that were engaged, and where specific concerns have been raised on a block by block basis.



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Engagement Objectives

Purpose of Engagement
The purpose of the engagement was to hear from owners and occupiers and understand to what extent the proposed trial may directly impact a particular property or business operation.

The preliminary concept designs for the proposed trial bike lanes introduce changes of varying degrees on up to 14 separate blocks in the Hobart CBD. Street frontages along these blocks vary considerably, including empty lots set to be future large developments (eg UTAS), large government institutions (eg Tasmanian Health Service), and blocks with multiple retail and services tenancies.

Particular attention was given to things such as:
- how a loss or change to on-street parking may positively or negatively affect an owner/occupier
- Impacts on driveways or loading zones
- Business operational/trading hours
- Reliance on nearby on street parking for customers, supplier deliveries
- Impacts on bus stops

The following objectives were defined during the engagement planning phase.

Objective 1
The engagement process needs to **'Inform'** key stakeholders about:
- Project background, vision, indicative timeline for implementation of any trial should it proceed.
- How a particular property may be directly impacted by any proposed changes to the road layout, parking, access to driveways, along a specific block.
- How an owner or occupier can obtain further information on the proposed trial, and additional background information.
- How an owner or occupier can provide specific feedback or general comments on the proposed trial and draft bike lane plans.

Objective 2

The engagement needs to **'Consult'** with key stakeholders about:
- Concerns or comments specific to the initial concept designs on their block.
- Any potential direct impact on their property/business that the 12-month trial may pose.
- Any outstanding questions owners/occupiers have about the proposed trial.

How we engaged

The December 2019 Council resolved that:

> *'consultation take place with relevant stakeholders, in particular, property owners, land owners, residents and lease holders of the affected streets'.*

The focus of the engagement was on the direct impacts the proposal would have to adjacent properties and businesses.

Targeting stakeholders

A stakeholder list was compiled of property owners from Council's rates database. Ground-floor occupiers were targeted through mailing to street addresses. In addition, buildings with known multiple tenancies were targeted via hand-delivery of the engagement materials direct to businesses.

Feedback from wider community, including bicycle user groups, other road users, pedestrian groups and the general public were not part of the scope of this particular engagement.

In addition to owners and occupiers, the following relevant institutional stakeholders were contacted:

- University of Tasmania
- RACT
- Tasmanian Bus Association
- Metro, RedDecker, Skybus, O'Driscoll, Redline, Gilbert Coaches, TassieLink
- Tasmanian Museum and Art Gallery,
- Tasmanian Fire Service
- Tas Police
- Ambulance Tasmania
- TasPorts
- Department of State Growth – Passenger Transport
- Tasmanian Health Service

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Engagement Methods

- Key Stakeholders and Owners and occupiers of properties adjacent to the proposed bicycle lane trial were sent an information pack via mail or hand-delivery in early June 2020.

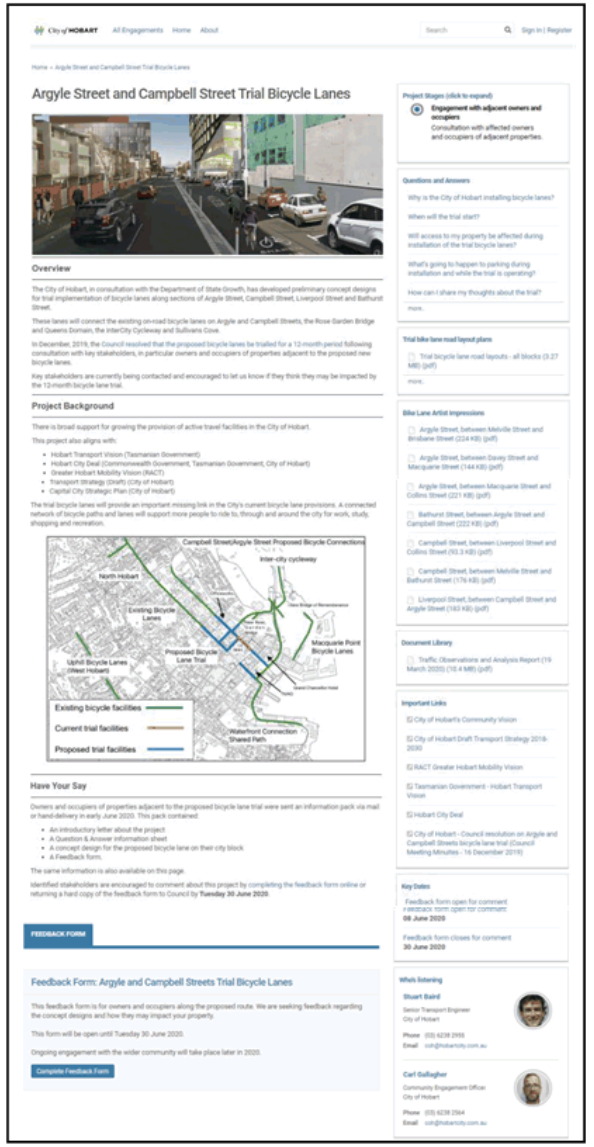
  This pack contained:

  - An introductory letter about the project
  - A Question & Answer information sheet
  - A concept design for the proposed bicycle lane on their city block
  - Where available, an artist impression of the proposed road layout.
  - A Feedback form.

- Stakeholders were encouraged to comment about how their property would be impacted should the trial proceed, or if they had further questions or comments about the proposed trail concept designs. Stakeholders were asked to complete the feedback form online or returning a hard copy of the feedback form to Council.

- A dedicated project page was also created on the YourSay Hobart website. Additional background information was made available on this site, along with the preliminary concept designs for all blocks, and an online version of the feedback form.

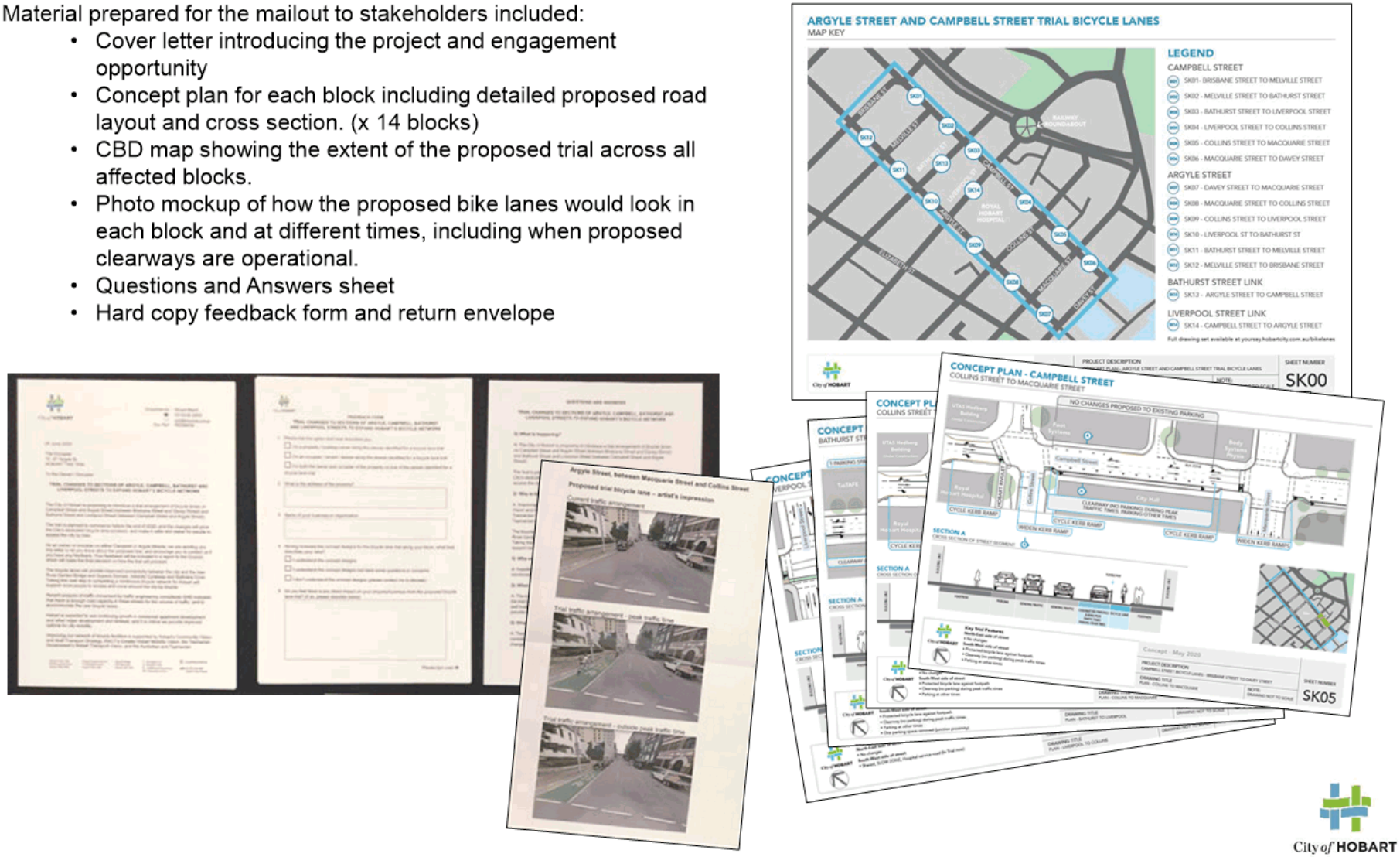
- Stakeholders were also provided with the opportunity for discussion (call/skype/meeting) between affected stakeholder and project team.



Engagement Methods

Material prepared for the mailout to stakeholders included:

- Cover letter introducing the project and engagement opportunity
- Concept plan for each block including detailed proposed road layout and cross section. (x 14 blocks)
- CBD map showing the extent of the proposed trial across all affected blocks.
- Photo mockup of how the proposed bike lanes would look in each block and at different times, including when proposed clearways are operational.
- Questions and Answers sheet
- Hard copy feedback form and return envelope



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Engagement Methods

Stakeholders were asked to complete a feedback form that contained the following questions:

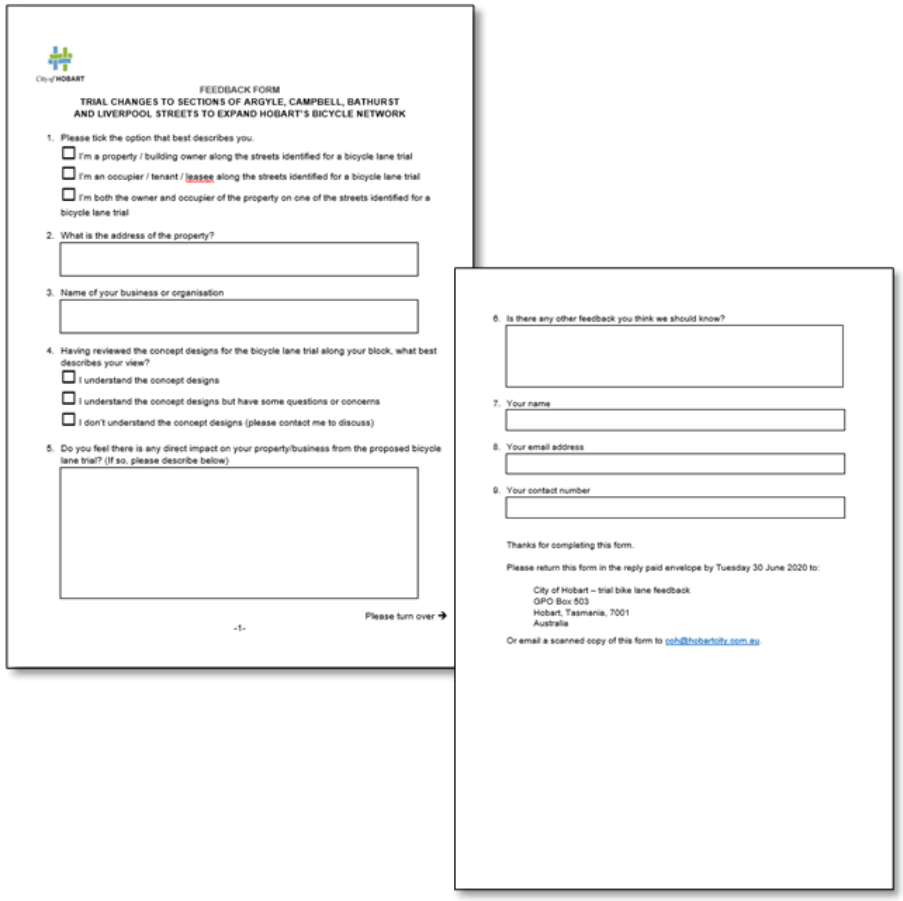
1. Having reviewed the concept designs for the separated bicycle lane along your block, what best describes your view?
   - I understand the concept designs
   - I understand the concept designs but have some questions or concerns
   - I don't understand the concept designs (please contact me to discuss)

2. Do you feel there is any direct impact on your property/business from the proposed bicycle lane trial?

3. Is there any other feedback you think we should know?

These questions were designed to prompt a discussion with stakeholders if the proposal raised any concerns.

The engagement was specifically looking at any direct impacts that the proposed trial would have on businesses and property owners if implemented as per the initial concept design.



City of Hobart

FEEDBACK FORM

TRIAL CHANGES TO SECTIONS OF ARGYLE, CAMPBELL, BATHURST AND LIVERPOOL STREETS TO EXPAND HOBART'S BICYCLE NETWORK

1. Please tick the option that best describes you.
   - ☐ I'm a property / building owner along the streets identified for a bicycle lane trial
   - ☐ I'm an occupier / tenant / lessee along the streets identified for a bicycle lane trial
   - ☐ I'm both the owner and occupier of the property on one of the streets identified for a bicycle lane trial
2. What is the address of the property?
3. Name of your business or organisation
4. Having reviewed the concept designs for the bicycle lane trial along your block, what best describes your view?
   - ☐ I understand the concept designs
   - ☐ I understand the concept designs but have some questions or concerns
   - ☐ I don't understand the concept designs (please contact me to discuss)
5. Do you feel there is any direct impact on your property/business from the proposed bicycle lane trial? (If so, please describe below)

Please turn over →

-1-

6. Is there any other feedback you think we should know?
7. Your name
8. Your email address
9. Your contact number

Thanks for completing this form.

Please return this form in the reply paid envelope by Tuesday 30 June 2020 to:

City of Hobart – trial bike lane feedback
GPO Box 503
Hobart, Tasmania, 7001
Australia

Or email a scanned copy of this form to coh@hobartcity.com.au

City of HOBART

Stakeholder feedback by block

YOUR SAY HOBART

yoursay.hobartcity.com.au

Prepared by

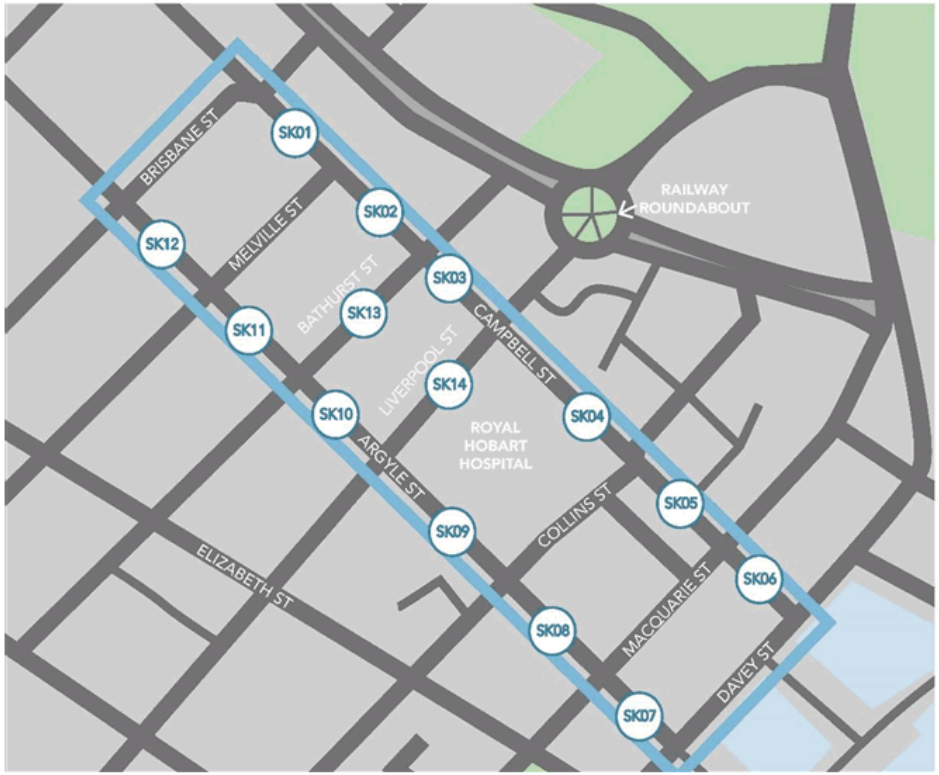
City of HOBART

Specific feedback by block

Stakeholder feedback has been collated for each block and summarised on the following pages.

Please note the focus for this engagement was on direct impacts to properties on specific blocks.

Some institutional stakeholders, and larger property owners, chose to provide written feedback related to the proposal as a whole. Some of this includes opinions and alternative suggestions to the concept plans. This feedback has been included in later in this report to provide transparency of the feedback received.



LEGEND

CAMPBELL STREET

- SK01- BRISBANE STREET TO MELVILLE STREET
- SK02 - MELVILLE STREET TO BATHURST STREET
- SK03 - BATHURST STREET TO LIVERPOOL STREET
- SK04 - LIVERPOOL STREET TO COLLINS STREET
- SK05 - COLLINS STREET TO MACQUARIE STREET
- SK06 - MACQUARIE STREET TO DAVEY STREET

ARGYLE STREET

- SK07 - DAVEY STREET TO MACQUARIE STREET
- SK08 - MACQUARIE STREET TO COLLINS STREET
- SK09 - COLLINS STREET TO LIVERPOOL STREET
- SK10 - LIVERPOOL ST TO BATHURST ST
- SK11 - BATHURST STREET TO MELVILLE STREET
- SK12 - MELVILLE STREET TO BRISBANE STREET

BATHURST STREET LINK

- SK13 - ARGYLE STREET TO CAMPBELL STREET

LIVERPOOL STREET LINK

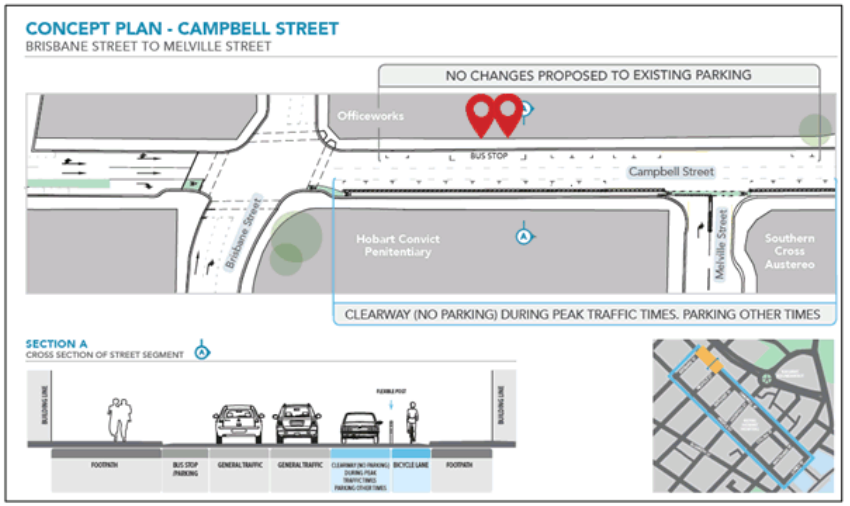
- SK14 - CAMPBELL STREET TO ARGYLE STREET

Specific feedback by block

SK01 – Campbell Street
Brisbane Street to Melville Street

Feedback Received

What was said	*1.1 - "there are more than 10 collisions a week between the bus stop and Bathurst Street"* *1.2 - "full-size buses and trucks are 2.5m and cannot fit in these lanes"* *1.3 "if changes are not made...there will be a serious accident"* *1.4 – "perhaps design a pull-in area for the bus stop (reduce footpath)* *1.5 – "Cars parked on the right and side is very hazardous when reversing into the space, also for passengers getting out. It could also reduce the road to one lane (when cars are parking)"*
What we heard	• Concerns for safety around bus stop when only two lanes operational as the lanes are narrow, making it difficult for cars to pass when bus is stopped. • Potential for this to be exacerbated if bus is stopped and a car is reverse parking opposite the stop at the same time.



101 Campbell St

103 Campbell St

stakeholder responses on this block

2 – owner/occupier
0 – institution

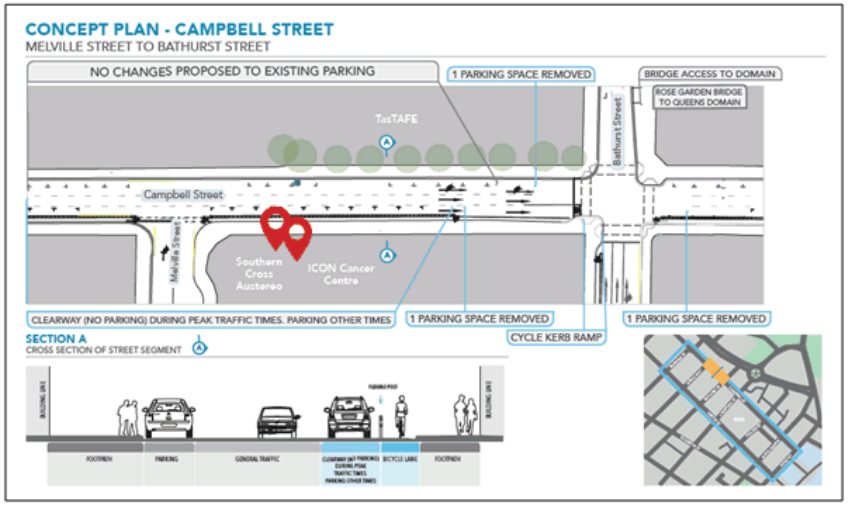
Block-specific key concerns raised
- narrowness of existing lanes,
- position of bus stop, and
- increased traffic congestion when clearway not in operation.

Specific feedback by block

SK02 – Campbell Street
Melville Street to Bathurst Street

Feedback Received

What was said	*2.1 - "My prime concern is with the removal of parking options along Campbell St. These are regularly used by patients of the Icon Cancer Clinic, many of who are elderly or unable to make sustained and extended exercise as a result of their treatment (walk from Argyle st carpark not possibe)...A similar situation could also be present for patients of the Hobart Specialist Day Hospital and Tas IVF."* *2.2 – "(concern around) the general pressure that will be placed on parking for visitors in the surrounding area, discouraging both visitors to the CBD and for commercial properties to see the CBD of Hobart as a prime location for investment"* *2.3 – "Concern with regards to traffic congestion leading into the CBD, especially in Campbell St....the sum benefit to bicycle users does not balance with the deficit to those required to use a car"*
What we heard	• Adequate close-by patient drop-off parking options for health-related businesses at 2 Melville St need to be considered. The proposed clearway in peak times could impact current short-stay (30min) allocated spaces outside Icon Cancer Centre. Icon operated 8am-4pm, tasivf 7am-4, Eternal 8.30am-6pm, HSDH 6.30am-6pm. • Concern around potential increased traffic congestion



2 Melville St

2 Melville St

Stakeholder responses on this block

2 – owner/occupier
0 – institution

Block-specific key concerns raised

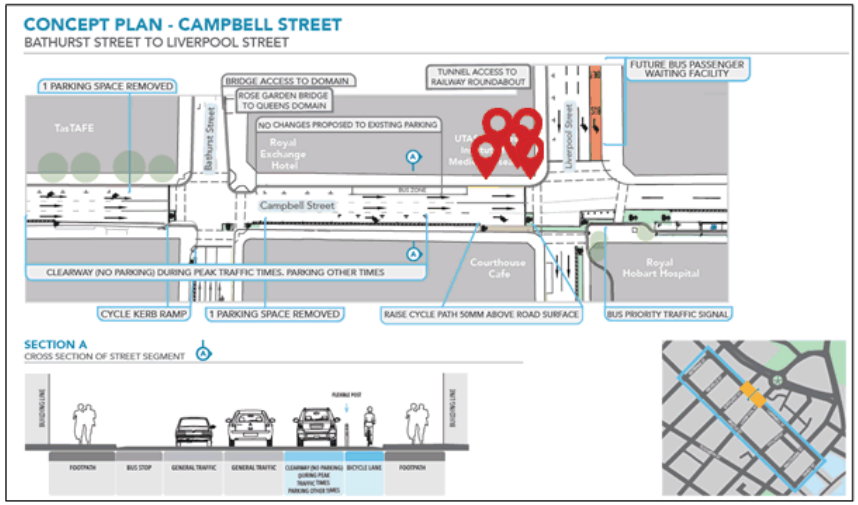
- Current 4 spaces (30min parking) outside Icon Cancer Centre entrance is used by patients for drop-off/pickup. There is a case for these to be retained

Specific feedback by block

SK03 – Campbell Street
Bathurst Street to Liverpool Street

Feedback Received

What was said	*3.1 - "Many of the staff in this building commute by bike. This will make their commute safer"* *3.2 "Will encourage more cyclists to ride to work and utilise the facilities we provide (for staff). Providing a safer alternative to public transport during COVID 19 but also a greener way to travel into the future. I fully support the proposal."* *3.3 "Fantastic work Hobart City Council, so supportive of this!!"* *3.4 "Positive impact by encouraging more staff to cycle to work (and safely). Highly support the move towards bike lanes, they are very much needed to support active and sustainable travel in Hobart"* *3.5 "More students & staff will feel supported riding bicycles to Menzies"*
What we heard	• The trial is supported by a number of workers who commute by bike to the Menzies building which is known to provide end of trip facilities.



17 Liverpool – Menzies

Stakeholder responses on this block

5 – owner/occupier
0 – institution

Block-specific key concerns raised

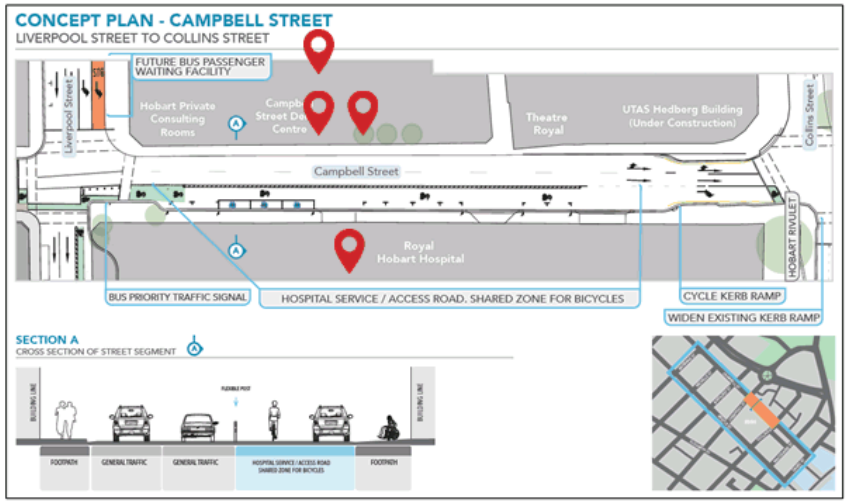
- No concerns raised from stakeholders in this block

Specific feedback by block

SK04 – Campbell Street
Liverpool Street to Collins Street

Feedback Received

What was said	*4.1 - "It's a good thing. Build some more!"* *4.2 "My observation is the cycle way on these streets are used minimally. My concern is the cost will outweigh the benefits. Traffic congestion on Campbell Street is presently an issue"* *4.3 "the bus stop currently located on the eastern side of Campbell St opposite the RHH should be relocated to the West side and incorporated into the on street car parking alignment in order to both ease the effect on the traffic flow in two traffic lanes, and create a drop off immediately outside the hospital negating the need to cross the busy Campbell Street to gain entry to the hospital. This would entail a right turn for buses entering Campbell st from the east on Liverpool Street from the right hand lane rather than the left as indicated on the current plans"*
What we heard	• The existing shared service lane in front of the hospital is underutilised by cyclists • There are concerns about congestion on Campbell Street



47 Campbell St

39 Campbell St

16 Mistral Place

RHH

Stakeholder responses on this block

3 – owner/occupier
1 – institution

Block-specific key concerns raised

- Current bike lane is underutilised

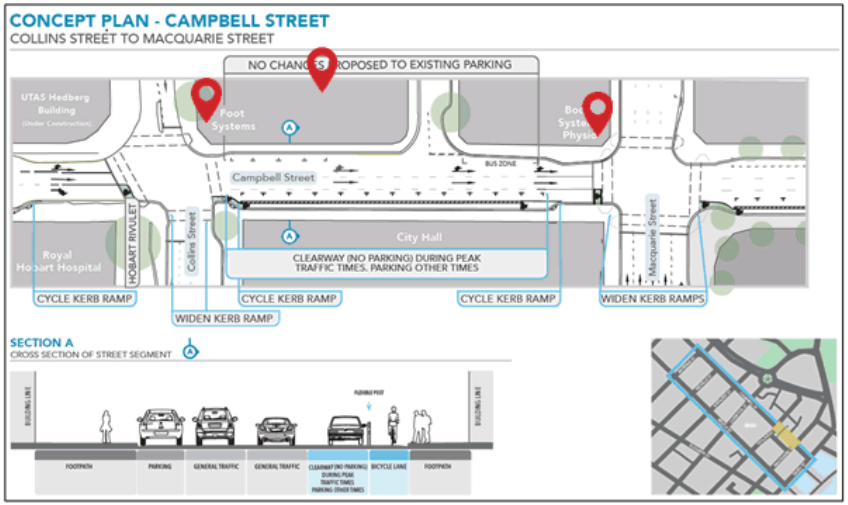
City of HOBART

Specific feedback by block

SK05 – Campbell Street
Collins Street to Macquarie Street

Feedback Received

What was said	*5.1 - "reduced parking between 7-9 will have minimal impact (business opens 8:30am). Reduced parking 4-6pm will have a significant impact for patients accessing the business. Reduction in parking around our business has already occurred (due to RHH and Hedburg developments). Our preference would be a permanent bicycle lane and parking (i.e no clearway in peek times)."*
What we heard	• Further reduction in parking is a concern for nearby health related businesses



4 Creswell Row

38 Collins

19 Macquarie

Stakeholder responses on this block

3 – owner/occupier
0 – institution

Block-specific key concerns raised

- Further reduction in parking is a concern for nearby health related businesses

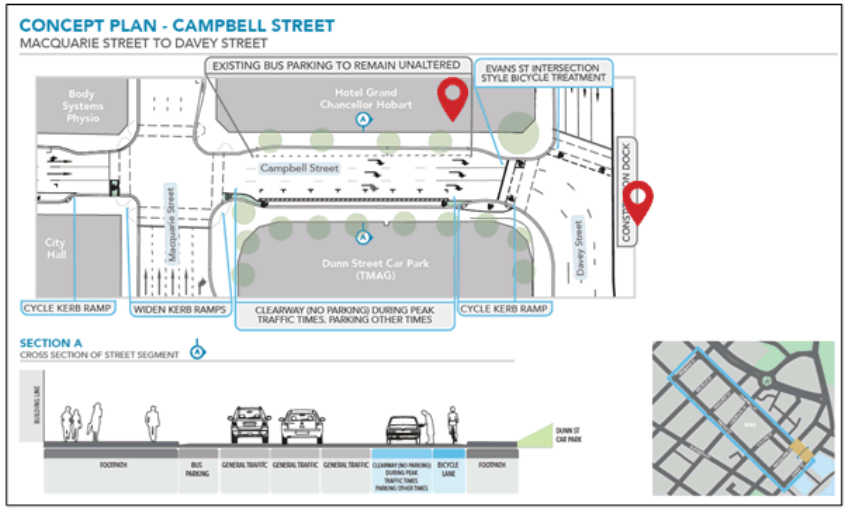
City of HOBART

Specific feedback by block

SK06 – Campbell Street
Macquarie Street to Davey Street

Feedback Received

What was said	*6.1 - "Having reviewed the plans and documents I can confirm that TasPorts has no objections to the propose expansion of the network"*
What we heard	• No concerns indicated by key stakeholders for this block



Tasports – 'no objections'

Grand Chancellor

Stakeholder responses on this block

1 – owner/occupier
2 – institution

Block-specific key concerns raised

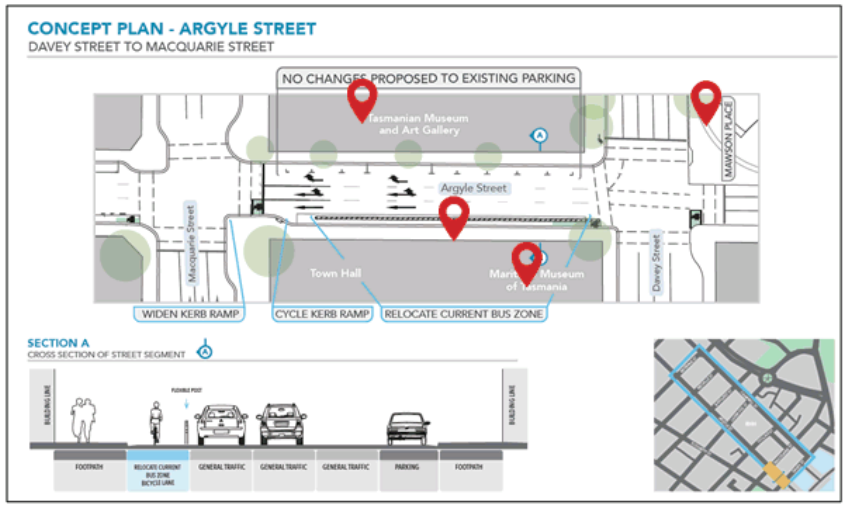
- No objections were raised by stakeholders in this block

Specific feedback by block

SK07 – Argyle Street
Davey Street to Macquarie Street

Feedback Received

What was said	*7.1 - "Removal of the bus stops on Argyle St (outside Council Offices) needs resolution. TMAG has 25000 school students per annum and that is the only bus stop that allows on-boarding/alighting safely....movement of individuals through Dunn Place car park is not something we want to encourage, especially school groups"* *7.2 - "Support the initiative totally, and wonder where the appropriate end-of-trip secure bike facilities will be established"* *7.3 – "the (Maritime) museum is generally supportive of the initiative....The museum would like to see the provision for dropping off and picking up of passengers for the (red decker) service as such visitors are essential to the museums financial survival. (The museum) would like to see the provisioning of loading/unloading facilities that can be safely accessed on the block.* *7.4 – detailed commentary provided by Red Decker separately*
What we heard	• Relocation of current bus zone is of concern for nearby museums as current one-way road configuration provides limited safe drop-off areas.



Tasports – "no objection"

Maritime Museum of Tasmania

Red Decker

TMAG

Stakeholder responses on this block

0 – owner/occupier
4 – institution

Block-specific key concerns raised

- Relocation of bus stop would impact tourist bus operators

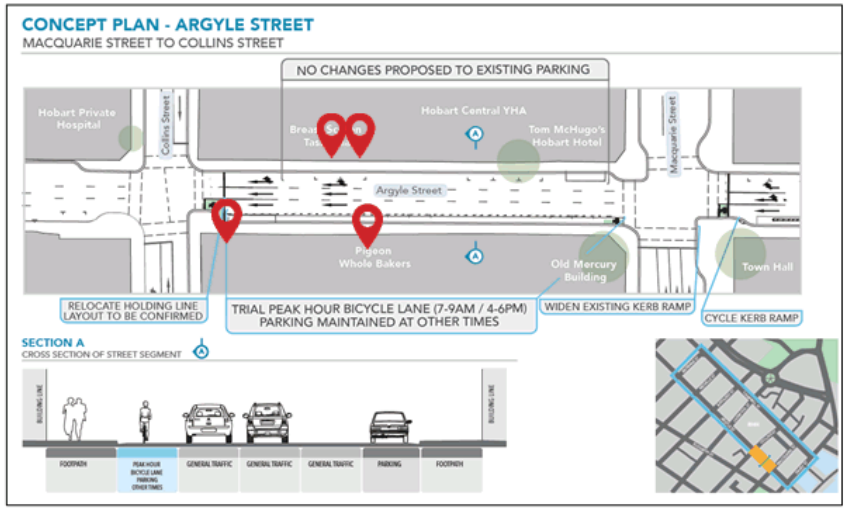
Specific feedback by block

SK08 – Argyle Street
Macquarie Street to Collins Street

Feedback Received

What was said	
	8.1 - "I will support the proposed bicycle lane plan, this will provide a safer route for cyclists getting into the city" *8.2 – "Is it possible for changes to the type of parking on the left side of Argyle St near the corner of Collins. This is currently a loading zone. It would be helpful to our service for this so be disabled parking , drop off//pickup or 15min parking. Could the existing loading zone be moved back towards the old Mercury building so local businesses could still have this facility?"* *8.3 – "limited parking times along the bicycle lane route would have limited impact on our services. Disability car parking in the Argyle St Carpark remains an issue for patients accessing hospital and outpatient services in the Wellington Centre and Telstra building. A few more spaces would be helpful"* *8.4 – "will lose parking adjacent to property…(in morning peak). Delivery vehicles and trucks parking on street to dispatch deliveries will be affected"* *8.5 –"There are a large number of cyclists who regularly commute to my building for work. Usually bikes travel on the right side of Argyle here, but will instead have to travel on the left and then cross multiple lanes of traffic in order to enter our carpark…I question the safety of this proposal. Also, many bike commuters travel outside 'rush hour', eg leave work at 2.30pm to meet children at school pickups. They won't benefit from these proposals."*

Feedback continued on next page



- **24-32 Argyle**
- **25 Argyle**
- **19-27 Argyle**
- **70 Collins**

Stakeholder responses on this block

4 – owner/occupier
0 – institution

Specific feedback by block

SK08 – Argyle Street
Macquarie Street to Collins Street

Feedback Received

Feedback continued from previous page

What we heard	
	• More on street disability parking in this area would be of benefit to patients of nearby health related occupiers. • Depending on the timing of the morning peak bike lane, some delivery vehicles may be impacted (delivery times changed). Further consultation with relevant businesses needed during implementation. • Concern that bike lane on the left side of the road won't improve safety.

Block-specific key concerns raised

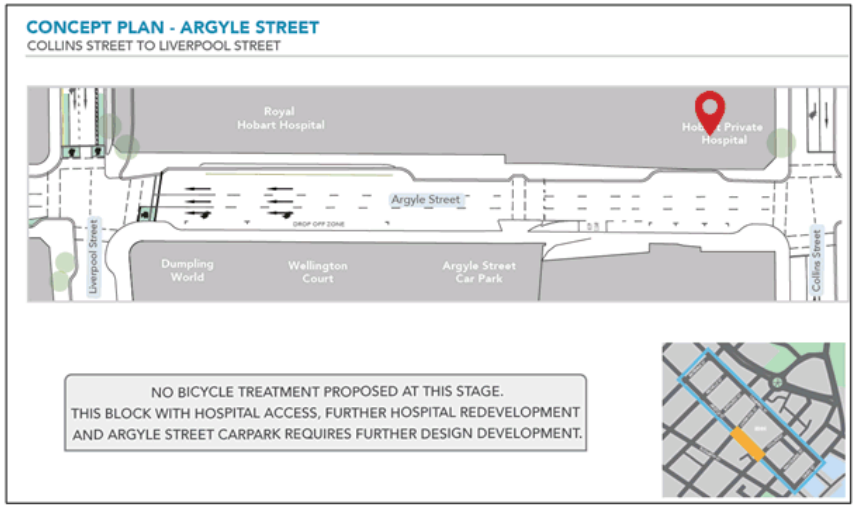
- further discussions with businesses needed over the timing of the clearway

Specific feedback by block

SK09 – Argyle Street
Collins Street to Liverpool Street

Feedback Received

What was said	*9.1 - "The area of road and footpath near the lights and exit from Argyle Street Carpark is an accident waiting to happen – how someone hasn't been run over is a miracle. The risk to bike riders with this exit and the line up for the carpark is immense"*
What we heard	• Cyclist safety on this block needs to be considered, especially around the Argyle Street car park entrance.



Hobart Private Hospital

Stakeholder responses on this block

0 – owner/occupier
1 – institution

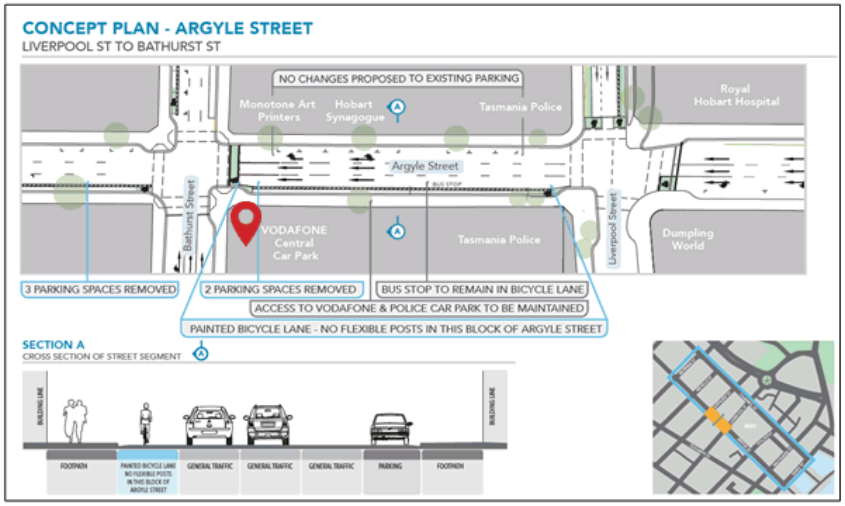
Block-specific key concerns raised
- Cyclist safety

Specific feedback by block

SK10 – Argyle Street
Liverpool Street to Bathurst Street

Feedback Received

What was said	*10.1 - "Prior to the trial commencing we would ask that consideration be give to extending the hours of operation of the clearways particularly during the afternoon peaks. We believe the clearways should operate from 3pm through to 6:30pm in the afternoons."*
What we heard	Traffic congestion in the afternoon peak is of concern. Extending the clearway hours could alleviate this.



84 Bathurst

Stakeholder responses on this block

1 – owner/occupier
0 – institution

Block-specific key concerns raised

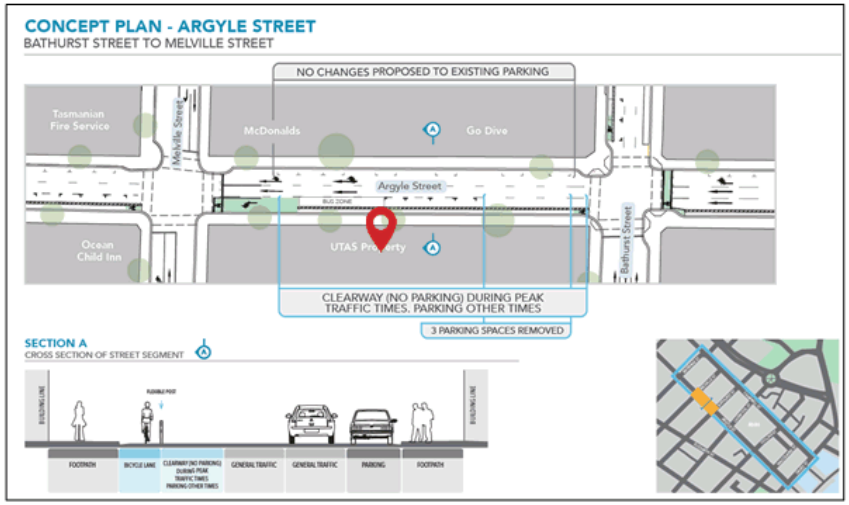
- traffic congestion and clearway hours

Specific feedback by block

SK11 – Argyle Street
Bathurst Street to Melville Street

Feedback Received

What was said	*11.1 – Submission received from UTAS. This has been detailed separately.*
What we heard	



UTAS

Stakeholder responses on this block

0 – owner/occupier
1 – institution

Block-specific key concerns raised

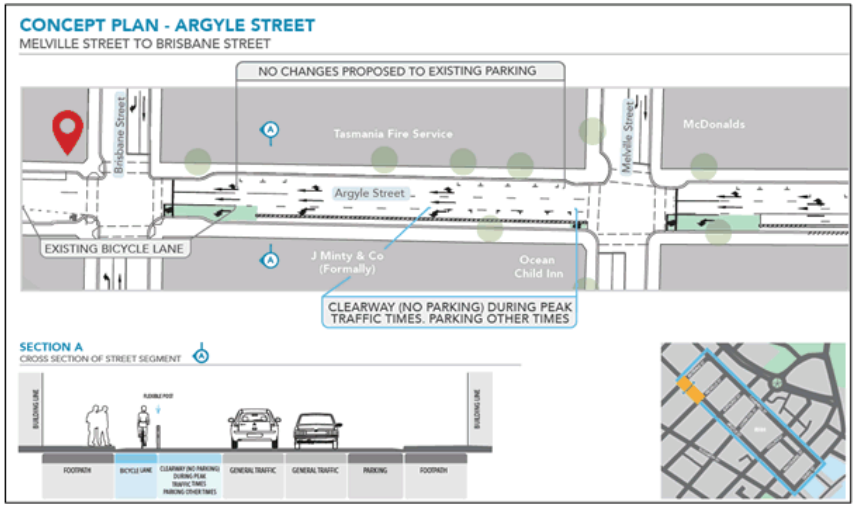
- No concerns raised from stakeholders in this block

Specific feedback by block

SK12 – Argyle Street
Melville Street to Brisbane Street

Feedback Received

What was said	*12.1 - "there is limited but well used parking outside my property in Argyle street and I would not like to see this affected by a bicycle lane"*
What we heard	• There is some concern about potential loss of nearby on-street parking during peak traffic times.



29 Brisbane

Stakeholder responses on this block

1 – owner/occupier
0 – institution

Block-specific key concerns raised

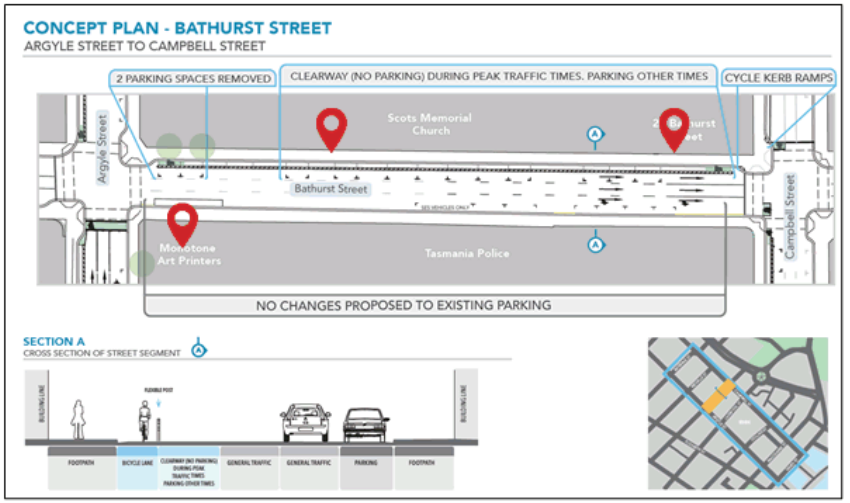
- Loss of parking

Specific feedback by block

SK13 – Bathurst Street
Argyle Street to Campbell Street

Feedback Received

What was said	*13.1 - "could signage for cyclist to slow down be installed, warning Cyclists to go slow as they approach Scotts Church through to the lights on Campbell St…as the driveways (from Scotts Church carpark and 21 Bathurst St are slightly obscured"* *13.2 – "I exit Scots Church Carpark into Bathurst St. At times it is extremely difficult to see past parked vehicles from the intersection to the exit. The parking spaces should be removed for easier vision of oncoming cars and bicycles. Not pushed further out into the street"* *13.3 – "In off-peak times cars parked (either side of Scots Church driveways) will block the line of sight for approaching vehicles from Bathurst and Argyle Streets. It's almost impossible to exit the car park and stay in the left hand lane. Delivery trucks use the entry and exit when dropping off supplies to the Church and Childcare centre."* *13.4 – "In peak times entry and exit from the carpark will be much improved when there are no parked cars (along Bathurst St).*
What we heard	• Concerns for visibility being further reduced for cars exiting Scotts church carpark in off-peak time.



21 Bathurst Street

29 Bathurst Street

61 Argyle St

Stakeholder responses on this block

3 – owner/occupier
0 – institution

Block-specific key concerns raised

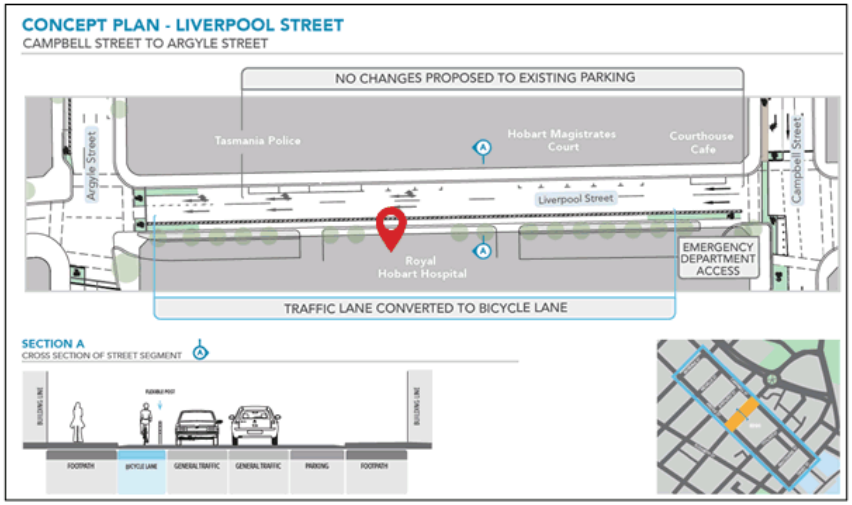
- Traffic safety concerns with current proposed parking

Specific feedback by block

SK14 – Liverpool Street
Campbell Street to Argyle Street

Feedback Received

What was said	*14.1* - "No concerns were raised in relation to the proposal"
What we heard	• No concerns have been raised regarding this block



RHH

Stakeholder responses on this block

0 – owner/occupier
1 – institution

Block-specific key concerns raised

- No concerns raised from stakeholders in this block

Stakeholder submissions

YOUR SAY HOBART

yoursay.hobartcity.com.au

Prepared by

City of HOBART

Stakeholder feedback received– METRO

Letter received by Metro - 23 June 2020

"Metro contends there are inherent safety issues with placing bicycle lanes between bus stops and the footpath. This arrangement requires bus users to cross the bicycle lane when boarding and alighting the bus, creating a high risk of pedestrian interaction with cyclists. Example shown below.

"Additionally, moving the bus stop away from the kerb to install a bicycle lane will disadvantage passengers with limited mobility or vision impairment, rendering the bus stop non-compliant with the Disability Standards for Accessible Public Transport that are set out under the Disability and Discrimination Act 1992.

"Metro also has concerns regarding the significant narrowing of main arterial roads such as Argyle Street and Campbell Street, which are already at capacity during peak travel periods, and carry large volumes of vehicular movement at other times. To encourage the use of alternative modes of transport beyond the private car, clearways should be installed on both sides of these roads during peak periods to facilitate reliable public transport services.

"Whilst Metro supports in-principle the reduction of vehicular movements within Hobart, the initiative could be extended to include bus prioritisation measures as a commentary measure to encourage motorists onto public transport.

SK01, SK02, SK03
"Metro supports the implementation of clearways during peak periods, however questions why clearways do not extend to the eastern side of Campbell Street. The introduction of bicycle lanes along this roadway effectively reduces Campbell Street to one lane outside of peak periods. Buses necessarily occupy the left side of any roadway to pick-up or set-down passengers. Retaining parking along the eastern side of Campbell Street at all times limits Metro's ability to adhere to the advertised timetable. Additionally, lane width in the vicinity of TAFE (SK02) results in Metro buses needing straddle lanes in this section, so any narrowing of the available road space would be detrimental to traffic flow.

"Metro suggests that the clearway initiative be expanded to the eastern side of Campbell Street during peak periods to assist with travel times for both motorists and public transport.

"The kerb bulge on the south eastern corner (SK02 & SK03) of Bathurst Street and Campbell Street should be removed to allow the clearway to extend along Campbell Street beyond this intersection.

"Metro welcomes the introduction of a dedicated bus lane and bus priority traffic signals at the intersection of Liverpool Street and Campbell Street (SK03)."

SK07
"Metro has concerns regarding the proposed relocation of the bus zone on the western side of this section, and the wider implications on public transport operators. Metro seeks clarification of the proposed relocation site to assess the impact on Metro's infrastructure and operations. "

SK09
"Metro suggests the western-most lane be changed to a 'left turn only' lane to reduce the length of queued traffic in this area, which often extends to the Argyle Street carpark. "

SK10
"Metro has concerns regarding the introduction of a bicycle lane alongside a highly-patronised bus stop. The potential for collision between passengers and bicycles is a significant safety concern. As there is no bicycle lane treatment proposed for Section SK09 (beyond the traffic light waiting bay), Metro suggests that the bicycle lane commence north of the bus stop."

SK11, SK12
"Similar to its concerns in relation to roadway narrowing on Campbell Street, reducing access to one lane during off peak can significantly impact Metro's ability to deliver services reliably.

"Section SK11 indicates a change to the western-most lane designation to that of 'left turn only'. Metro has concerns that cars may queue through the bus zone in this location. Metro requests that line marking facilitates buses being able to move freely from the bus stop into the northbound lanes."

Stakeholder feedback received– DSG

Letter received by DSG- 30 June 2020

The following comments were submitted by Passenger Transport section of Department of State Growth, Tasmanian Government.

SK10 – Argyle Street (Liverpool Street to Bathurst Street)

"Council's suggestion to implement a bicycle lane on the section of Argyle Street (between Liverpool and Bathurst Streets) will not affect the bus stop as per Metro's concerns. The bus stop will legitimise, and provide some additional safety, bicycle usage on this section of Argyle Street. Metro's suggestion that the bicycle lane commence north of the bus stop will only increase the gap in the bicycle network.

"An improvement to the bicycle network plan could actually be to have a painted bicycle lane commence at the intersection of Liverpool Street, and then become a separated cycleway after the bus stop. However, it's possible that council has not chosen this option because of the car park entry past the bus stop."

SK11 – Argyle Street (Bathurst Street to Melville Street)

"Moving a bus stop away from the kerb, without additional works, would appear to render the bus stop non-DDA compliant.

"An initial and temporary option may be to retain the separated bicycle lane until the bus zone and then the bicycle lane share the bus zone until the intersection (meaning the bus stop will not be away from the kerb). This may however prove a safety issue for bicycle users as bus drivers may not be able to see cyclists prior to pulling into the bus stop, especially if cars are parked in the remaining car parking spaces."

Photos supplied by Department of State Growth

Stakeholder feedback received – RACT

Letter received by RACT – 6 July 2020

"RACT supports a trial of Hobart CBD cycleways as they are in line with the principles in its Greater Hobart Mobility Vision and Active Transport Policy.

"However, while in support of a trial in principle, RACT would like to see a broad review of all current cycling infrastructure across Hobart. The objective of this review would be to ensure there is a cohesive network of infrastructure in the right locations and with the most appropriate connections.

"The review should also focus on ensuring the location of infrastructure provides the best opportunities to physically separate cyclists from motorists. This has been a high priority for RACT for many years and is outlined in both the RACT's Greater Hobart Mobility Vision and Active Transport Policy.

"With this in mind, RACT would like to see City of Hobart explore the prioritisation of active and public transport along Elizabeth Street, north and south bound. This is also in line with the Greater Hobart Mobility Vision, as well as RACT's Active Transport and Public Transport policies.

"RACT believes the long-term focus on Elizabeth Street may provide opportunities for greater separation between cyclists and motorists, as well as allow for more vehicles on Campbell and Argyle Streets during peak periods. However, it is understood this is not within the scope of this project.

"RACT also encourages the City of Hobart to consider similar trials of cyclist infrastructure outlined in the Greater Hobart Mobility Vision, including:

- *Hobart waterfront to the CBD*
- *Rivulet Track to the Intercity Cycleway*
- *Sandy Bay to the CBD"*

Stakeholder feedback received – UTAS

Letter received by UTAS – 3 September 2020

UNIVERSITY of TASMANIA

Division of the Chief Operating Officer

Stuart Baird
Senior Transport Engineer
City of Hobart

bairds@hobartcity.com.au

Dear Stuart

Thank you for the opportunity to respond to the City of Hobart's Argyle St and Campbell St trial bicycle lanes proposal, as advertised on the Council's website, https://yoursay.hobartcity.com.au/bikelanes.

As a key stakeholder in the city's future, the University of Tasmania fully supports the installation of bicycle lanes across the Hobart CBD. The benefits that it would bring – by reducing congestion on our roads and supporting a healthy and active community – would certainly be felt broadly across the community.

Thank you for sharing the details of your proposed trial network and implementation plans. We recognise there are different options in use around the world each with their own advantages and challenges. We look forward to assessing the results of your trial and working with you on how your proposed plans may be enhanced and embedded as a permanent transport solution.

As we have discussed, we would anticipate the proposed form of this network may evolve over time, as we learn from what has worked elsewhere and determine how best they would work in our city.

The University remains committed to working with you in support of the ongoing development of the Hobart cycling network for the benefit of all who live, work and study in the City of Hobart.

I look forward to our future discussions to ensure this proposal maintains momentum.

Kind regards

Phil McMahon

Executive Director Commercial Strategy (Acting)

3 September 2020

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"The University remains committed to working with you in support of the ongoing development of the Hobart cycling network for the benefit of all who live, work and study in the City of Hobart."

Stakeholder feedback received– THS (RHH)

- Meeting was held with John Hughson, Director Corporate and Support Services THS – Southern Region on Monday 6 July 2020 to discuss the proposal.
- The proposed plan was raised by Jon at the RHH Corporate Executive on Wednesday 8 July 2020.
- "No concerns were raised in relation to the proposal"

Stakeholder feedback received– Nekon

Letter received by Nekon - 10 August 2020

Nekon Pty. Ltd.

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ABN 64 676 235 168

7 August 2020

Neil Noye
Director City Planning
Hobart City Council
GPO Box 503
HOBART 7001

Dear Neil

Cycleway Concept on Sections of Argyle, Campbell, Bathurst and Liverpool Streets

I refer to my letter 25 June 2020 regarding the above, your subsequent response and discussions with Frazer Read on my behalf.

We appreciate the additional information that you have provided and discussions. However, having reviewed the information we remain concerned that the proposal is not well conceived and is not supported by analysis of the safety, take up and suitability of the existing on road cycle lanes around the city.

The starting point must be a review of whether the existing on road lanes are safe, being used and are meeting KPIs. They don't appear to be. It would be against best practice to extend the network in this format without this analysis.

It appears that the concept for the Campbell and Argyle Street cycle routes was shown notionally on the 2008 City of Hobart Principal Bicycle Network plan. However, we understand that there is not a detailed report that supports that plan. Since 2008 there have been numerous high level reports and a divergence from the 2008 network plan. The following themes and directions arise from more recent work and conflict with Council's concept:

- Council will make its decisions based on evidence and current key data[1].
- Council will collect data that assists decision making, tracks changes and measures its progress[2].
- Improve safety for pedestrians and cyclists[3].
- Support more people to ride bicycles through the development of a strong network of safe paths and streets where people regardless of age or ability can comfortably cycle.[4]
- Elizabeth Street (see Figures 1 and 2 over page) has been identified in more recent years as the preferred active transport spine in the CBD[5]

[1] Theme 1, City of Hobart Transport Strategy 2018-30
[2] Position Statement, Theme 1, City of Hobart Transport Strategy 2018-30
[3] P.17, Tasmanian Walking and Cycling for Active Transport Strategy.
[4] Theme 4, City of Hobart Transport Strategy 2018-30
[5] P12, 30 Year RACT Greater Hobart Mobility Vision, 2019 and P.13, Hobart Transport Vision, Infrastructure Tasmania, 2018

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Figure 1 - Elizabeth Transit Priority and Cycleway Concept , Infrastructure Tasmania, 2018

Figure 2 - Elizabeth Transit Priority and Cycleway Concept, Hobart Transport Vision, Infrastructure Tasmania, 2018

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We continue to have a number of serious concerns regarding the safety, impact on the road network and benefit of the proposal.

Safety

- Argyle and Campbell Streets are both one way and relatively high speed environments.
- As higher speed one way environments, on road cycle lanes on Campbell and Argyle Streets will not provide the required safety where people regardless of age or ability can comfortably cycle;
- The narrowing from three to two lanes either side with car doors opening into theses lanes is a serious hazard. Council will be aware of a number of fatalities associated with people getting out of cars into active traffic lanes. The proposed narrowing and concentration from three to two lanes will exacerbate these risks;
- Campbell Street is the primary south and east bound emergency vehicle route for police, fire and ambulance existing the CBD and consequently involves regular emergency vehicle movements and added distraction. For these reasons it is unsuited for use as a cycle priority road;
- The varied intersection treatments along the length of both Campbell and Argyle Streets will be confusing for both cycle and motor vehicle users, reducing suitability to only experienced cyclists.
- For the above reasons the proposal is unlikely to encourage more people to cycle. We urge Council to concentrate resources to an effective solution for the long term.
- More recent strategic planning has identified a two way cycleway on Elizabeth Street as the preferred route.

Efficiency of the road network

- Hobart City Council has a responsibility to ensure that traffic management measures that it implements do not lead to congestion and increased travel times for those less advantaged living at the fringes of Greater Hobart.
- The existing problems of traffic congestion in Hobart have been well documented over recent years. The closure of more traffic lanes without a full assessment of safety, impact on congestion, travel times, cost benefit assessment and demand for the concept cannot be justified;
- Given inadequacies in the design, the proposal is unlikely to lead to increased cycle use. It is therefore also unlikely to reduce vehicle demands and is likely to increase traffic congestion without benefit.
- The GHD report is based on one winter day only and also at a time when many road closures were in place within the city. Any proposals should be informed by further traffic and cycle samples across a number of days through the year as well as comprehensive modelling.

Budget

- Investment without supporting data is not justified.
- For the reasons expressed above the proposal will not achieve the purpose to increase safe cycle infrastructure and encourage greater cycle use.

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- The post Covid economic environment has put unprecedent strain on the finances of all levels of government. A $500,000 trial of cycle lanes that are unlikely to be effective cannot be justified.
- We recognise that an Elizabeth Street solution may be more expensive. However it is critical that Council progresses to a meaningful long term solution rather than waste time and money on substandard projects that deliver no substantive benefit and will cost more money to reverse in the future.

KPIs

- The trial is proposed without any background data of the number of users of existing on road cycle lanes. In the absence of this data there will be no way to measure the success of the proposed trial.
- What are the KPI numbers for a successful trial?
- What happens if the trial is unsuccessful?

On Street carparking

- As previously conveyed, the ICON cancer centre relies on the adjacent on street car parking spaces for the drop off and pick up of patients undergoing treatment. It is important that these parking spaces remain unencumbered.

Conclusion

The starting point for this concept should have been a review of whether the existing on road cycle lanes around the city are safe, fit for purpose and being used. No such analysis has been done and it would be against best practice for Council to act without this information.

The proposed cycle lane concept is also not well conceived within the higher-speed one-way environments of Campbell and Argyle Streets. It will not provide a safe path where people regardless of age or ability will comfortably cycle. It is therefore unlikely to lead to increased cycle use and the $500,000 trial cannot be justified, particularly in the post Covid economic environment.

Council must act as the model proponent and ensure that the proposal is:

- based on evidence and data
- supported by analysis of the safety, use and suitability to provide a safe path where people can ride comfortably regardless of age and ability
- supported by a wide sample of traffic counts and assessment of impact on congestion, regional as well as local travel times, cost benefit and demand for this format of proposal
- likely to be effective and represent an appropriate use of constrained public funds.

These matters have not been assessed and the proposed trial should not proceed. We would also suggest that a review of other existing bike lanes is made to disclose whether they have met KPI numbers.

We encourage Council to concentrate resources on an evidence based and effective long term cycle network.

Yours sincerely
NEKON PTY LTD

Per:

Robert Rockefeller
(Direct email: robert@nekon.com.au)
(Direct phone: (03) 6224 6511)
(Direct Mobile: 0417764924)

Stakeholder feedback received– Red Decker

Feedback received by Red Decker – 26 July 2020

- *Red Decker operate the official sightseeing tour of Hobart. Passengers can choose to hop-on and hop-off at 20 bus stops located in and around Hobart along our defined route.*
- *One of our key bus stops is located outside the Maritime Museum of Tasmania on Argyle Street and services both the Maritime Museum as well as the Tasmanian Museum and Art Gallery. It would be highly beneficial for us to maintain access to this bus stop for the purpose of our hop-on hop-off service.*
- *On our summer timetable (October – April), Red Decker buses stop, if required, at this bus stop at 10.02am, 11.02am, 12.02pm, 1.02pm, 2.02pm, 3.02pm and 4.02pm. On our winter timetable (May – September) Red Decker buses stop, if required, at this bus stop at 11.02am, 12.32pm, 2.32pm and 4.02pm. Buses operate 7 days a week (closed Christmas Day).*
- *Our onboard commentary is GPS activated….markers around the city trigger the activation of the commentary relevant to the nearby surroundings. It was quite a lengthy and costly process to introduce this technology. It would be an equally difficult process to update the commentary, due to a change in our tour route or bus stop location.*
- *Due to the height and length of our double-decker buses, we do require a reasonable amount of space to enter and exit the bus stop. There is a tree located on the footpath of Argyle Street near the Davey Street intersection. In order to safely enter the bus stop, with clearance away from the tree, our buses must enter the bus stop after the tree. There is currently adequate space to enter the stop, but this would not be the case if the bus stop was to move further down Argyle Street towards Davey Street.*
- *Our buses are also wheelchair accessible. In order to continue wheelchair access at this bus stop, the current curb height needs to remain in place. This ensures a safe gradient for loading and unloading wheelchair users with the use of our fold-out ramp.*

- *I understand that the current bus stop is marked as a bus pick-up and drop-off zone but is often used by various bus companies as a layover zone and this is to be avoided with the implementation of the trial bike lane.*
- *During the 2019/20 cruise ship season we operated our buses on a half-hourly timetable with up to 6 buses in operation on any given day. This included 4 timetabled buses and up to 2 buses on stand-by. Often peak capacity is reached on our morning departures and the back-up buses are required at short notice to accommodate the overflow of passengers. On busy cruise ship days, we do find it difficult to find suitable space for our back-up buses to layover until they are required.*
- *In regards to the alternate layover zone along Evan Street: • It does not have adequate toilet facilities for drivers. • Limitations due to the size of our double-decker buses prevent us from being able to turn around in Evan Street. •*
- *Limitations due to the size of our double-decker buses prevent us from being able to drive along Franklin Wharf to exit from Hunter Street.*
- *• TasPorts have strict guidelines in place that prevent any unauthorised access from Evan Street and around to Hunter Street past the Cruise Ship Terminal. Access is limited to tour operators who sell their products as Shore Excursions onboard the ship. We do not have such access. •*
- *It would be unsafe for us to drive past the Cruise Ship Terminal on a cruise ship day. Our big red buses can easily draw a crowd, and without a specified bus stop, it would be unsafe to load passengers here. Selling of tickets/tours is also not permitted here within such close proximity to the cruise ship.*

Engagement summary and discussion

YOUR SAY HOBART

yoursay.hobartcity.com.au

Prepared by

City of HOBART

Engagement Snapshot

256
Information packs mailed to key stakeholders

33
Written Feedback Submissions Received

14
Maps prepared detailing the proposal on each block

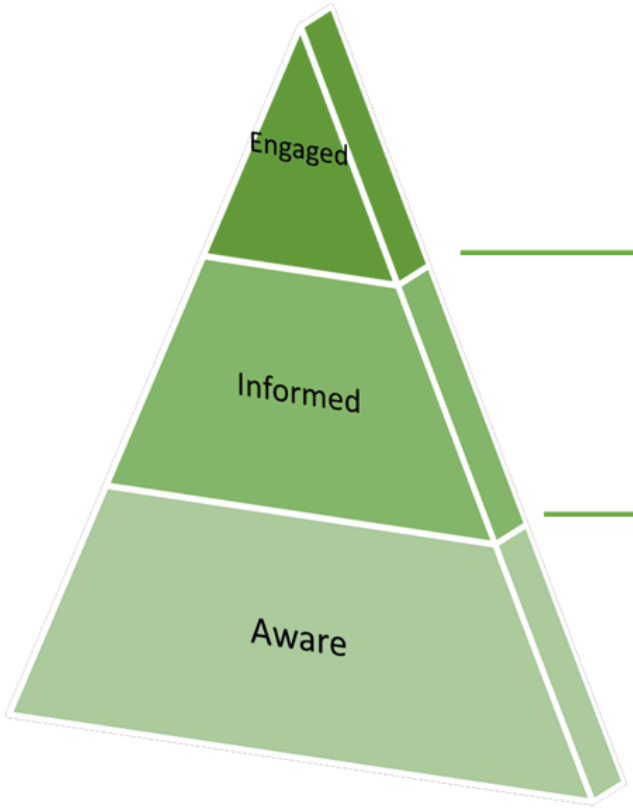
6
Direct calls with Stakeholders

7
Face to face meetings with stakeholders

191
Visits to Yoursay Hobart page

City of HOBART

Engagement Snapshot



- 33 feedback submissions received
- 7 face to face meetings with stakeholders
- 6 phone call discussions

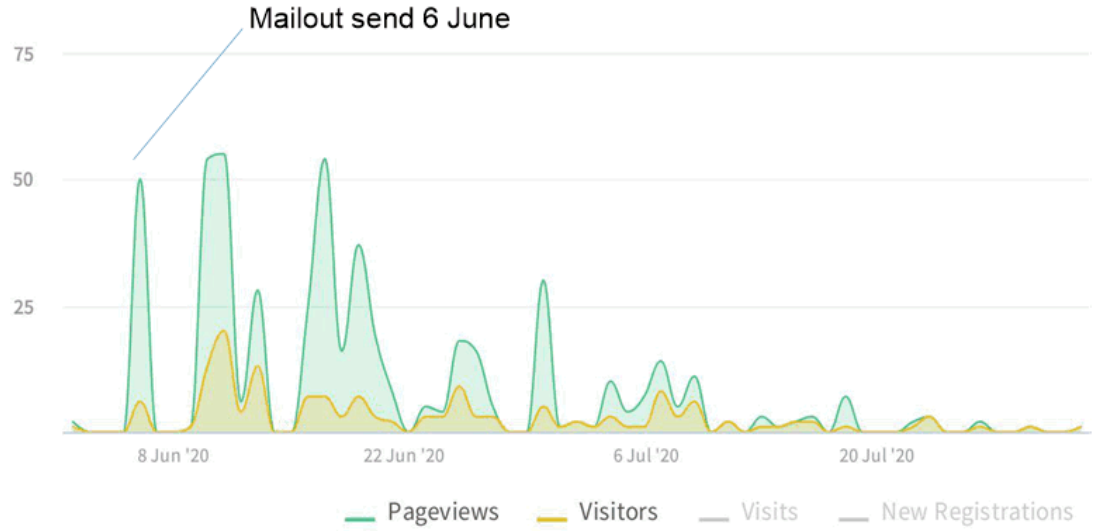
- 36 visitors downloaded documents
- 139 documents downloaded
- FAQs viewed 19 times

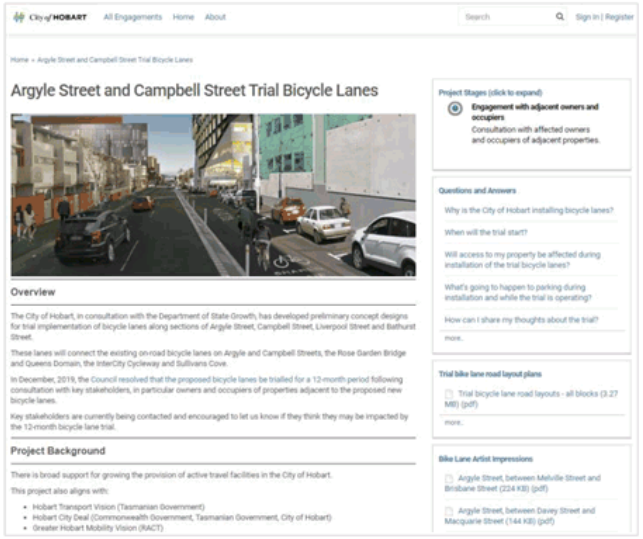
- 256 information packs mailed out
- 191 visits to yoursay hobart

Engagement Snapshot: Your Say Hobart Statistics

Visitors Summary

Your Say Hobart from 01 Jun'20 to 31 Jul'20





Engagement Snapshot: Key Themes

- 33 feedback submissions received out of 256 stakeholders contacted (13% response)

Key themes that came through in the feedback received:

Safety concerns with some elements of the preliminary design concepts		9 mentions
General **support** for the proposed bike lane trial		9 mentions
Concern about loss of on-street **parking** impacting businesses		7 mentions
Concern about increased **traffic congestion** caused by removal of lane		4 mentions
Concern about impact on **bus stops** and safety		2 mentions

Discussion & Conclusion

Response rate and direct property impacts

- Of the 256 stakeholders contacted we received 33 responses equating to a 13% response rate. This is a relatively small sample to draw generalised conclusions from.
- It should be noted that the purpose of engagement was to understand to what extent the proposed trial may directly impact a particular property or business. As such, we can imply that at least 13% of stakeholders contacted felt they were somehow impacted (either positively or negatively).
- Measuring level of support for the proposal is out of scope of for this engagement. Therefore no conclusions can be drawn in this regard.
- Feedback received is specific to each block, and in most cases to a particular property. This reflects the nature of the questions asked.
- There were some general comments about the proposal overall that came from long-form written responses. This commentary has been considered as part of this report.

Safety concerns

- There were several comments related to safety concerns or potential increase in traffic accidents as a result of the bike lane trial. These comments ranged from concerns around visibility of oncoming bikes by drivers exiting from concealed driveways, to perceptions that existing traffic lanes will be narrowed further causing accidents with buses and larger vehicles.
- There was concern that the trail was proposed along 'higher speed one way environments' and that the 'varying intersection treatments would be confusing for cyclists and drivers'.

Support for the trial

- There were 9 stakeholders that expressed support for the proposal. They indicated their belief that the plan 'will provide a safer route for cyclists getting into the city', 'encourage more staff to cycle to work', '(the bike lanes) are very much needed to support active and sustainable travel in Hobart'.
- Several stakeholders were not supportive of the trial. Raising concerns about the costs/benefits of a trial, concern it is in the wrong place, concern that there is not the need and the current bike lanes are underutilised.

Discussion & Conclusion

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Discussion & Conclusion

Concern about loss of some on-street parking

- Several businesses noted concerns about loss of parking directly outside their business or nearby. Health related businesses voiced that their patients relied on adequate nearby parking as their mobility may be compromised. Some retail businesses expressed concern that the bike lane may affect customer parking or deliveries. Comments were largely about parking convenience rather than overall lack of parking availability.

Traffic congestion

- Some predicted the trial would exacerbate congestion leading into the CBD and argued "the sum benefit to bicycle users does not balance with the deficit to those required to use a car.

- There was a argument presented by one stakeholder that the trial is unlikely to increase cycling update and reduce car usage, and therefore the net impact would be increased traffic congestion in the reduced traffic lanes.

Bus Stops

- Some concerns were raised about bus stops and bus lay-over spaces particularly for tourist and chartered buses around the Town Hall and TMAG.

- A number of design concerns were raised by Metro and some solutions proposed by DSG that should be considered in future iterations of the detailed design for the trial.

Monitoring and evaluation of the trial

- There was interest in understanding the 'success criteria', how the trial would be monitored and evaluated over the 12 month period, how this would be reported, what the criteria would be used to judge if the trial was successful (and should be considered for permanent installation), and what would happen if the criteria is not met and therefore the trial fails? Clarity around these elements should be defined before implementation of the trial.

Discussion & Conclusion

Conclusions & Suggestions

- The engagement provided some useful feedback that can be used to help refine the design on the proposed trial. This included some suggestions that will improve safety.

- There are varied opinions on the benefit of a trial, expected uptake and use, the chosen location and integration with the wider cycling network, and the depth of analysis undertaken in development of the proposed trial.

- If the trial is to proceed, continued engagement and communication on the final design should take place with key stakeholders / businesses prior to installation.

- A community education campaign for CBD motorists, cyclists, and pedestrians that will help to raise awareness of the trial, encourage use by promoting safer bike commuting routes, remind people of road rules, establish norms for cycling (and driver) etiquette and behaviour, and aim to minimise conflict and improve safety. i.e the trial needs to consider more than just the installation of infrastructure.

- Should the trial proceed, a mechanism should be in place for the public to provide feedback on how the trial is working to help with design refinement, and trial evaluation.

End of document

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City of HOBART

Argyle and Campbell Street Bicycle facility trial
CoH Officer responses to summary concerns raised in stakeholder engagement

Block	Concerns	Response
SK01 — Campbell (Brisbane to Melville)	→ Concerns for safety around bus stop when only two lanes operational as the lanes are narrow, making it difficult for cars to pass when bus is stopped. → Potential for this to be exacerbated if bus is stopped and a car is reverse parking opposite the stop at the same time. → Concern around increased traffic congestion when clearway not in operation.	Stop # 3 (101 Campbell Street) is a low frequency (1 bus approximately each 1/2 hour), inbound bus stop for routes 560, 561 and 562. Potential minor interruptions to traffic flow are possible, as occurs now, however as a predominately, end of route, passenger drop off stop, overall impact is deemed low. Parking turn over generally creates "side friction" wherever kerbside parking is present. Likelihood of bus stopped and adjacent passenger vehicle reverse parking happening simultaneously is low. GHD modelling suggests this block of Campbell Street does not require a clearway, and can operate satisfactorily on 2 lanes at pre COVID traffic volumes. GHD modelling (and observations) do not indicate proposal exacerbates traffic congestion.
SK02 — Campbell (Melville to Bathurst)	→ Adequate close by patient drop off parking options for health related businesses at 2 Melville St need to be considered. The proposed clearway in peak times could impact current short stay (30min) allocated spaces outside Icon Cancer Centre. Icon operated 8am-4pm, tasivf 7am-4, Eternal 8.30am-6pm, HSDH 6.30am-6pm. → Concern around potential increased traffic congestion	The 2 Melville Street businesses have "drive through" access on the property which provides for patient drop off and pick up. Onsite parking is reserved for patients and staff of the various businesses. Consultation concept indicated clearway operation. GHD modelling suggests this block of Campbell Street does not require a clearway, and can operate satisfactorily on 2 lanes at pre COVID traffic volumes. GHD modelling (and observations) do not indicate proposal exacerbates traffic congestion. The situation can be monitored and arrangements reviewed if/as required.
SK03 — Campbell (Bathurst to Liverpool)	→ No concerns raised from stakeholders in this block	

Argyle and Campbell Street Bicycle facility trial
CoH Officer responses to summary concerns raised in stakeholder engagement

SK04 — Campbell (Liverpool to Collins)	→ The existing shared service lane in front of the hospital is underutilised by cyclists → There are concerns about congestion on Campbell Street	Current trial lane arrangement at RHH does not connect to bicycle infrastructure, and is not marked to promote bicycle use. Observations to date and GHD modelling do not indicate any particular congestion issues caused by arrangements in this block.
SK05 — Campbell (Collins to Macquarie)	→ Further reduction in parking in the area is a concern for nearby health related businesses	PM peak clearway will reduce parking, although accessible car parking spaces have been established adjacent to relevant business, Dunn Street carpark generally has spare capacity in afternoon. Adjacent Wapping area currently has unmetered 1P and 2P parking in Creswell's Row, Terminus Row and Sackville Street which could be better managed to support businesses in PM peak.
SK06 — Campbell (Macquarie to Davey)	→ No objections raised by stakeholders in this block	
SK07 — Argyle (Davey to Macquarie)	→ Relocation of current bus zone is of concern for nearby museums as current one way road configuration provides limited safe drop off areas. → Impact on operation of tourist buses who use this block for as layby area in peak season and for drop offs	Drop off and pick up bus zone adjacent to Hotel Grand Chancellor is generally underutilised and has capacity to support TMAG school visitation drop off and pick up. Grand Chancellor manager supportive. Concept design has been adjusted to allow for "Red Decker" to continue with Maritime Museum drop off and pick up arrangements. Wider City bus layover space allocation review has been flagger with DSG and Bus Operators as inner city extended period layover is not an effective use of kerb space.
SK08 — Argyle (Macquarie to Collins)	→ More on street disability parking in this area would be of benefit to patients of nearby health related occupiers. → Depending on the timing of the morning peak bike lane, some delivery vehicles may be impacted (delivery times changed). Further consultation with relevant	The opportunity to further manage the existing loading zone adjacent to the Telstra building for access / drop off parking during adjacent RHH podiatry Clinic hours is possible. Kemp Street completion and additional loading zones provided in Collins Street (adjacent block) should be adequate for loading needs in the vicinity.

Argyle-and-Campbell-Street-Bicycle-facility-trial¶
CoH-Officer-responses-to-summary-concerns-raised-in-stakeholder-engagement¶

	businesses needed during implementation. → Concern that bike lane on the left side of the road won't improve safety with a number of commuter cyclists in building opposite pigeonwhole	Unfortunately, door to door facilities for all CBD buildings will not be possible to achieve with this project, however lower speed limits in the CBD will have a positive effect on all vulnerable road users.
SK09—Argyle (Collins to Liverpool)	→ Cyclist safety on this block especially around the Argyle Street car park entrance is of concern. → Concern that increase in bike traffic in this block could increase risk of collision without bikelane or other measures in place.	The Argyle Street car park (entrance and exit) is of concern and will be the subject of further work. Lower speed limits in the CBD will have a positive effect on all vulnerable road users.
SK10—Argyle (Liverpool to Bathurst)	→ Traffic congestion in the afternoon peak is of concern. Extending the clearway hours could alleviate this (3pm-6:30pm).	Observations to date and GHD modelling do not indicate any particular congestion issues caused by arrangements in this block. The situation can be monitored and arrangements reviewed if/ as required.
SK11—Argyle (Bathurst to Melville)	→ No concerns raised from stakeholders in this block	
SK12—Argyle (Melville to Brisbane)	→ Concern about potential loss of nearby on street parking during peak traffic times affecting businesses	Current concept design does not envisage any parking loss in the block.
SK13—Bathurst (Argyle to Campbell)	→ Concerns for visibility being further reduced for cars exiting Scotts church carpark in off peak time and drivers focused on whats happening at the Argyle St lights for a break in the traffic to exit, and not conscious of looking out for cyclists.	Concept design modification has removed parking spaces in locations to improve off street carpark access sightlines.
Sk14—Liverpool (Campbell to Argyle St)	→ No concerns raised from stakeholders in this block	

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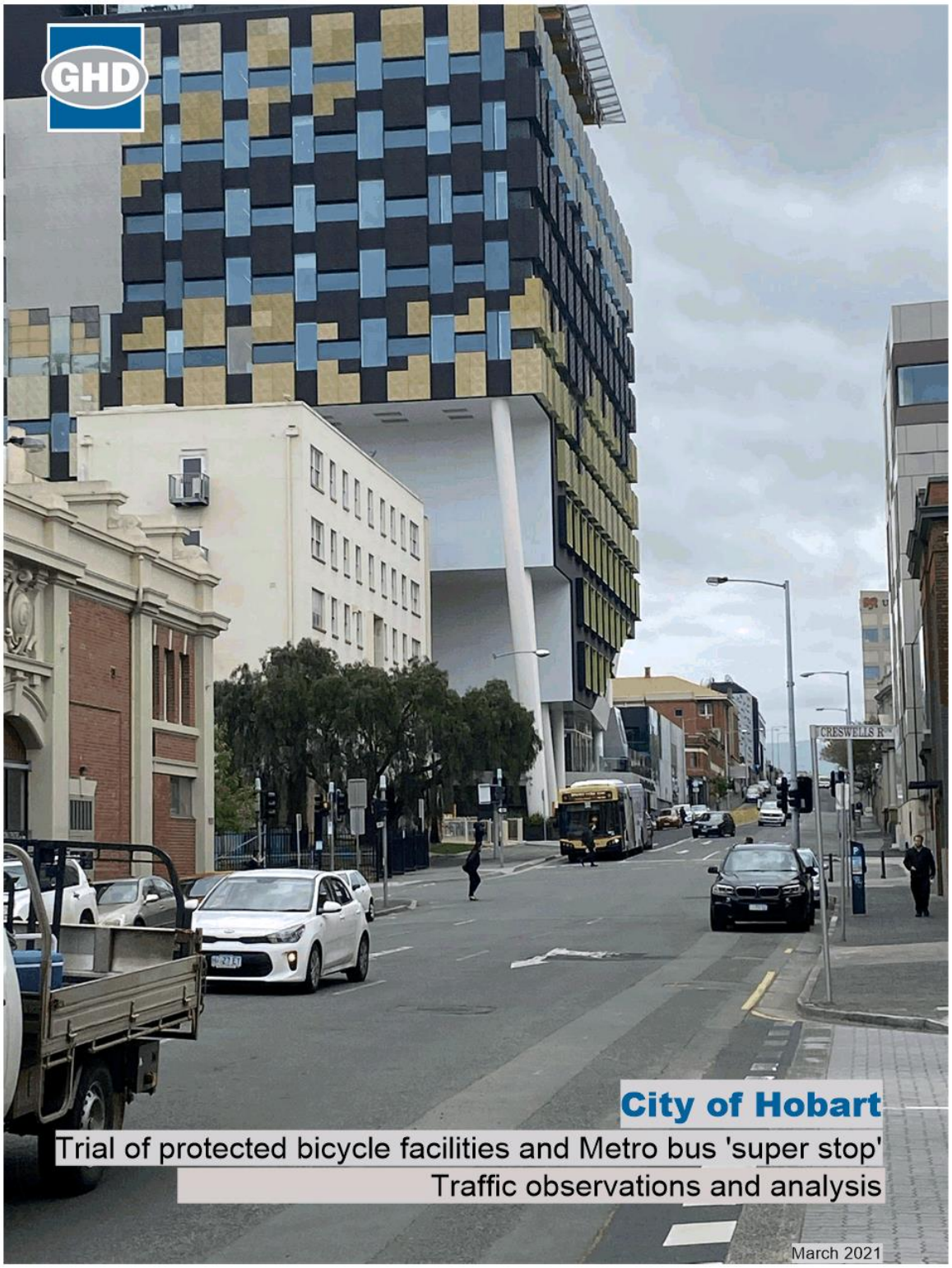
GHD
CRESWELLS R
City of Hobart
Trial of protected bicycle facilities and Metro bus 'super stop'
Traffic observations and analysis
March 2021

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Appendices

1. Introduction

GHD was engaged by City of Hobart to undertake traffic observations and analysis to support changed traffic arrangements for the trial of protected bicycle facilities and a 'Metro bus super stop' ('super stop'). An assessment of the performance of the Campbell Street, Argyle Street, Liverpool Street and Bathurst Street corridors was undertaken to ensure the feasibility of any proposed change in use of the road space. The assessment is required to provide an understanding of all transport modes, their operational and performance needs, how they impact on road capacity and the reliability of travel.

1.1 Background

During the reconstruction of the Royal Hobart Hospital (2016 – 2019), the traffic carrying capacity of Campbell Street was reduced from three lanes to two lanes, between Liverpool Street and Collins Street. The third lane was used as an access lane to support construction activities and was not available to general traffic. At the completion of works the City of Hobart is trialling the use of the third lane as a 'shared use' hospital service lane rather than returning it to use as a general traffic lane. The City of Hobart is also considering the use of road space on surrounding midblocks of Campbell Street, Argyle Street, Liverpool Street and Bathurst Street with intention to efficiently use road space and adequately provide for transport modes.

1.2 Network aspirations

The City of Hobart is considering the potential future use of the third lane on Campbell Street, with an aim of utilising this space for a purpose other than providing more capacity for cars. The future function of the Campbell Street corridor is influenced by the following characteristics:

- Anecdotally the Department of State Growth indicated that during construction of the Royal Hobart Hospital, a decrease in traffic flow occurred on Campbell Street.
- There is an anticipated rise in pedestrian activity due the presence of new and existing pedestrian generators (such as the Royal Hobart Hospital, the new UTAS Performing Arts Centre, the Theatre Royal, the University's Medical Science precinct buildings).
- Plans to expand the city's bicycle network.
- Campbell Street continuing to be a key corridor for public transport.

1.3 Purpose of this report

The purpose of this report is to document traffic operations and analysis to support changed traffic arrangements for the trial of protected bicycle facilities and bus 'super stop'. This includes documentation of the current operations and transport related impacts occurring within the study area and extrapolation of the performance considering the potential changes in the use of the road space and the feasibility of these proposed changes.

Previously GHD has prepared a number of reports in relation to the proposed works:

Traffic Observation Analysis Report *(March 2020)* - documents traffic operations and analysis to support changed traffic arrangements for the trial of protected bicycle facilities and a bus 'super stop'. This included documenting the current operations and transport related impacts occurring within the study area and extrapolation of the performance considering the potential changes in the use of the road space and the feasibility of these proposed changes.

Junction Geometric Design Review *(July 2020)* - details the junction geometry of the proposed arrangements to ensure geometric design concerns are satisfied. The review

referenced the *CoH Design Guidance Note #2, Lateral Shifts – Traffic Lanes past Objects / Obstructions* and identified recommendations for mitigating any geometric concerns.

Junction Capacity Assessment *(July 2020)* - details the midblock capacity for the proposed modifications to ensure capacity concerns are satisfied. The assessment was undertaken from a first principles approach using methods detailed in *Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods, 2020.*

This report is the culmination of the previous capacity studies (*Traffic Observation Analysis Report* and *Junction Capacity Assessment)* with additional intersection modelling undertaken based on recommendations of the *Junction Capacity Assessment* to ensure that sufficient capacity is provided by the proposal and to recommend times where clearways are required.

1.4 Study area

For the purpose of this project, the study area includes the Campbell Street corridor between Brisbane Street and Davey Street, the Argyle Street corridor between Brisbane Street and Davey Street, as well as Liverpool Street and Bathurst Street between the Railway roundabout and Argyle Street, as presented in Figure 1. Connections between or across each street, and other influences caused by adjacent streets are also considered.

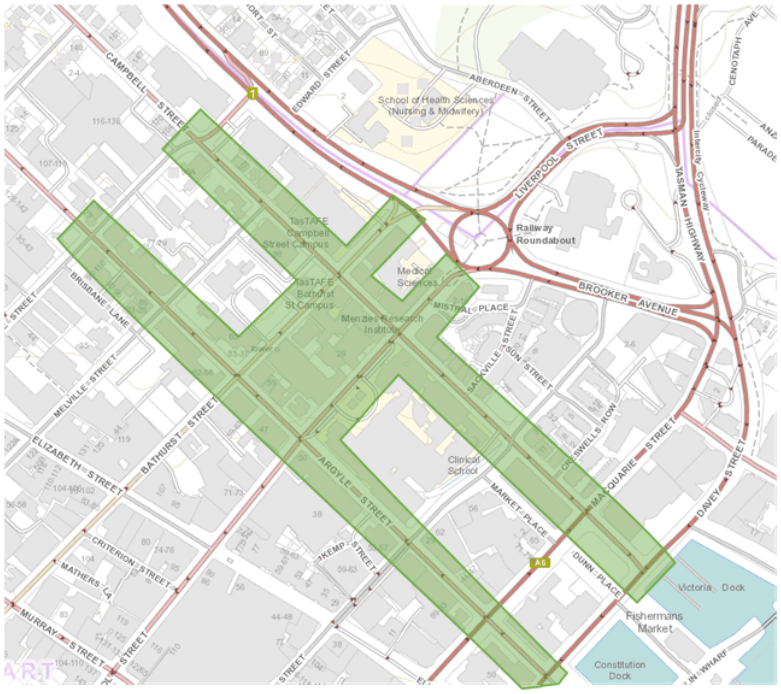


Figure 1 Study area

Image source: thelist.tas.gov.au

1.5 Methodology

The assessment was developed in line with the following methodology:

- Consolidation of outcomes of previous studies, particularly the *Traffic Observation Analysis Report* and the *Junction Capacity Assessment* (GHD, 2020).
- Gathering of existing conditions data to give context to the transport task in the study area.
- Additional observations of the study area;
  - Campbell Street trial conditions of the hospital service lane between Liverpool and Collins Street.
  - Bathurst Street review of lane utilisation and turning movements between Campbell Street and Brooker Avenue.
  - Bus and pedestrian movements at the existing Liverpool Street bus stop to understand impacts of the proposed bus 'super stop'.
- Updated traffic survey to understand existing travel patterns (particularly turning movements) with consideration to traffic volume impacts resulting from COVID-19 and associated restrictions.
- Detailed assessment of intersection capacities, including SIDRA intersection modelling.
- Reporting of recommendations.

1.6 Scope and limitations

This report: has been prepared by GHD for City of Hobart and may only be used and relied on by City of Hobart for the purpose agreed between GHD and the City of Hobart as set out in this report.

GHD otherwise disclaims responsibility to any person other than City of Hobart arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Hobart and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.7 Assumptions

During the preparation of this report the following assumptions have been adopted:

- SCATS data provided by Department of State Growth accurately depicts the prevailing traffic conditions.
- Previous survey data provided by City of Hobart accurately depicts the prevailing traffic conditions.
- Traffic data collected by Matrix Traffic and Transport on Wednesday 9 September 2020 accurately depicts the prevailing traffic conditions.
- The traffic conditions experienced during site visits undertaken on Wednesday 26 June 2019 and Wednesday 9 September 2020 were representative of the typical weekday traffic flow.

2. Proposed use of road space

The City of Hobart has spent considerable effort building and updating the bicycle network within the Hobart CBD. The completion of works at the Royal Hobart Hospital and underutilised lanes within the network provide an opportunity to further extend the bicycle network through making use of reinstated and underutilised road space. The proposed changes to the use of road space include:

- Provision of bicycle lanes.
- Service lane for hospital drop off and pick up.
- A bus 'super stop' for Liverpool Street.

The initial concept design for bicycle facilities on Argyle Street, Campbell Street, Liverpool Street and Bathurst Street, including sections of separated cycleways was presented in the Open City Infrastructure Committee meeting on 11 December 2019. The concept sketches presented at the meeting are included in Appendix A.

An overview diagram is provided in Figure 2 showing the approved trial arrangements.

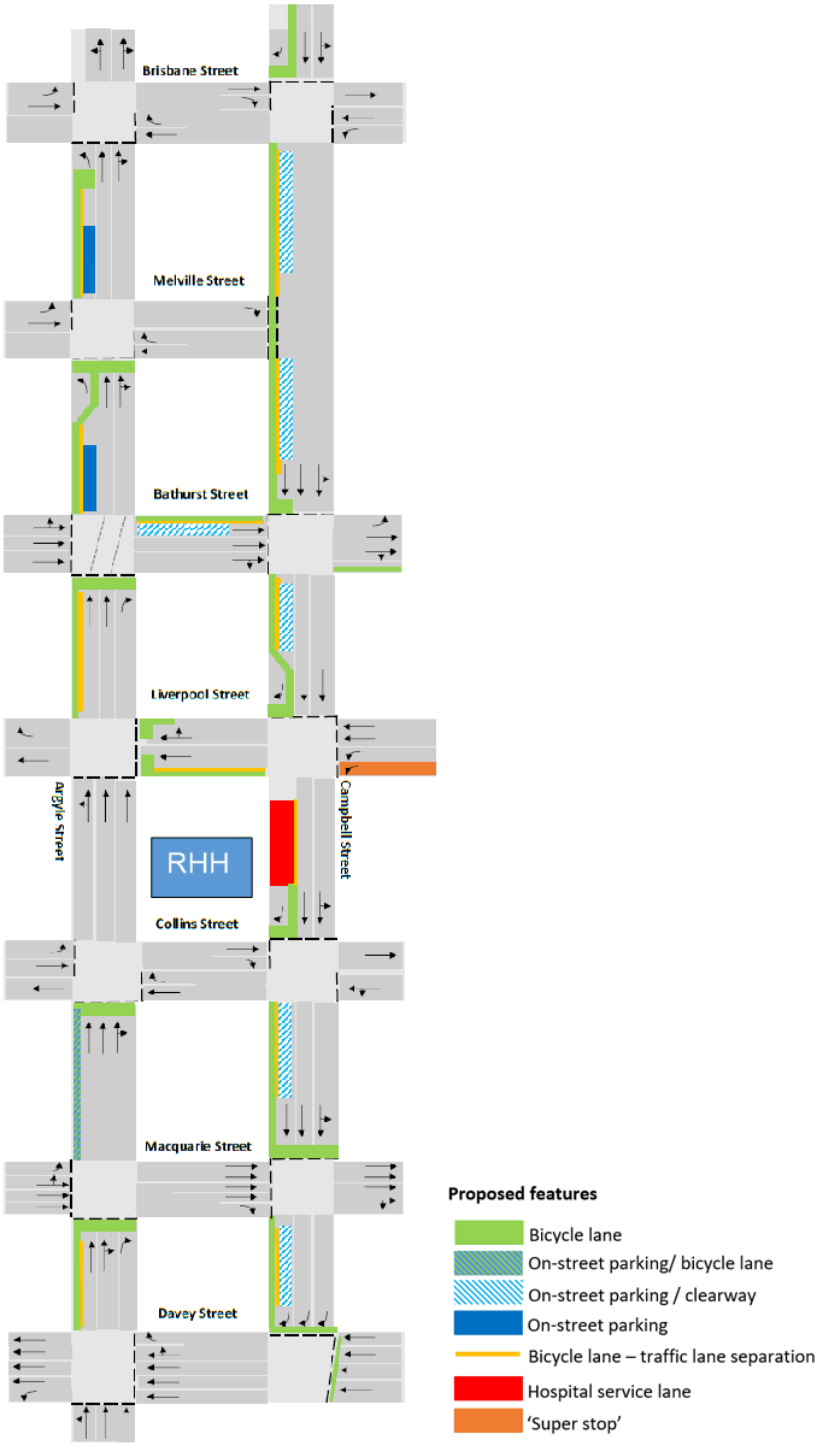


Figure 2 Trial arrangement

Note: On-street parking shown is only the parking that is impacted by the proposal

2.1 Bicycle lanes

Figure 3 shows the existing (including current trial arrangements adjacent to the Royal Hobart Hospital) and the proposed cycling network in Hobart CBD. The proposed cycling facilities will create better links between existing infrastructure to promote and support commuter cyclists.

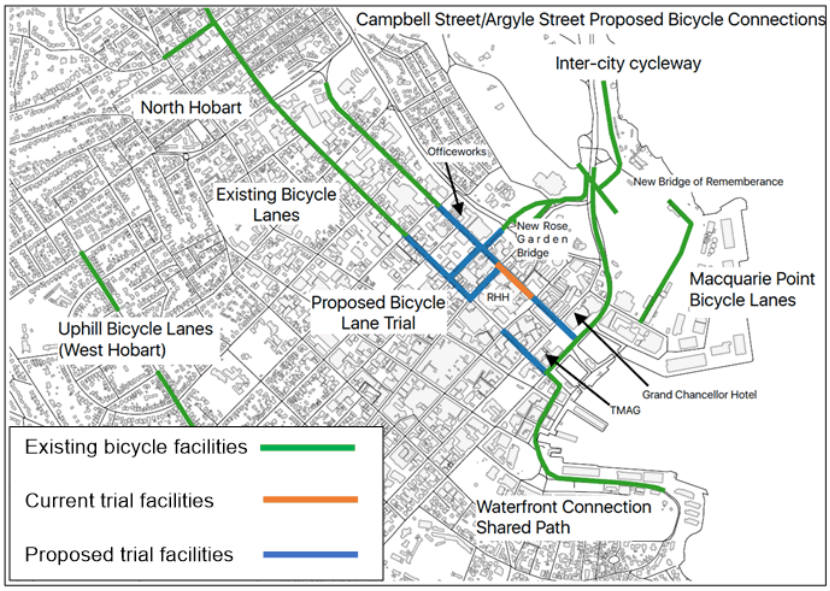


Figure 3 Bicycle infrastructure in Hobart CBD

Image provided by City of Hobart

City of Hobart's proposal for the use of road space on Campbell Street, Argyle Street, Bathurst Street and Liverpool Street includes bicycle infrastructure in the arrangements detailed in Table 1.

No bicycle treatment is proposed for Argyle Street midblock between Collins Street and Liverpool Street, whilst continuing construction and hospital access and related activities still take place in this midblock. Arrangments in this section would also need to consider conflicts with the Argyle Street car park access.

Table 1 Provision of bicycle infrastructure and locations

Arrangement	Example	Locations (midblocks)
A protected bicycle lane in one of the existing parking lanes. Parking reinstated during off-peak periods in a clearway lane	 *Image provided by City of Hobart*	**Campbell Street** • between Brisbane Street and Liverpool Street • between Collins Street and Davey Street **Bathurst Street** • between Argyle Street and Campbell Street
A bicycle lane in one of the existing parking lanes. Parking reinstated in right traffic lane	 *Image provided by City of Hobart*	**Argyle Street** • between Bathurst Street and Brisbane Street

Arrangement	Example	Locations (midblocks)
A bicycle lane in one of the existing parking lanes		**Argyle Street** • between Liverpool Street and Bathurst Street • between Macquarie Street and Davey Street
A bicycle lane in one of the existing traffic lanes		**Liverpool Street** • between Campbell Street and Argyle Street
A temporal parking / bicycle lane, parking provided during off-peak periods	 *Image provided by City of Hobart*	**Argyle Street** • between Collins Street and Macquarie Street

Arrangement	Example	Locations (midblocks)
A shared zone servicing cyclists and drop off and pick up for the Royal Hobart Hospital (trial is currently in place).		**Campbell Street** • between Liverpool Street and Collins Street

2.2 Bus 'Super stop'

In Liverpool Street between the Railway Roundabout and Campbell Street, it is proposed to install a bus 'super stop'. The proposed bus 'super stop' would be able to service multiple buses kerbside, without delaying passing traffic.

The bus 'super stop' will require associated changes to the lane arrangement on Liverpool Street, reducing the number of through lanes from three to two and retaining the left turn lane as illustrated in Figure 4. Additionally, to obtain full benefit of the bus 'super stop' a bus phase could be implemented to compliment the bus only lane and allow buses to turn left into the rightmost lane on Campbell Street.

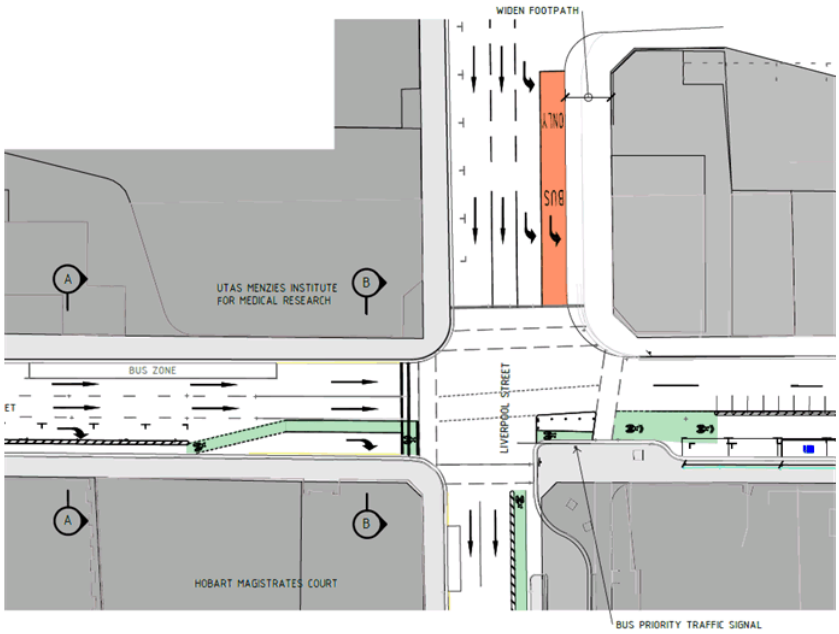


Figure 4 'Super stop' arrangement

Image provided by City of Hobart

3. Feasibility assessment

A number of assessments were undertaken in the *Traffic Observation Analysis Report* based on site observations, consultations and desktop assessments. These tasks are summarised in the following sections.

3.1 Site visit observations

In order to gain an understanding of the behaviours of road users exhibited within the study area, site visits were undertaken on Wednesday 26 June 2019 during the AM Peak 8:00 – 9:00, the PM peak 16:30 – 17:30 and the inter-peak 13:30 - 14:30. The conditions observed are considered to be representative of a typical weekday.

The observation area is shown in Figure 5. The observation area only includes parts of the study area in which the proposal results in potential changes to the midblock capacity.

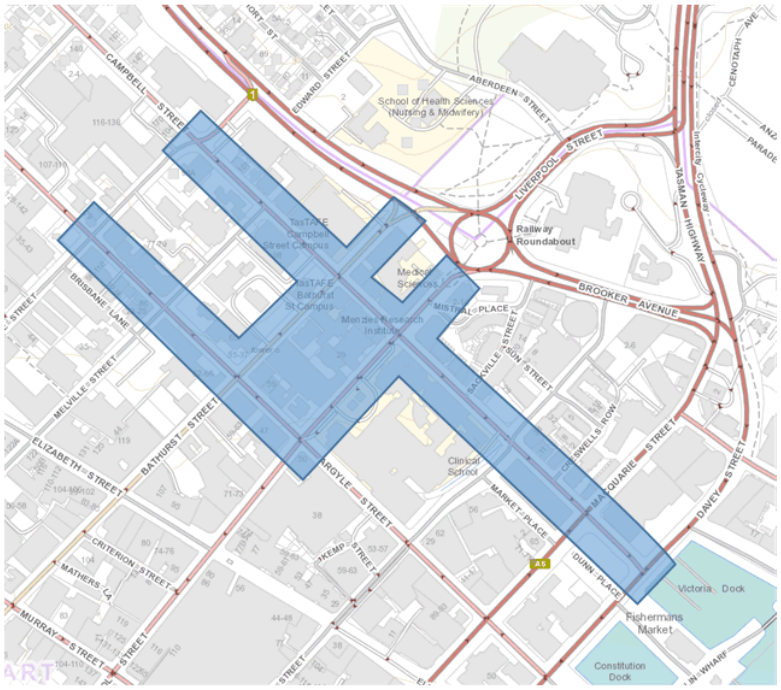


Figure 5 Observation area

Image source: thelist.tas.gov.au

In general the observations indicated that there is an excess of road space within the study area under typical traffic conditions. However, at times the sequencing of traffic signals reduces the experienced capacity. A summary of key observations per site is provided in Table 2.

3.2 Road function assessment

3.2.1 Road use hierarchy and priorities

To gain an understanding of the role each street within the study area plays in the context of the broader Hobart CBD road network, the current road hierarchy and modal priorities for different times of the day within the study area have been reviewed.

The existing road hierarchy is presented in Figure 6 and is based on data obtained from theLIST. In their current form both Campbell Street and Argyle Street are classified as Arterial Roads and therefore their role is to provide for major urban movements, catering for a relatively high volume of traffic. The two roads act as a couplet providing a critical connection between North Hobart and the CBD. Murray Street and Harrington Street provide a similar function for the area west of Elizabeth Street.

Campbell Street is an approved heavy vehicle route on the National Heavy Vehicle Register as is the parallel movement on the Brooker Highway.

The Brooker Highway is situated to the east and runs parallel to Campbell Street. The Brooker Highway is classified as a State Highway under the road hierarchy and its role is to cater for regional traffic movement, catering for large traffic volumes.

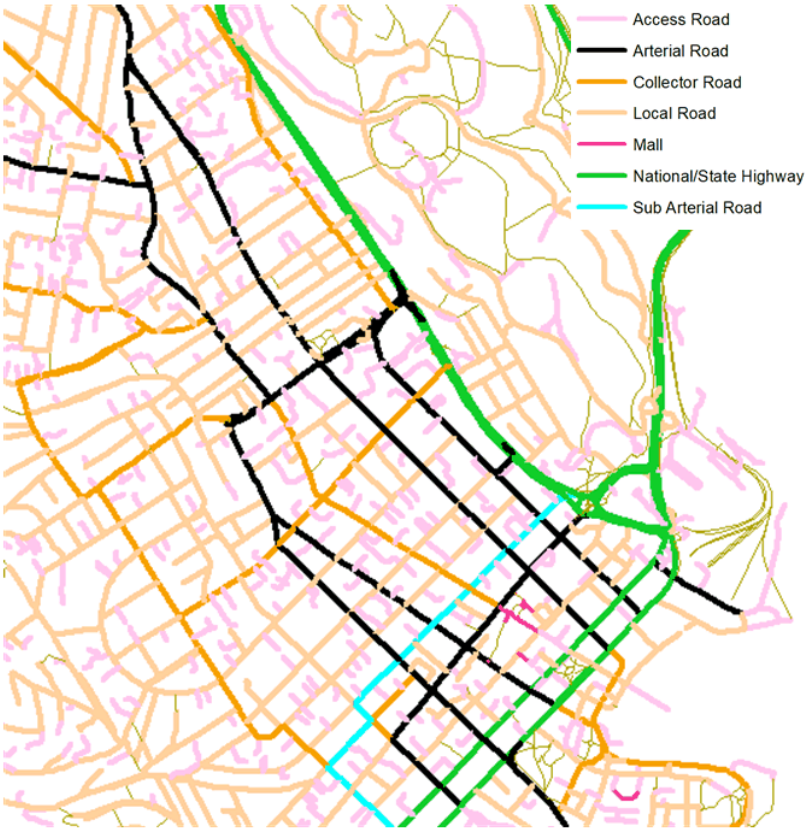


Figure 6 Hobart CBD road hierarchy

Image source: data obtained from thelist.tas.gov.au

The *Traffic Observation Analysis Report* (GHD, 2019) included desktop and onsite observations of the traffic conditions within the study area and comments on the feasibility of the proposal. The full assessment is included as Appendix C. A summary of the findings from the previous assessment of volume capacity ratio (V/C ratio) for the identified intersections is provided in Table 2.

Table 2 Summary of traffic observation analysis report

Junction approach	Observations	V/C ratio	
		AM	PM
Campbell Street			
Brisbane Street	Low use of right lane. Good coordination led to minimal queues.	0.61	0.56
Bathurst Street	Low use of right lane, preference for middle lane. High number of left turning vehicles.	0.56	0.58
Liverpool Street	High use of middle lane, low use of right lane.	0.62	0.53
Collins Street	High demand for right turn, particularly by buses.	N/A	N/A
Macquarie Street	Lower use of right lane. High demand for left lane.	0.56	0.81
Davey Street	Even utilisation. High volumes in PM peak.	0.49	0.74
Argyle Street			
Bathurst Street	Low use of right lane. Congestion on Bathurst Street restricts right turns.	0.59	0.80
Melville Street	No issues observed.	0.51	0.53
Brisbane Street	No issues observed.	0.54	0.64
Liverpool Street			
Campbell Street	Low use of right lane. Buses are main cause of capacity issues.	0.39	0.18
Argyle Street	Preference for left lane.	0.78	0.41
Bathurst Street			
Argyle Street	Typically low volumes.	N/A	N/A
Campbell Street	Mid-block can frequently fill.	0.33	0.64

Note: V/C ratio less than 0.85 considered to have sufficient capacity, less than 0.6 approximately equivalent to LoS A.

3.3 Road authority consultation

Consultation was undertaken with key personnel at the City of Hobart and the Department of State Growth, to gain an understanding of their perception of the current road network performance and behaviour within the study area, and the respective desired movement outcomes.

3.3.1 Traffic behaviour

Discussions with the City of Hobart and the Department of State Growth indicated that the road network generally operates well. However, the level of resilience in the network was low, particularly in relation to the section of Liverpool Street between Campbell Street and the Railway Roundabout.

Two situations that occur frequently in the network that highlight the low level of resilience are:

- Extended and frequent use of a stop/go baton on Campbell Street outside the hospital during the construction period created queues that blocked Liverpool Street, which in turn resulted in queuing through the Railway Roundabout and blocking the Brooker Highway. However this issue has resolved since the completion of construction activities at the hospital.
- Multiple buses arriving and utilising the bus stop on Liverpool Street between Campbell Street and the Railway Roundabout. When more than one bus is queued for the stop, they can block the through lanes on Liverpool Street, which in turn results in queuing through the Railway Roundabout and blocking the Brooker Highway.

Additionally both the City of Hobart and the Department of State Growth had observed the uneven distributions of traffic across traffic lanes within the study area.

One reason for the uneven lane distributions is due to 'Trap Lanes'[1]. Within the study area there are two trap lanes. There are trap lanes in Liverpool Street where the right most lane terminates as a dedicated right turn lane at the intersection with Argyle Street, and also on Campbell Street where the right lane on approach to Liverpool Street terminates as a dedicated right turn lane (under the recent construction traffic management and current trial traffic management arrangement at the Royal Hobart Hospital).

A second reason for the uneven lane distribution is a preference for motorists to choose the lane that provides the most direct path to their destination early, sometimes several blocks before they're required to turn. This is to minimise lane change manoeuvres.

3.3.2 Traffic signal operation

The operation of the traffic signals within the study area is the responsibility of the Department of State Growth. The signal operations have remained relatively unchanged since before the construction of the Royal Hobart Hospital commenced. In general the traffic signals operate as follows:

- Traffic signals are coordinated to promote through movements on Brooker Highway, Davey Street and Macquarie Street as a priority;
- Traffic signals on Brooker Highway, Davey Street and Macquarie Street typically run on longer cycle times than in the centre of the CBD;

[1] A trap lane is a lane that extends the full length of a block that terminates in a mandatory left or right turn movement.

- The traffic signals on Argyle Street are coordinated northbound, north of Macquarie Street; and
- The traffic signals on Campbell Street are coordinated southbound until Macquarie Street, where the coordination of Macquarie Street becomes a priority.

The above operating conditions explain the observations summarised in Section 3.1. The traffic signals on Bathurst Street at the Railway Roundabout and Campbell Street are 'out of step', meaning that their respective phase changes are not matched. This results in Bathurst Street traffic on occasions filling the midblocks on Bathurst Street between the Railway Roundabout and Argyle Street, while other times the queuing was minimal.

3.3.3 Proposed use of road space

The proposed use of road space, as detailed in Section 2, was discussed with the City of Hobart and the Department of State Growth in July 2019 (prior to the completion of the Royal Hobart Hospital construction and the implementation or the trial hospital service lane). In general, both road authorities indicated that there appeared to be sufficient capacity under current reduced lane conditions within the road network to accommodate the proposal. However, the following items were raised in relation to the designs:

- With the introduction of clearways, lane distributions need to minimise the number of trap lanes.
- The proposed bus 'super stop' and associated lane redistribution must allow sufficient space for buses to queue at the stop and not block through traffic.
- The interaction between vehicles and buses turning left from Liverpool Street onto Campbell Street needs to be carefully managed.
  - With the current arrangement there is a risk of vehicles turning in front of buses.
  - If a bus priority phase is provided at the signals, detailed phasing design will be required to provide desired flow of buses. Additionally, bus priority phases are typically misunderstood by the travelling public.
- Access / Egress and the interaction of cyclists and vehicles in the proposed hospital service lane needs to be carefully considered and managed.

4. Initial junction capacity assessment

Following the feasibility assessment, the proposed conditions in Campbell Street, Argyle Street, Liverpool Street and Bathurst Street were assessed with respect to potential impacts on capacity (as set out in the *Junction Capacity Assessment* report).

4.1 First principles capacity assessment

A first principles assessment of the capacity (by lane) for each midblock was undertaken using the following method:

For interrupted flow facilities on urban arterial roads, such as where traffic flow conditions are subject to the influence of traffic signals, the method for assessing capacity is prescribed in sections 6.2 and 7.4.2 of the Austroads Guide. The assessment follows the following process:

1. Determine limiting mid-block capacity based on type of lane (Section 6.2, Table 6.1)
2. Determine base saturation flow based on the environment class (Section 7.4.2, Table 7.4)
3. Adjust base saturation flow based on lane width, gradient and traffic composition factors (Section 7.4.2, Eq 23)
4. Determine the capacity of a movement based on adjusted base saturation flow, cycle time and effective green time (Section 7.4.2, Eq 17)

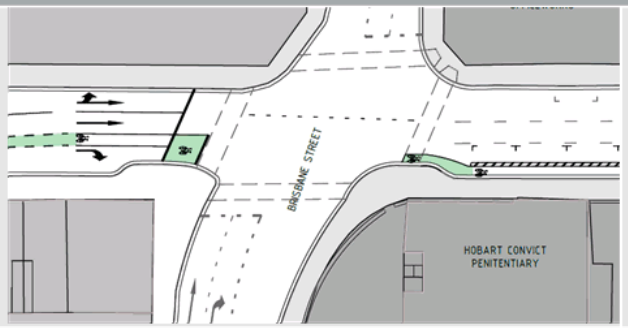
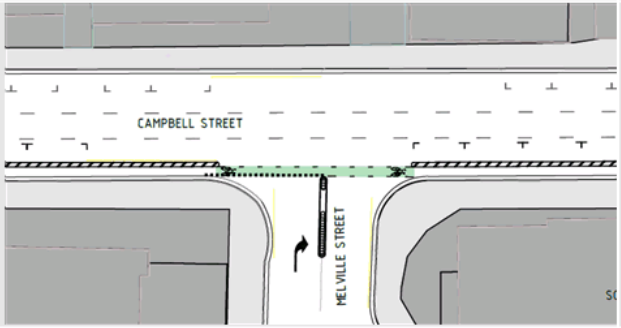
Following the advice in Austroads a more precise assessment to account for factors such as short lanes and lane blockages can be done using computer traffic modelling programs, so for this assessment a simplified approach is considered appropriate.

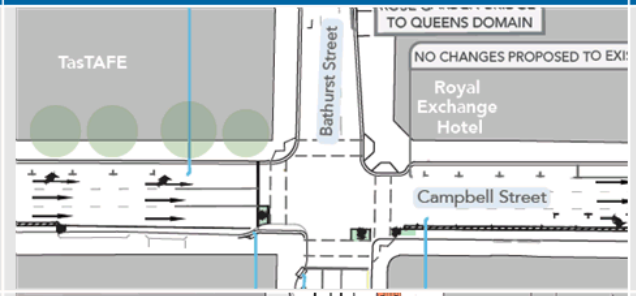
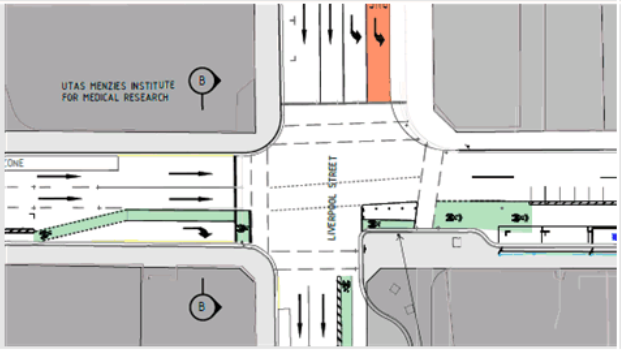
The assessment does not consider the impacts of short lanes. In order to provide a conservative assessment, short lanes were not included within the assessment and adjacent lanes were required to provide sufficient capacity. This approach allows identification of intersection that have sufficient capacity without the provision of short auxiliary lanes and those intersections that require additional assessment to include the additional capacity provided by the short lanes.

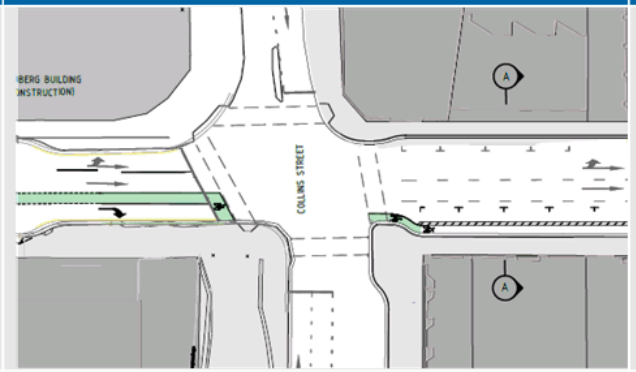
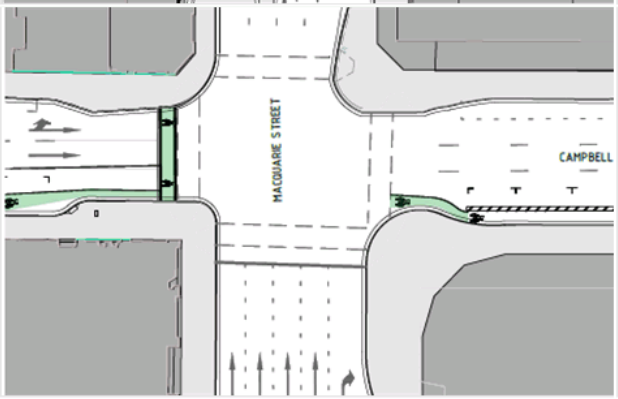
4.2 Road configuration and capacity under proposal

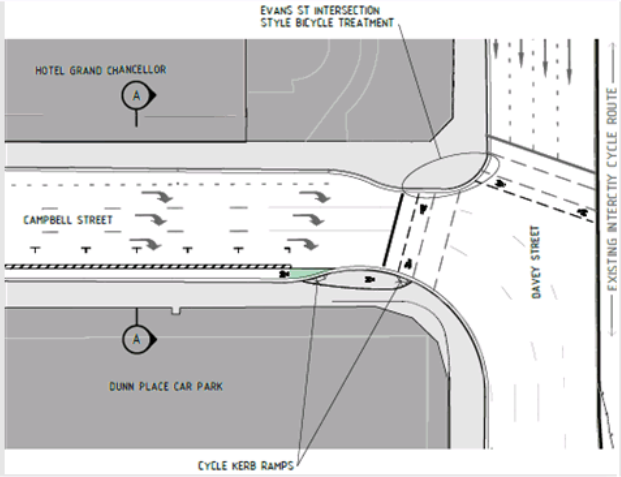
A summary of the junction capacity assessment is presented in Table 3.

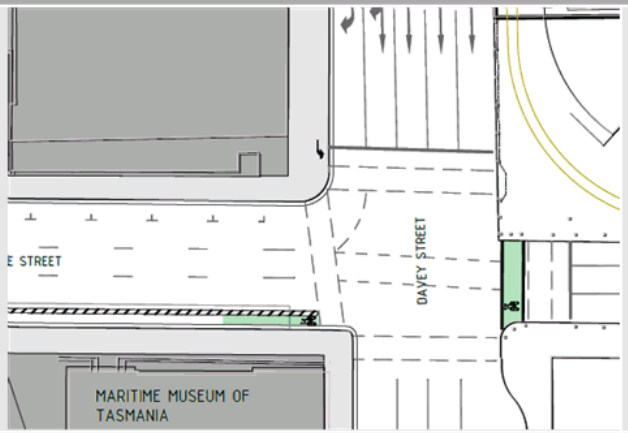
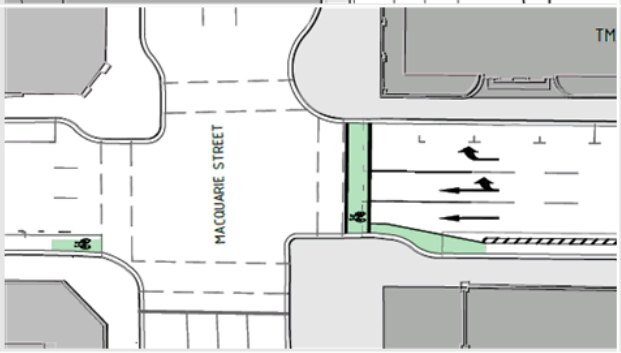
Table 3 Review of changes to capacity under proposal

Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Campbell Street				
Brisbane Street		Existing through and right lane converted to right only. Upgrade of bicycle facilities at intersection.	***All conditions*** Reduced to two through lanes at intersection	Sufficient capacity under proposal
Melville Street		Protected bicycle lane with parking / clearway in third traffic lane. Bicycle lane extends across intersection.	***Clearway conditions*** No change ***Non-clearway*** Reduced to two traffic lanes at intersection	Assessed at Bathurst Street junction

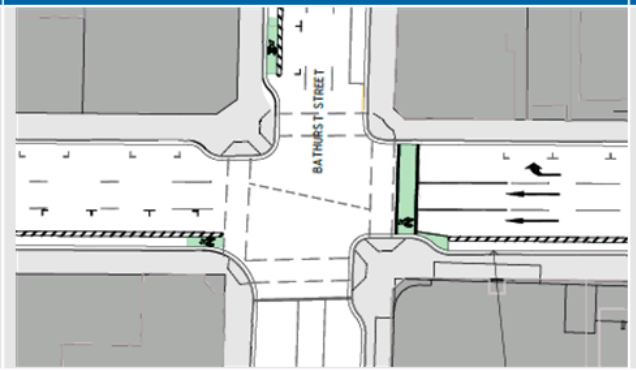
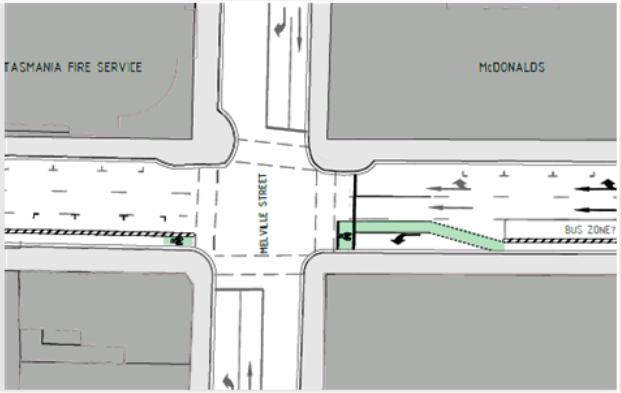
Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Bathurst Street		Protected bicycle lane with parking / clearway in rightmost traffic lane.	***Clearway conditions*** No change ***Non-clearway*** Reduced to two traffic lanes at intersection	Review further for non-clearway conditions
Liverpool Street		Protected bicycle lane with parking / clearway in rightmost traffic lane. Short lane provided for right turns at intersection.	***Clearway conditions*** No change ***Non-clearway*** Reduced to two traffic lanes for midblock with short right turn lane at intersection	Sufficient capacity under proposal for non-clearway conditions.

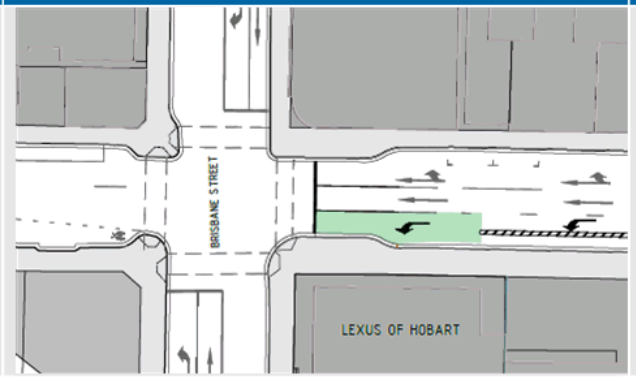
Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Collins Street		Hospital service lane shared zone in rightmost traffic lane. Convert the right most lane to a dedicated right turn lane.	***All conditions*** Reduced to two through lanes through midblock with third lane separated shared lane for hospital drop off / pick up and cyclists. Short right turn only lane provided at intersection	Sufficient capacity under proposal in interpeak. Further review required for AM and PM.
Macquarie Street		Bicycle storage box across all three approach lanes. Protected bicycle lane with parking / clearway in rightmost traffic lane.	***Clearway conditions*** No change ***Non-clearway*** Reduced to two traffic lanes with short auxiliary through lane at intersection	Review of non-clearway conditions indicated sufficient capacity under proposal for AM and interpeak, noting lane allocation and use of left lane by through movements. Clearway required during PM peak.

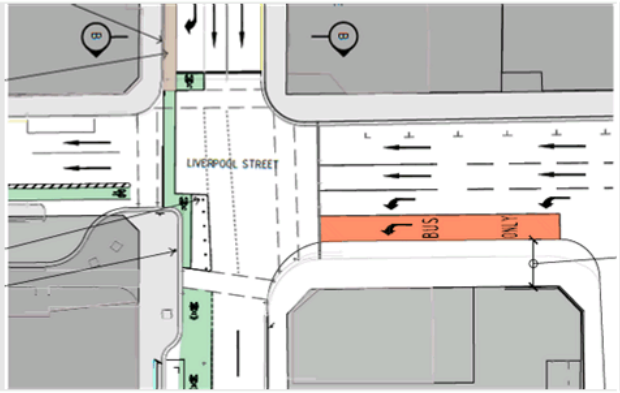
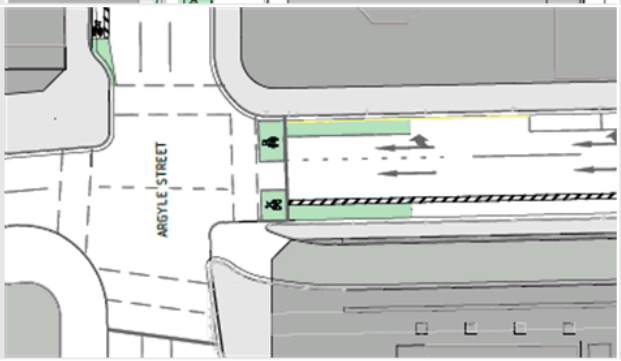
Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Davey Street		Protected bicycle lane with parking / clearway in rightmost traffic lane.	***Clearway conditions*** No change ***Non-clearway*** Rightmost lane becomes short auxiliary lane allocated to two lanes on Davey Street	Sufficient capacity under proposal for non-clearway conditions in AM and interpeak. Clearway required during PM peak.

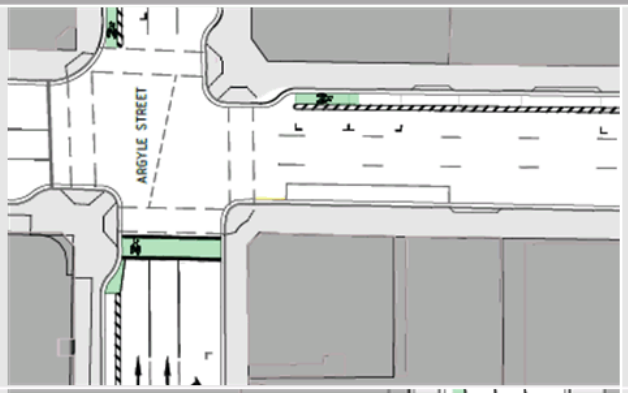
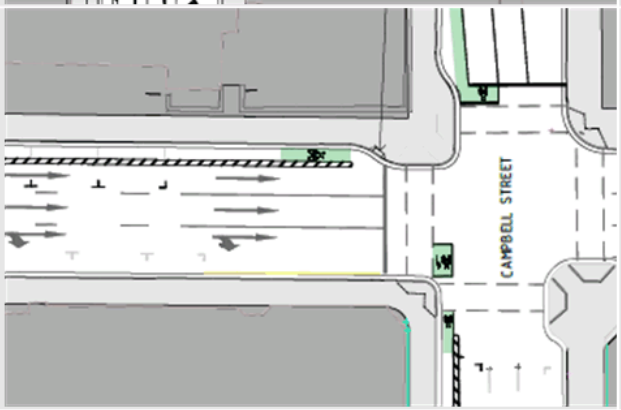
Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Argyle Street				
Davey Street		Bicycle storage box across all three approach lanes.	***All conditions*** No change	No further review required, capacity is not considered to be worsened.
Macquarie Street		Protected bicycle lane in existing parking lane. Bicycle storage box across all three approach lanes.	***All conditions*** Some reduction in side friction caused by parked and parking vehicles	No further review required, capacity is not considered to be worsened

Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Collins Street		Peak hour bicycle lane in existing parking lane. Bicycle storage box across all three approach lanes.	***Peak hour conditions*** Some reduction in side friction caused by parked and parking vehicles ***Off-peak conditions*** No change	No further review required, capacity is not considered to be worsened
Liverpool Street		No change.	***All conditions*** No change	No further review required, capacity is not considered to be worsened

Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Bathurst Street		Bicycle lane in existing left side parking lane. Conversion of right lane to right turn only.	***All conditions*** Some reduction in side friction caused by parked and parking vehicles. Reduction in through traffic capacity with only two through lanes at intersection.	Sufficient capacity under proposal.
Melville Street		Protected bicycle lane in existing parking lane. Left lane converted to short dedicated left turn lane. Parking and bus zone retained in the left lane upstream of short lane for the entire day.	***All conditions*** Reduced to two traffic lanes with short left turn lane at intersection	Sufficient capacity under proposal

Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Brisbane Street		Protected bicycle lane in existing parking lane. Left lane converted to short dedicated left turn lane. Parking implemented in the left lane upstream of short lane for entire day.	***All conditions*** Reduced to two through traffic lanes with short left turn lane at intersection	Sufficient capacity under proposal

Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Liverpool Street				
Campbell Street		Lanes rearranged to provide Metro bus super stop in leftmost lane, left turn lane and reduction to two dedicated through lanes.	***All conditions*** Reduced to two through traffic lanes at intersection with dedicated lane for left turning buses and super stop	Sufficient capacity under proposal, however lane utilisation likely to change under proposal. Left turn improved with dedicated storage for buses. Operation of 'super stop' requires further consideration.
Argyle Street		Bicycle lane in leftmost traffic lane. Right lane converted to through and right lane.	***All conditions*** Reduced to two traffic lanes comprised of one dedicated through lane and one shared through and right lane	Further review required

Junction	Layout	Proposal for approach	Change to capacity under proposal	Further review
Bathurst Street				
Argyle Street		Changes to downstream of intersection with leftmost lane converted to parking / clearway.	***All conditions*** Reduction to two through lanes downstream of intersection	Sufficient capacity under proposal, in AM. Further review required during PM and interpeak. Consideration should be given to demand for left lane to remain as auxiliary lane downstream.
Campbell Street		Leftmost lane is converted to parking / clearway with protected bicycle lane provided. Short auxiliary lane provided at intersection.	***Clearway conditions*** No change ***Non-clearway*** Reduced to two traffic lanes comprised of one dedicated through lane, one shared through and right lane and short auxiliary through lane provided at intersection	Sufficient capacity in AM under non-clearway proposal, however lane utilisation likely to change under proposal. Further review required during PM and interpeak.

Further assessment has been conducted following the *Junction Capacity Assessment* report, these assessments are detailed in Section 5.

As documented in Table 3, the following intersections require further review or allocation of clearway:

- Campbell Street approach to Bathurst Street for all time periods
- Campbell Street approach to Collins Street for all time periods
- Campbell Street approach to Macquarie Street clearway required for PM peak
- Campbell Street approach to Davey Street clearway required for PM peak
- Liverpool Street approach to Campbell Street review of bus super stop operation required
- Bathurst Street approach to Argyle Street and Campbell Street

5. Detailed intersection assessments

The *Junction Capacity Assessment,* summarised in Section 4, indicated that additional assessment was required for a number of intersections impacted by the proposal in order to properly understand and manage the impacts anticipated as a result of the proposal.

Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis recommends the use of SIDRA intersection assessment for further analysis of isolated intersections in order to examine the impacts resulting from short lanes, pedestrians and lane blockages.

The following locations have been identified as requiring a more detailed assessment (as shown in Figure 7):

1. Campbell Street approach to Bathurst Street
2. Liverpool Street / Campbell Street junction for consideration of bus movements with the installation of the Metro bus 'super stop'
3. Campbell Street approach to Collins Street

4. & 5. Bathurst Street connectivity through Argyle Street and Campbell Street (two junctions)

6. Liverpool Street approach to Argyle Street

Figure 7 Traffic network model area

5.1 Traffic data

5.1.1 Traffic survey

Intersection turning movement counts (video capture) were undertaken by Matrix Traffic and Transport on the Wednesday 9 September 2020 during the hours between 7:30 AM and 9:30 AM, 12:30 PM and 2:30 PM and 4:00 PM to 6:00 PM. The surveyed intersections are as follows:

- Bathurst Street / Campbell Street
- Bathurst Street / Argyle Street
- Bathurst Street / Brooker Highway
- Liverpool Street / Campbell Street
- Liverpool Street / Argyle Street
- Collins Street / Campbell Street

It is noted that survey traffic volumes are currently impacted by behavioural changes due to COVID-19 and SCATS data was used to normalise any new survey data.

5.1.2 Adjustments to survey data

As noted above, that it was necessary to review the suitability of any new survey data against 2019 traffic volumes to ensure the intersection assessments represented typical unimpacted performance of the network.

SCATS data for the month of September in 2019 and 2020 was obtained for the intersections of Macquarie Street with Campbell Street and Argyle Street. The data was used to determine the impact of COVID-19 on the transport network by accounting for any decrease in traffic volumes as a result of COVID-19. The difference of traffic volumes observed in the SCATS data is presented in Table 4.

Table 4 COVID-19 traffic volume assessment

Time period	Campbell Street factor	Argyle Street factor
AM	4%	20%
Interpeak	3%	17%
PM	6%	18%

A meeting was held with City of Hobart and Department of State Growth to discuss the appropriateness of the COVID-19 factors for use on the survey data. As a result of this meeting additional SCATS data was acquired for the intersections of Argyle Street with Bathurst Street and Liverpool Street in order to confirm the significant adjustment factor shown in Table 4. The additional data showed a high level of variance however did not contradict the previously obtained data. The factored survey volumes were compared against the 2018 SCATS data used in the initial stages of this study. This comparison also confirmed the factors were appropriate for use.

5.2 Observations

A site visit was undertaken on Wednesday 9 September 2020 at the surveyed locations coinciding with the turning movement surveys, and key observations are summarised in the following sections.

Bathurst Street between Campbell Street and Brooker Avenue

The purpose of the site visit was to review lane utilisation and turning movements on Bathurst Street. A very low number of lane change manoeuvres were observed on Bathurst Street, indicating that drivers are avoiding lane changing by choosing their lane upstream based on where they need to go a few blocks downstream.

At the intersection with Brooker Highway it was observed that although three lanes provide the through movement onto the Tasman Highway the majority of vehicles use the middle lane due to the left lane terminating downstream. It is also noted that in the AM peak the tidal flow arrangements mean the right lane also terminates downstream.

Intersection of Collins Street and Campbell Street

The purpose of the site visit was to review performance of existing trial measures including the length of short lane and transition from shared lane to short lane. The length of the short lane was observed to be sufficient during the observed period. As observed in the previous site visit, the arrival of buses in pairs causes the short right turn lane to overflow into the through lane. This resulted in significant queueing in the middle traffic lane, however this queueing is typically due to poor stacking of vehicles and clears within one signal cycle.

A number of buses were observed to undertake the right turn almost entirely from the through lane. By observing a number of buses it was clear that buses were able to complete the turn comfortably from the allocated short turn lane however low compliance was observed.

It is clear that the end of the shared zone presents a number of potential conflicts due to the conflicting demands of vehicles entering the short turn lane, cyclists exiting the shared zone and vehicles exiting the shared zone. However, on site it was observed that road users were able to manage priority at the end of the shared lane and start of the short turn lane. If there is concern around safety it may be possible to provide infrastructure to separate the entry to the turn lane from the exit of the shared zone however this would impact the length of both lanes.

Bus and pedestrian movements at existing Liverpool Street bus stop

The purpose of the site visit was to understand impacts of the proposed bus 'super stop'. The following observations were made with respect to bus arrivals and pedestrian behaviour:

- Buses arrived (often in pairs) at very close intervals in the AM peak (approximately 10 arrivals within 15 minutes), and less frequent in the interpeak and PM (observed to be separated by at least 5 minutes).
- The drop off bus services typical saw 2-6 passengers alight at the Liverpool Street stop.
- The UTAS bus services had 1-2 passengers board at the stop.
- Passengers leaving the bus stop were evenly distributed between crossing Liverpool Street and crossing Campbell Street.

In summary the buses arrived with relatively high frequency (particularly in the morning peak) and typically arrived in twos and sometimes threes. Because of the multiple arrivals the stacking of buses can have impacts on the existing capacity of the intersection. Typically there weren't large numbers of pedestrians observed alighting the buses at the stop and the footpath is sufficiently wide to house pedestrians at the crossing signals.

5.3 Traffic model development

SIDRA intersection (SIDRA) was used to develop a network model to allow complex analysis of the proposed intersection arrangements including short lanes and lane blockages. SIDRA is a

mathematical intersection modelling software package that is capable of estimating detailed intersection performance average over an hour of time.

SIDRA enables network effects to be considered, particularly lane blockages (downstream impacts) on each intersection in the network, allowing analysis of the interaction of connected intersections.

Signal timing data, was obtained from Department of State Growth on 3 August 2020, for the modelled intersections. The traffic signal timing was used to replicate the traffic performance for all modelled intersections.

Modelling Objectives

The objective of the modelling is to examine the ability for the proposed conditions to operate in each time period at the intersections of:

- Campbell Street approach to Bathurst Street
- Liverpool Street / Campbell Street junction for consideration of bus movements with the installation of the Metro bus 'super stop'
- Campbell Street approach to Collins Street
- Liverpool Street approach to Argyle Street

These intersection were identified in Section 4 as requiring further review. The remaining junctions within the study area have been identified as no further review required or clearway required in certain time periods as detailed in Table 3.

For the purpose of this modelling the proposal is modelled to determine if appropriate operation can be maintained.

Base model calibration

The base model was developed based on existing conditions of the network as at 9 September 2020 (including the trial of the shared hospital service lane on Campbell Street between Liverpool Street and Bathurst Street). The traffic data discussed in Section 5.1 was utilised as the demand input for the models.

The network model was calibrated based on lane utilisation from the two observation site visits. By programming the lane utilisation choices and minimising lane changing to replicate actual driver behaviour on the network the queue lengths achieved in the model accurately depicted actual existing queue lengths.

Scenario model development

There were a number of modifications proposed to the arrangement of the road network within the study area. The list of these changes is detailed in Section 4.2. Due to the nature of the assessment the network layout was updated throughout the assessment process. This allowed consideration of the network under the full extent of the proposal first and then the necessary capacity adjustments made. The results in Section 5.4 are based on the final network models for each time period as shown in Section 5.4.1. Signal cycle times were maintained to retain the existing coordination within the overall network, however phase times for the scenarios were configured by SIDRA in the network model to optimise performance due to the modifications to the arrival balance at each intersection.

5.4 Assessment

5.4.1 General network observations

A SIDRA network was required to achieve calibration and review lane blockage and other downstream impacts. Additionally, this allowed general observation of the network including sites not within the scope of the detailed analysis.

Overall the SIDRA modelling aligned with the findings from the first principles assessments providing confidence in the preliminary analysis.

5.4.2 Campbell Street approach to Bathurst Street

Under base traffic conditions the Campbell Street approach to Bathurst Street is currently performing at LoS B with average queues extending back to TasTafe (approx. 70 m). The shared left / through lane on Campbell Street approach experiences queues due to the opposing pedestrian crossing movement on Bathurst Street (east). The high use of the left most lane was input into the lane utilisation of the model during the calibration process.

The proposed layout for the intersection of Campbell Street and Bathurst Street was modelled in the SIDRA network model. The intersection layout is shown in Figure 8, with key results presented in Table 5.

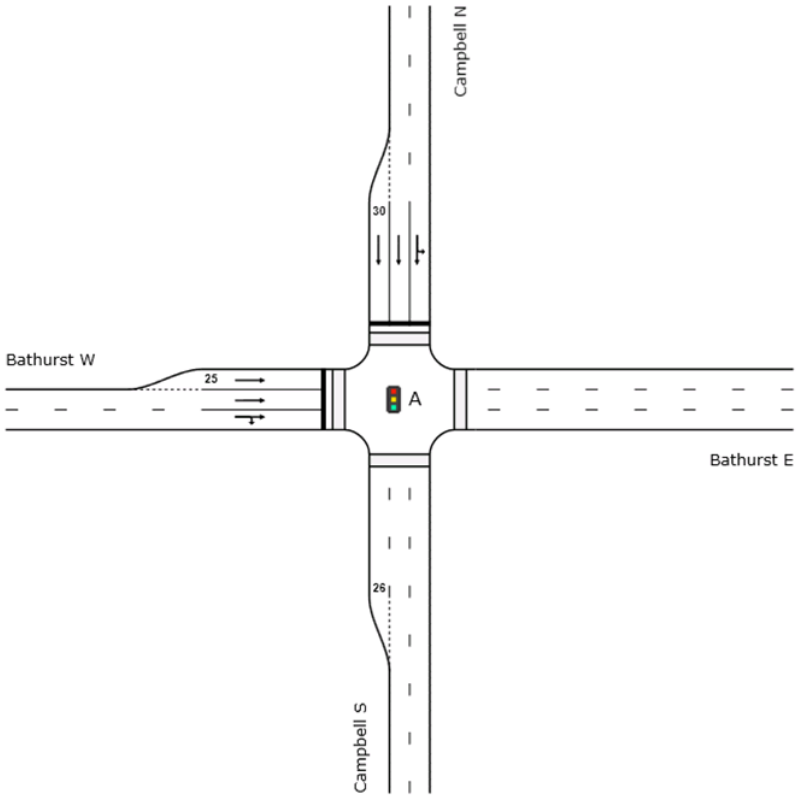


Figure 8 Modelled intersection layout Campbell Street / Bathurst Street

Table 5 Campbell Street / Bathurst Street key results

Time	Max. lane degree of saturation	Average number of cycles	Outcome
AM	0.627	0.84	Proposal provides sufficient capacity, vehicles are able to clear within a cycle.
Interpeak	0.435	0.77	Proposal provides sufficient capacity, vehicles are able to clear within a cycle.
PM	0.753	1.1	The proposal is close to capacity with some vehicles not clearing in a single cycle. Potential improvements of clearway upstream and/or downstream of the intersection are limited due to the discontinuation of the through movement downstream. Main cause of reduction in performance at the intersection is the allocation of additional cycle time to Bathurst Street movement due to SIDRA optimisation of delay.

As presented in Table 5 under the proposed Campbell Street downstream road arrangement, the model indicates that the arrangement provides sufficient capacity during both AM and interpeak periods.

In the PM peak period the demand approaches the capacity of the proposed lane configuration, however this is largely a reflection of the signal timing. Existing signal timing prioritises Campbell Street movements resulting in the opposing Bathurst Street movements experiencing delays and vehicles potentially taking two signal cycles to pass through the intersection. The proposal impacts this balance with the lane reductions on both Campbell Street and Bathurst Street.

The highest lane 95th percentile queue for all time periods is comfortably within the 220 m of midblock storage. It should be noted that existing lane utilisation behaviours were included from the calibrated base model so this queue can be further alleviated by better utilisation of lane space by road users.

A sensitivity analysis was conducted to review the impact of providing a clearway on either:

1. Campbell Street with clearway upstream and downstream
2. Bathurst Street approach with clearway

The first scenario showed only a slight improvement and provided a degree of saturation >0.7 and average number of cycles (to clear the intersection) as 1. Some adjustment to this could be made by improving the signals for Campbell Street but at the detriment of the performance of Bathurst Street. It should be noted that this is aligned with the existing performance, however this causes the performance to be highly reliant on the signal timings and arrivals of vehicles and implies poor resilience of the intersection.

With the clearway on Bathurst Street only both approaches achieved degree of saturation of <0.7 and average number of cycles <1. It is noted that this clearway provides a greater improvement to the overall performance of the intersection.

It is recommended that the clearway on Bathurst Street (discussed further in Section 5.4.5) on approach to Campbell Street is provided in the PM peak. The clearway on Campbell Street could be considered for the PM peak to provide further alleviation but is not considered necessary.

5.4.3 Campbell Street approach to Collins Street

The proposed layout was modelled in the network model, the high utilisation of the middle traffic lane observed on Campbell Street was included in the model during the calibration process. The modelled intersection layout is presented in Figure 9. The modelling results reflect onsite observations that the performance of Campbell Street approaching Collins Street is strongly impacted by the performance of the downstream intersection of Campbell Street at Macquarie Street due to the longer cycle time at this intersection.

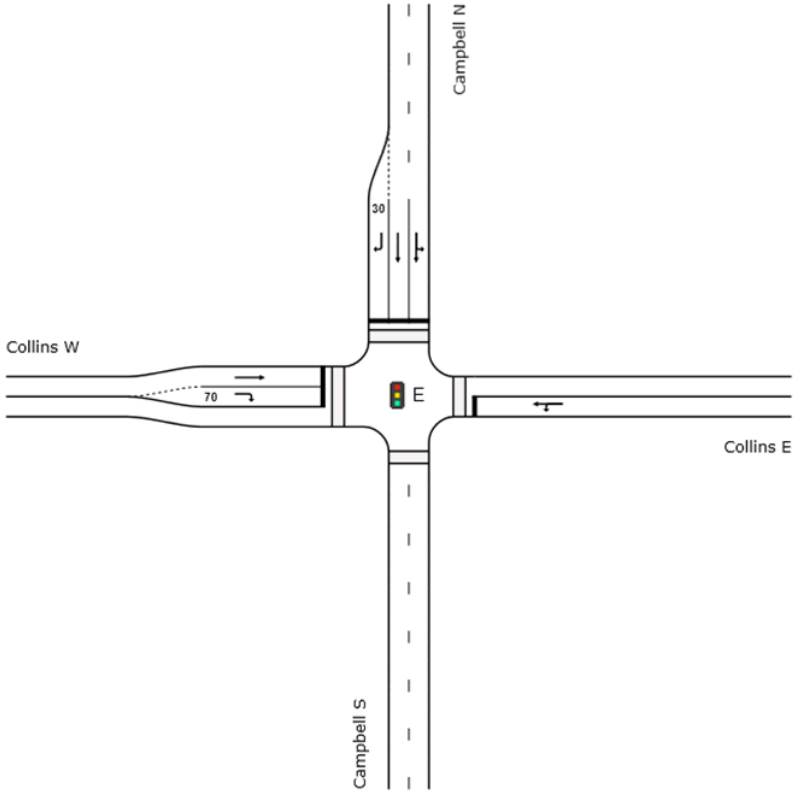


Figure 9 Modelled intersection layout Campbell Street / Collins Street

Key results from the scenario model are presented in Table 6.

Table 6 Campbell Street / Collins Street key results

Time	Max. lane degree of saturation	Average number of cycles	Outcome
AM	0.480	0.45	Proposal provides sufficient capacity, vehicles are able to clear within a cycle for all time periods.
Interpeak	0.398	0.66	
PM	0.607	0.76	

Under the trial arrangement the results indicate that downstream blockage impacts on Campbell Street due to the Collins Street signals double cycling compared to the signals at Macquarie Street. This operation is particularly restrictive in the PM peak period, reinforcing the requirement for a clearway during the PM peak period on approach to Macquarie Street as identified in Table 3. With the downstream conditions in place the intersection provides sufficient capacity in all time periods.

The 95th percentile queue for the high right turn movement onto Collins Street is expected to exceed the storage provided which is observed on site during peak AM demands. From the model results there is likely sufficient storage within the two full length lanes to store cars within the midblock during overflow events.

5.4.4 Liverpool Street approach to Argyle Street

Under base conditions the Liverpool Street approach to Argyle Street is observed to perform at LoS B and LoS C for AM and PM peak periods respectively. The modelled intersection layout is presented in Figure 10.

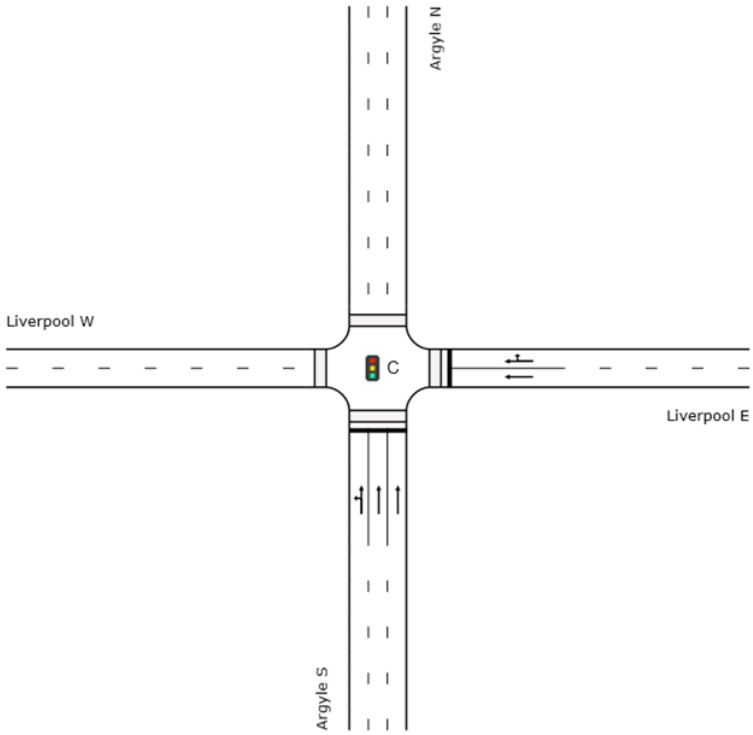


Figure 10 Modelled intersection layout Argyle Street / Liverpool Street

Key results from the scenario model are presented in Table 7.

Table 7 Argyle Street / Liverpool Street key results

Time	Max. lane degree of saturation	Average number of cycles	Outcome
AM	0.614	0.85	Proposal provides sufficient capacity, vehicles are able to clear within a cycle for all time periods.
Interpeak	0.583	0.93	
PM	0.558	0.92	

Under proposed conditions on the Liverpool Street approach to Argyle Street, the performance is not significantly impacted with the same Level of Service ratings maintained. The 95th percentile queues can be accommodated within the mid block, however it is noted that in practice downstream behaviours can impact the efficiency of the lane storage.

5.4.5 Bathurst Street connectivity through Argyle Street and Campbell Street

The traffic surveys were analysed in order to determine the potential lane allocation for Bathurst Street noting from the first principles assessment that the total approach volume was within capacity but the individual lane capacities were exceeded in the middle lane when a side lane was replaced with parking. It is acknowledged in Section 0 that a requirement for a clearway on approach to Campbell Street was identified for the PM peak. This assessment has been undertaken independently to review the through performance of Bathurst Street.

The turning movement data provides a small origin-destination network by which vehicles can be assigned to a lane and vehicles whose destination can be accommodated by a number of lanes can instead be allocated to the most efficient lane. In order to assess the lane allocation vehicles were assigned to the left and right lanes when they are required to turn left or right at that junction or at a junction downstream (i.e. no lane changing). All remaining traffic is considered to be through traffic at all intersections, for this assessment all through traffic was allocated to the middle lane as this would be the preference for through traffic travelling onto the Tasman Highway.

The calculated lane allocation is presented in Table 8.

Table 8 Bathurst Street required lane allocation

Approach	Left	Middle	Right
AM			
Argyle Street	225	124	111
Campbell Street	126	223	149
Brooker Avenue	170	328	16
PM			
Argyle Street	284	299	157
Campbell Street	235	607	275
Brooker Avenue	347	916	10
Interpeak			
Argyle Street	221	91	118
Campbell Street	162	273	235
Brooker Avenue	236	414	8

The lane allocations in Table 8 were compared to the capacity assessment values from the *Junction Capacity Assessment* (refer Section 4 and Appendix D), and the colour scheme applied to represent the compliance with the capacity.

In the AM peak hour the survey volumes were all within the capacity under the preferred lane allocation analysis. The short auxiliary lanes on approach to Argyle Street and Campbell Street and on departure from Campbell Street are not required during the AM peaks under existing traffic volumes.

In the PM peak hour the survey volumes typically exceeded the theoretical capacity as observed in Section 4. On approach to Campbell Street the capacity of both the middle lane and right lane is exceeded. It is anticipated that a majority (>90%) of the traffic allocated to the right lane will turn into Campbell Street and are not using this lane for the downstream approach. Given there is no change to the right turn provision the turn will continue to operate as it currently does, however the capacity assessment indicates that this lane cannot accommodate additional through traffic. A clearway is required in the left lane during the PM peak in order to accommodate the through traffic demand.

On approach to Argyle Street in the PM peak the resultant through demand is too high to be accommodated by only the middle lane (according to the first principles capacity). This additional through capacity can be serviced by the right lane. Although not required for capacity there may be some benefits provided by having a clearway in the left lane to increase storage for vehicles turning left further downstream at the Brooker Highway.

In the interpeak the survey volumes on approach to Argyle Street are within the capacity under the preferred lane allocation analysis. On approach to Campbell Street the capacity of the right lane is exceeded however since there is no change to the right turn provision the turn will continue to operate as it currently does. There is sufficient capacity in the middle lane to support any traffic turning right downstream and the through traffic is further supported by the short left lane.

The resultant recommendations are summarised in Table 9.

Table 9 Bathurst Street recommendations

Approach		Proposal conditions
Argyle Street	AM	No clearway required
	PM	Consider providing a clearway
	Interpeak	No clearway required
Campbell Street	AM	No clearway required
	PM	Clearway required (aligning with Section 0)
	Interpeak	No clearway required

5.4.6 Liverpool Street / Campbell Street junction with the Metro bus 'super stop'

The SIDRA model was also used to undertake further assessment of a potential bus phase to support the Metro bus 'super stop'.

Signal phasing was adjusted to include a 'bus jump' start for all cycles during both the AM and PM peak periods. It is noted that in the modelling, this 'bus jump' phase runs every cycle, however in reality the bus early start phase will only operate when a bus is detected waiting at the intersection. On this basis the modelling is providing a conservative result when reviewing the operation during the peak periods. The phase time for the 'bus jump' phase is mainly removed from the Campbell Street through movement phase where a high LoS is still achieved despite the reduced phase time.

During both the AM and PM peak periods, delays and queuing are at an acceptable level for both approaches, with the lowest approach Level of Service being LoS C on Liverpool Street

(refer Figure 11) and do not impact any upstream intersections (particularly the Railway Roundabout). The inclusion of the Bus Only left lane on Campbell Street does not have a detrimental impact on general traffic turning left from Liverpool Street onto Campbell Street.

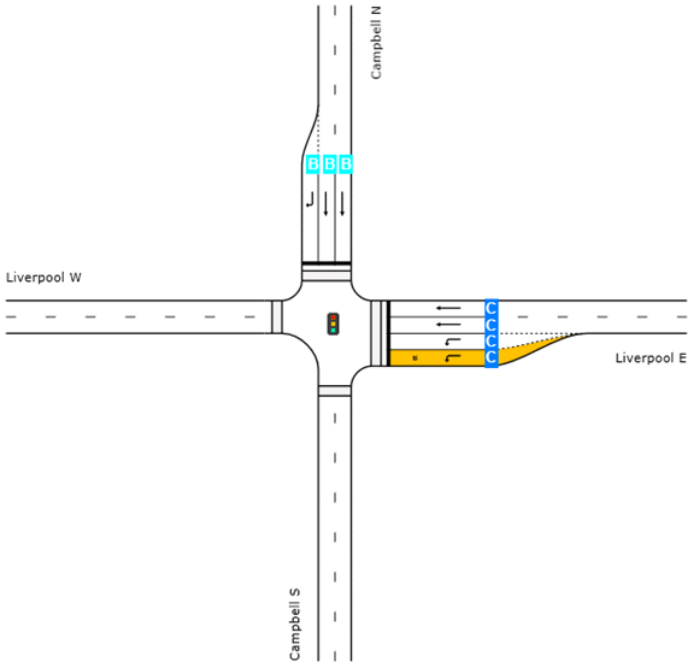


Figure 11 AM and PM Bus phase Level of Service

6. Recommendations

This report has documented the current operations and transport related performance of Campbell Street, Argyle Street, Liverpool Street and Bathurst Street and includes a review of likely performance of proposed bicycle lanes and the trial traffic management arrangement in Campbell Street (adjacent to the Royal Hobart Hospital K-Block).

The staged investigation allowed triaging of intersections to ensure approaches requiring a more detailed review were addressed. A summary of each stage outcomes and the overall recommendation for each intersection is provided in the following series of site based summary sheets.

Generally, the assessment indicated that there is sufficient capacity provided by the proposal, the requirement for clearways at certain periods during the day is illustrated in the site summary sheets with the recommended implementation of the proposal summarised in Table 10.

An overview diagram is provided in Figure 12 showing the recommended implementation.

Table 10 Recommended implementation

Approach	AM Peak	Interpeak	PM Peak
Campbell Street			
Brisbane Street	Proposal can operate all day		
Bathurst Street (NC)	Proposal with parking can operate all day. Clearway not required but could be considered for consistency in PM peak.		
Liverpool Street (NC)	Proposal with parking can operate all day. Clearway not required but could be considered for consistency in PM peak.		
Collins Street	Trial considered to perform appropriately during all time periods.		
Macquarie Street (NC)	Proposal with parking can operate during AM and interpeak		Clearway required
Davey Street (NC)	Proposal with parking can operate during AM and interpeak		Clearway required
Argyle Street			
Bathurst Street	Proposal can operate all day		
Melville Street	Proposal with parking can operate all day. Clearway not required		
Brisbane Street	Proposal with parking can operate all day. Clearway not required		
Liverpool Street			
Campbell Street	Proposal including early start bus phase can operate all day		
Argyle Street	Proposal can operate all day		
Bathurst Street			
Argyle Street	Short lane for additional capacity through intersection		Clearway required
Campbell Street (NC)	No clearway		Clearway required

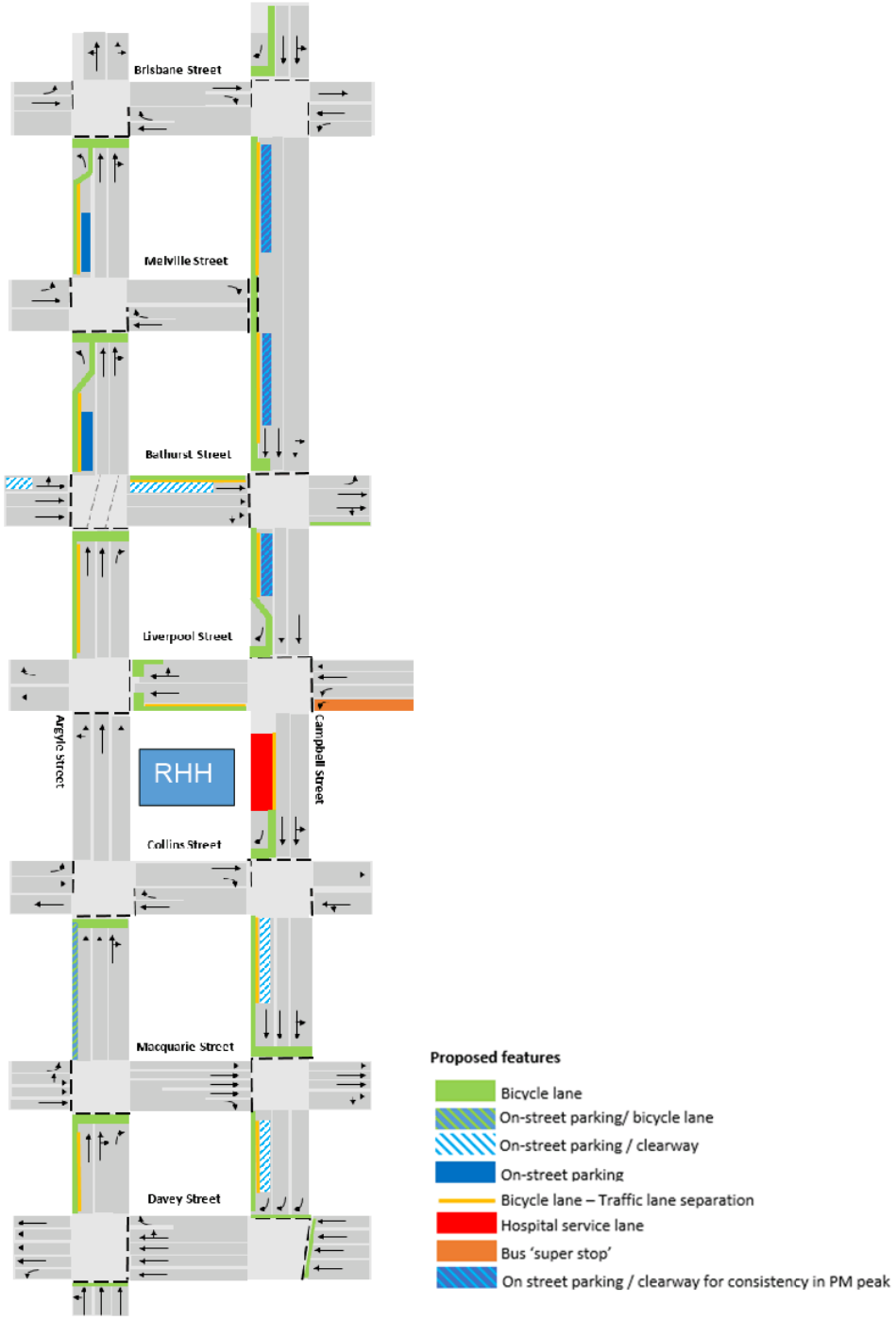
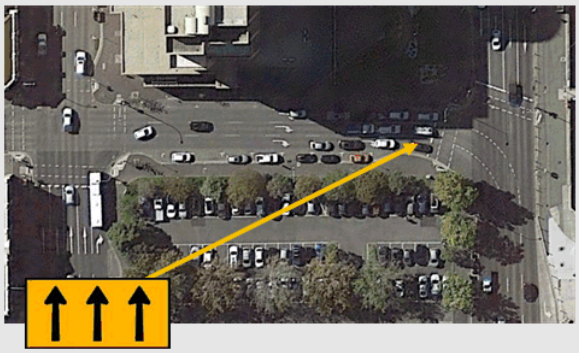


Figure 12 Recommended implementation with clearways for PM peak

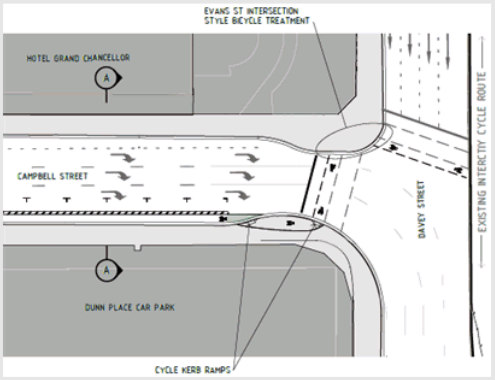
Note: On-street parking shown is only the parking that is impacted by the proposal

Campbell Street
Approach to Davey Street

Existing conditions: Three lane right turn approach to Davey Street



Proposal: Clearway in rightmost traffic lane



V/C Assessment

- Even lane utilisation
- Sufficient capacity expected in AM
- PM peak approaching capacity due to high volumes

AM Peak
V/C = 0.49

PM Peak
V/C = 0.74

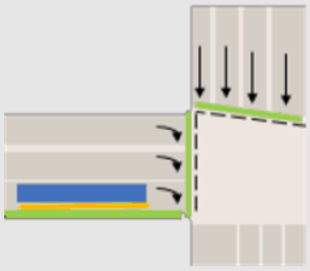
Initial capacity assessment – Austroads method

Lane	*Left lane (R)*	*Middle lane (R)*
AM	-101	-9
PM	-56	173
Interpeak	-96	18

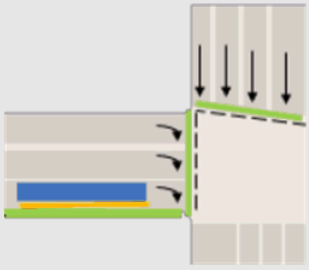
Recommendation

- Based on initial assessment parking can be provided in AM and inter-peak as short lane provides additional capacity
- Clearway required in PM peak

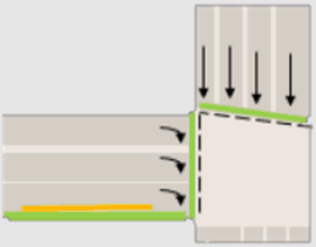
AM peak



Interpeak

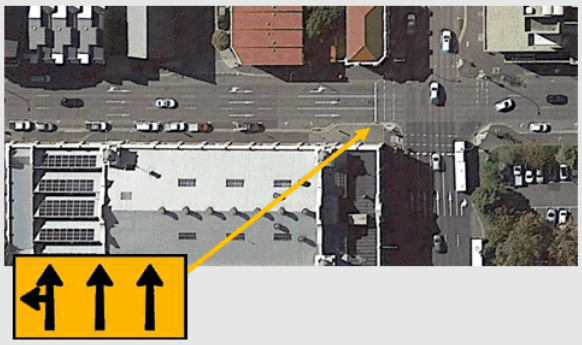


PM peak

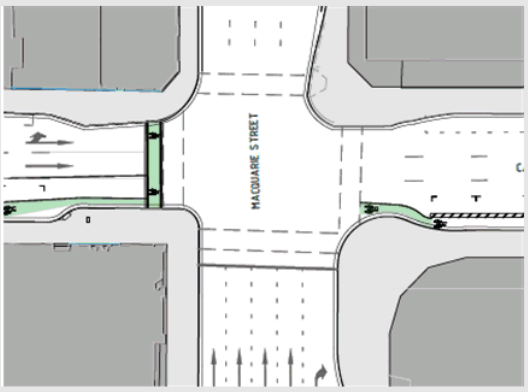


Campbell Street
Approach to Macquarie Street

Existing conditions: Two dedicated through lanes and a through and left lane on approach to Macquarie Street



Proposal: Clearway in rightmost traffic lane



V/C Assessment

- Low use of right lane
- High demand for middle lane and left turn
- PM peak approaching capacity due to high volumes

AM Peak
V/C = 0.56

PM Peak
V/C = 0.81

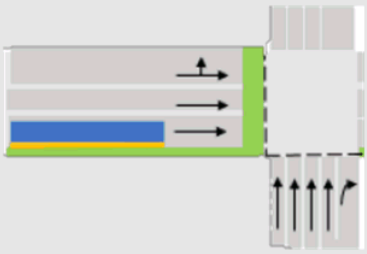
Initial capacity assessment – Austroads method

Lane	*Left lane (R)*	*Middle lane (R)*
AM	21	-199
PM	59	-28
Interpeak	16	-204

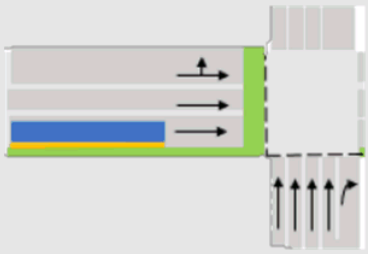
Recommendation

- Based on initial assessment parking can be provided in AM and inter-peak as sufficient capacity in middle lane to accommodate additional through traffic
- Clearway required in PM peak (further review may allow for parking)
- SIDRA network model indicated provision of a PM clearway is required to minimise risk of impacts on upstream intersections due to longer cycle time at Macquarie Street

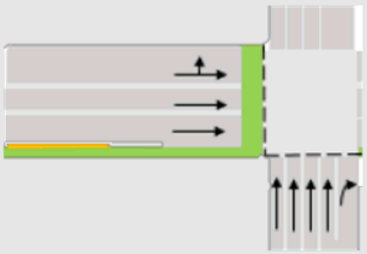
AM peak



Interpeak



PM peak



Campbell Street
Approach to Collins Street

Trial conditions: Two through lanes and shared hospital service lane in rightmost traffic lane with short dedicated right turn lane provided at intersection

Site observations

- High demand for right turn, particularly by buses
- Improperly stacked vehicles in short lane can cause overflow into middle traffic lane
- Conflict point at end of shared zone observed to be managed well

Detailed assessment

- Proposal provides sufficient capacity, vehicles are able to clear within a cycle for all time periods
- 95th percentile queue exceeds short lane capacity, however overflow can be accommodated within middle lane
- Performance for through traffic subject to downstream capacity between Macquarie Street and Collins Street

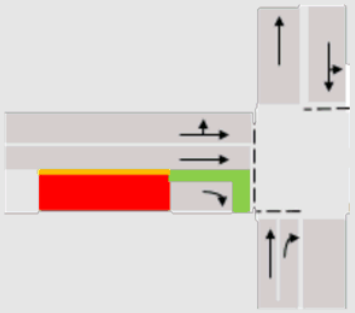
Initial capacity assessment – Austroads method

Lane	*Left lane (T)*	*Middle lane (T + R)*
AM	-168	211
PM	-162	30
Interpeak	-174	-50

Summary of observations

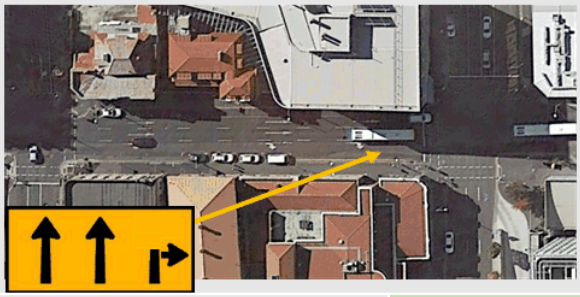
- Trial conditions are considered to be operating appropriately
- Permanent implementation of the trial arrangement would be supported
- Conflicting traffic movements at the end of the service lane may be a safety concern however the current configuration is observed to be used appropriately
- Correct use of the right turn lane by buses will increase the operational capacity of the intersection

Trial conditions can continue to operate during all time periods.

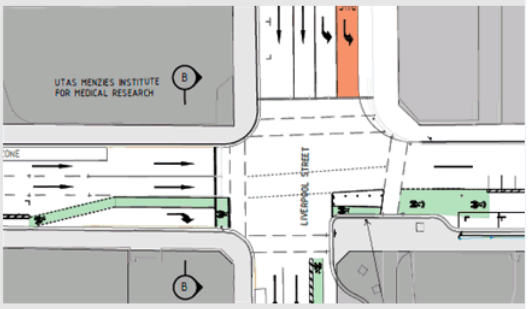


Campbell Street
Approach to Liverpool Street

Existing conditions: Two dedicated through lanes and a right lane on approach to Liverpool Street (under trial downstream).



Proposal: Reduced to two traffic lanes for midblock with short right turn lane in clearway lane



V/C Assessment

- High use of middle lane
- Low use of right lane

AM Peak

V/C = 0.62

PM Peak

V/C = 0.53

Initial capacity assessment – Austroads method

Lane	*Left lane (T)*	*Middle lane (T + R)*
AM	-264	-53
PM	-305	8
Interpeak	-340	-63

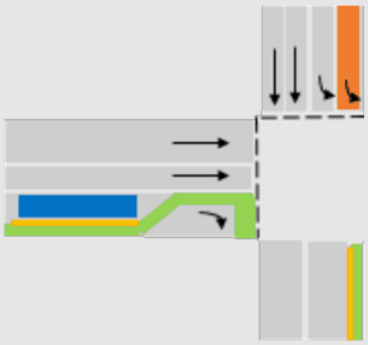
Note

- Conversion of through and right lane to right turn only lane has taken place due to trial conditions between Liverpool Street and Collins Street.
- Performance for through traffic not significantly impacted by conversion of lane to right only.

Recommendation

- Based on initial assessment parking can be provided in all time periods.
- A PM peak clearway could be considered for consistency with downstream sections of Campbell Street however doesn't provide through connectivity so minimal benefit anticipated.
- Additional PM capacity required easily accommodated within short right turn lane provision.

Proposed layout for all time periods

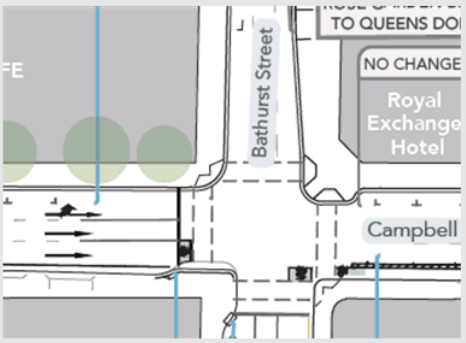


PM peak parking optional

Campbell Street
Approach to Bathurst Street

Existing conditions: Two dedicated through lanes and a through and left lane on approach to Bathurst Street.

Proposal: Parking and clearway in rightmost lane.



V/C Assessment

- Even lane utilisation
- Sufficient capacity expected in AM
- PM peak approaching capacity due to high volumes

AM Peak
V/C = 0.56

PM Peak
V/C = 0.58

Initial capacity assessment – Austroads method

Lane	*Left lane (T + L)*	*Middle lane (T)*
AM	76	-15
PM	155	-14
Interpeak	64	-126

Detailed assessment

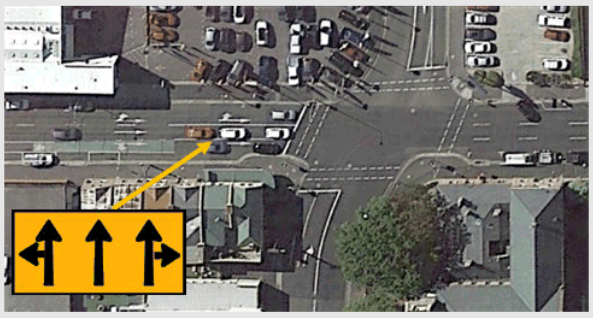
- Proposal provides sufficient capacity with vehicles able to clear in one cycle in AM peak and interpeak
- PM peak performance is highly dependant on signal allocation between Campbell Street and Bathurst Street
- Clearway on Bathurst Street negates need for Campbell Street clearway

Recommendation

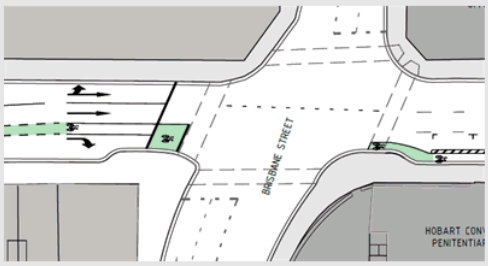
- Based on the detailed assessment parking can be provided in all time periods
- A clearway could be considered in the PM peak aligning with downstream treatment however benefit is limited as the lane terminates at Liverpool Street.

Campbell Street
Approach to Brisbane Street

Existing conditions: One dedicated through lane and two shared through and turn lanes on approach to Brisbane Street



Proposal: Existing through and right lane converted to right only



V/C Assessment

- Low use of right lane
- Good signal coordination leads to minimal queues and delays

AM Peak

V/C = 0.61

PM Peak

V/C = 0.56

Initial capacity assessment – Austroads method

Lane	*Left lane (T + L)*	*Middle lane (T + R)*
AM	-186	-31
PM	-83	-107
Interpeak	-209	-224

Recommendation

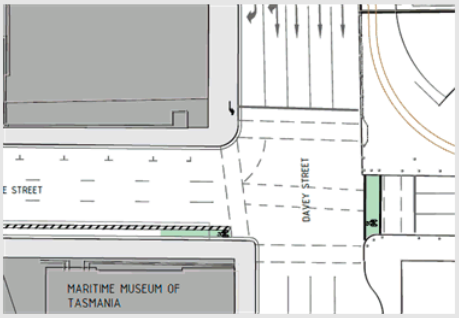
- Based on initial assessment proposed arrangement can be provided during all time periods

Layout for all time periods

Argyle Street
Approach to Davey Street

Existing conditions: Two through lanes with a through and left lane onto Davey Street

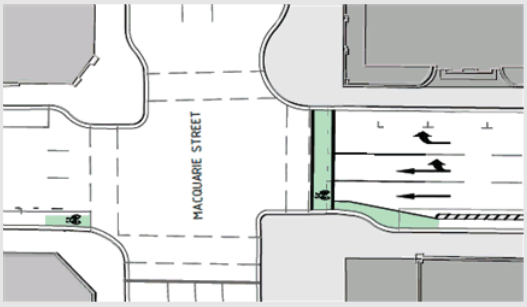
Proposal: No capacity change to traffic lanes



Argyle Street
Approach to Macquarie Street

Existing conditions: Dedicated through lane, through and right lane and dedicated right lane

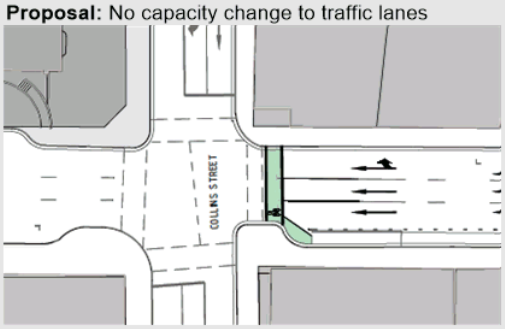
Proposal: No capacity change to traffic lanes



Argyle Street
Approach to Collins Street

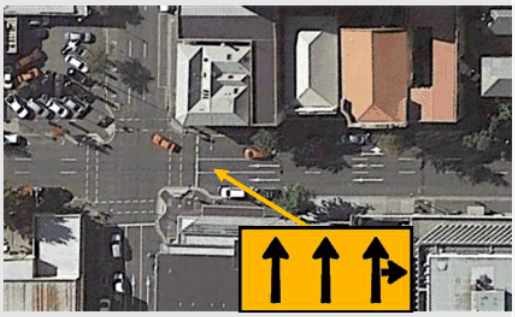
Existing conditions: Two dedicated through lanes and one dedicated right lane

Proposal: No capacity change to traffic lanes

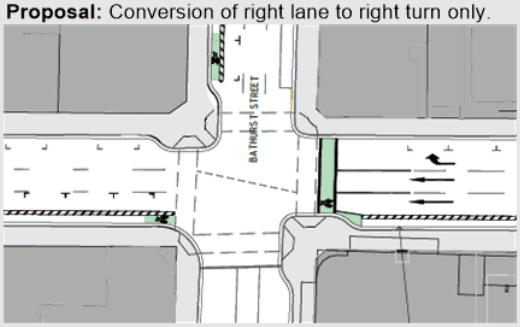


Argyle Street
Approach to Bathurst Street

Existing conditions: Two through lanes and a shared through and right lane on approach to Bathurst Street



Proposal: Conversion of right lane to right turn only.



V/C Assessment

- Low use of right lane
- Congestion on Bathurst Street restricts right turns

AM Peak
V/C = 0.59

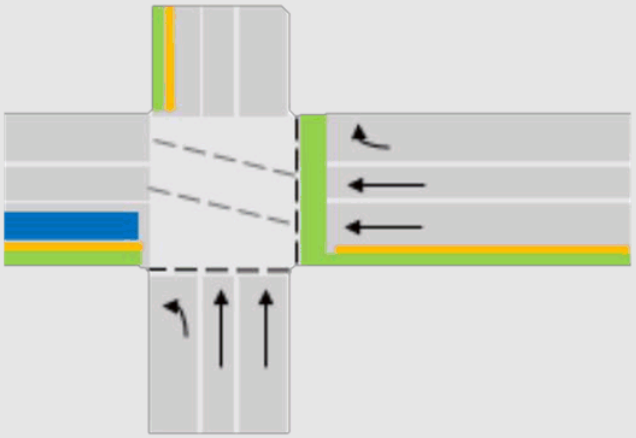
PM Peak
V/C = 0.80

Initial capacity assessment – Austroads method

Lane	*Left lane (T)*	*Middle lane (T)*	*Right lane (R)*
AM	-560	-454	-77
PM	-530	-364	217
Interpeak	-558	-450	155

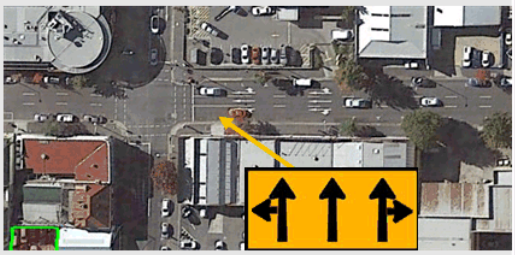
Recommendation

- Proposed arrangement can be implemented for all time periods
- There is only provision of two downstream lanes under the proposal

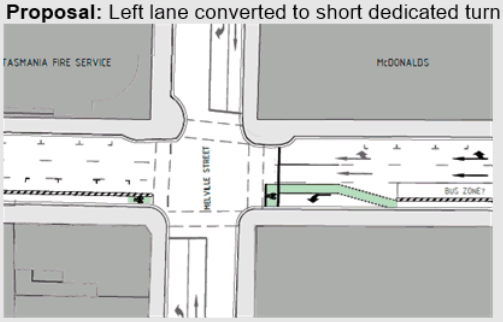


Argyle Street
Approach to Melville Street

Existing conditions: Through and right lane, dedicated through lane and through and left turn lane



Proposal: Left lane converted to short dedicated turn lane



V/C Assessment

- No issues observed

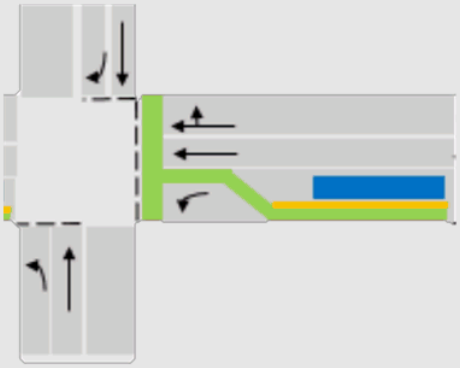
AM Peak	V/C = 0.51
PM Peak	V/C = 0.53

Initial capacity assessment – Austroads method

Lane	*Middle lane (T + L)*	*Right lane (T + R)*
AM	-67	-266
PM	-20	-322
Interpeak	-92	-320

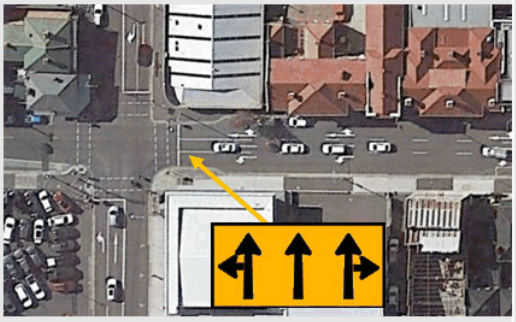
Recommendation

- Based on initial assessment proposal can be implemented during all time periods

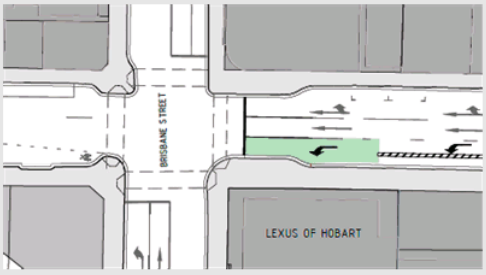


Argyle Street
Approach to Brisbane Street

Existing conditions: One dedicated left turn lane, one dedicated through lane and a shared through and right lane.



Proposal: Left lane converted to short lane



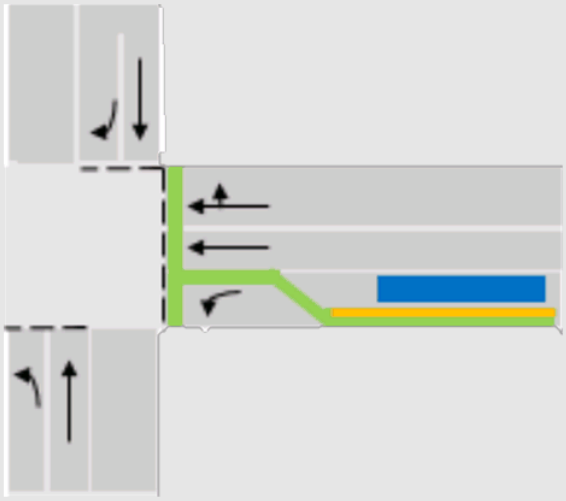
V/C Assessment

- No issues observed.

AM Peak V/C = 0.54	**Initial capacity assessment – Austroads method**		
	Lane	*Middle lane (T + L)*	*Right lane (T + R)*
PM Peak V/C = 0.64	*AM*	-142	-136
	PM	-47	-57
	Interpeak	-132	-108

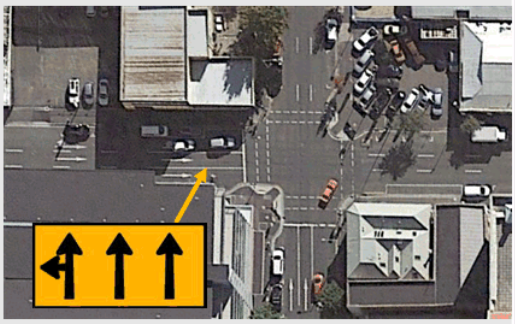
Recommendation

- Based on initial assessment proposal can be implemented during all time periods

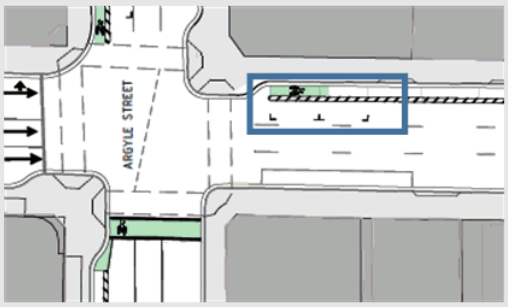


Bathurst Street
Approach to Argyle Street

Existing conditions: Two dedicated through lanes and a shared through and left lane



Proposal: Change to downstream lane provision (reduction to two lanes)



Initial assessment

Typically low volumes observed

Detailed assessment

- The survey volumes were all within capacity under the preferred lane allocation analysis in the AM peak hour
- There is sufficient capacity in the interpeak
- A downstream clearway is required in the left lane during the PM peak in order to accommodate the through traffic demand.

Initial capacity assessment – Austroads method

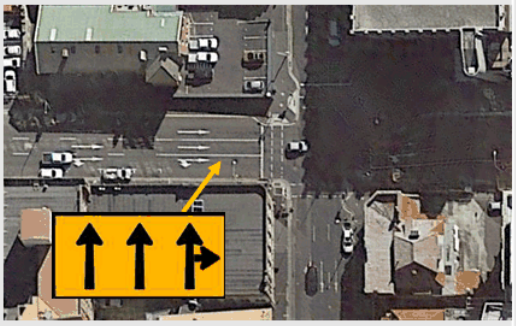
Lane	*Left lane (T + L)*	*Middle lane (T)*	*Right lane (T)*
AM	-185	11	-291
PM	-108	155	-251
Interpeak	-123	118	-264

Recommendation

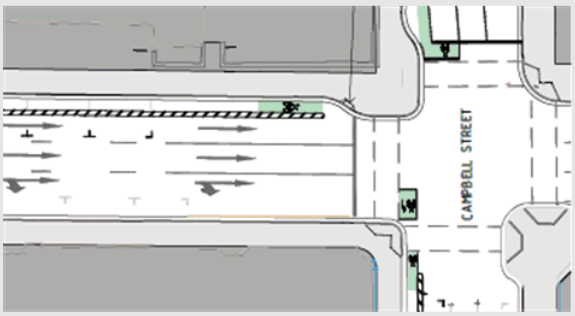
- Parking can be provided in AM and inter-peak as the short lane provides additional capacity
- Downstream learway required in PM peak
- Parking spaces required to be removed (highlighted in diagram) to allow left lane to provide short lane through provision at all times

Bathurst Street
Approach to Campbell Street

Existing conditions: Two dedicated through lanes and a through and left lane on approach to Campbell Street



Proposal: Clearway in leftmost traffic lane with short through lane provided during parking periods.



Initial assessment

- Should be sufficient capacity if lane allocation is appropriate
- Need to review requirement for vehicles to be in right lane
- Clearway likely required in PM

AM Peak
V/C = 0.33

PM Peak
V/C = 0.64

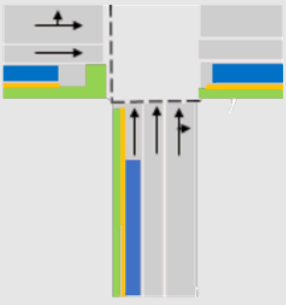
Initial capacity assessment – Austroads method

Lane	*Middle lane (T)*	*Right lane (T + R)*
AM	-175	15
PM	68	245
Interpeak	-114	125

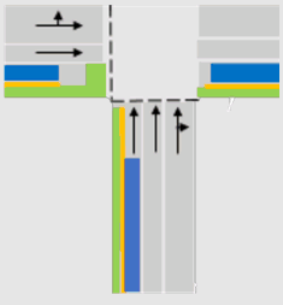
Detailed assessment and recommendations

- The survey volumes were all within capacity under the preferred lane allocation analysis in the AM peak hour
- The theoretical capacity of the right lane is exceeded in all time periods, however there is no change to the right turn provision under the proposal
- A clearway is required in the left lane during the PM peak in order to accommodate the through traffic demand and to support intersection performance.
- The short lane should provide sufficient additional through capacity in the interpeak

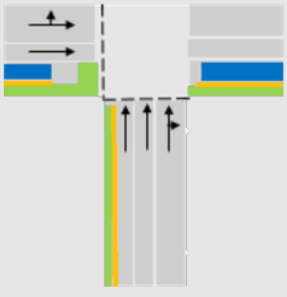
AM peak



Interpeak

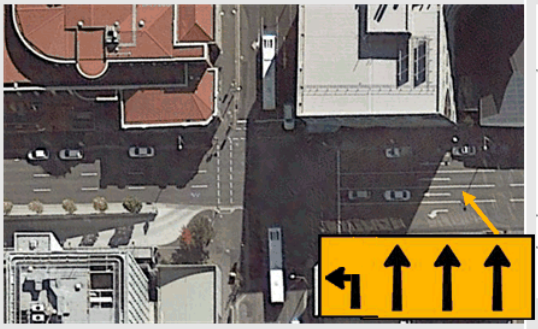


PM peak

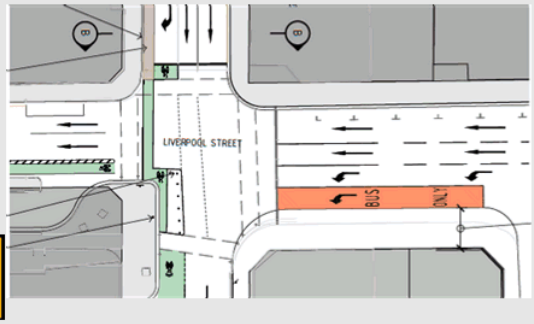


Liverpool Street
Approach to Campbell Street

Existing conditions: Three through lanes with one dedicated left turn lane



Proposal: Dedicated bus lane provided with separate bus turn phase and reduction to two dedicated through lanes.



V/C Assessment

- Low use of right lane.
- Buses are main cause of capacity issues.

AM Peak
V/C = 0.39

PM Peak
V/C = 0.19

Initial capacity assessment – Austroads method

Lane	*Left lane (L)*	*Middle lane (T)*	*Right lane (T)*
AM	80	-262	-119
PM	-51	-407	-355
Interpeak	12	-423	-347

Detailed assessment

- During both the AM and PM peak periods, delays and queuing are at an acceptable level for both approaches, with the lowest approach Level of Service being LoS C on Liverpool Street.
- With removal of buses into a dedicated bus lane, the left lane has less traffic than existing resulting in more capacity for vehicle storage
- Pedestrian facilities at the intersection provide adequately for current bus patron demands
- Delays for pedestrians are minimal due to the 60 second signal cycle time

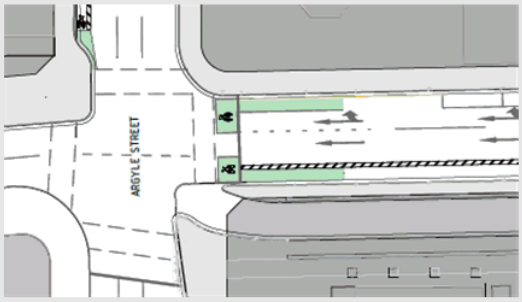
Recommendation

- Based on the detailed assessment a bus early start phase can be implemented with minimal impact on other lanes on Liverpool Street and Campbell Street approaches to the intersection

Liverpool Street
Approach to Argyle Street

Existing conditions: Two dedicated through lanes and a dedicated left lane on approach to Argyle

Proposal: Bicycle lane in leftmost traffic lane



V/C Assessment

- Preference for left lane.

AM Peak	V/C = 0.78
PM Peak	V/C = 0.41

Initial capacity assessment – Austroads method

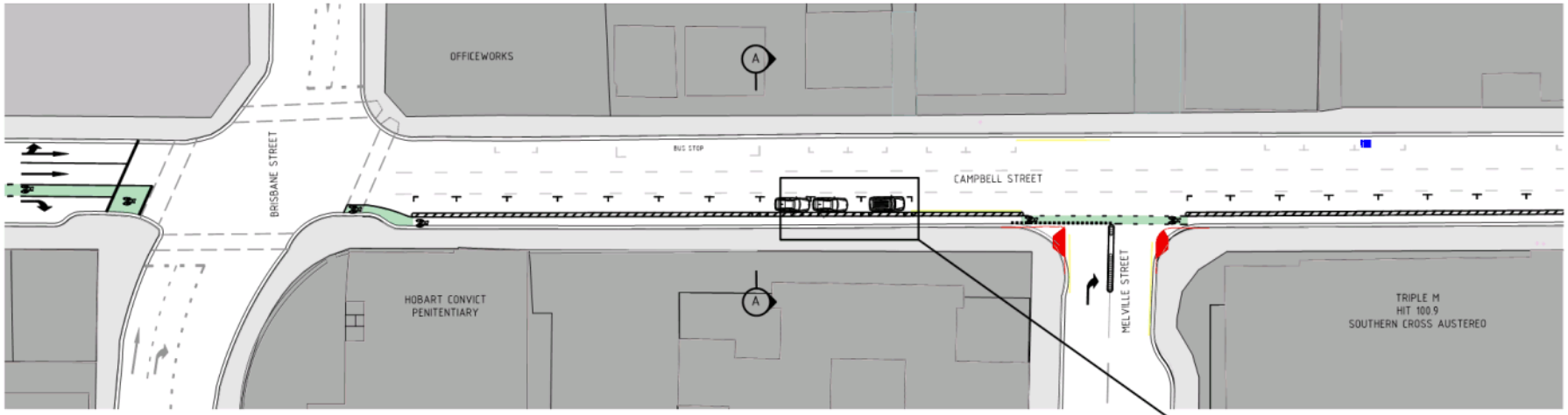
Lane	*Left lane (T)*	*Right lane (T + R)*
AM	-505	584
PM	-716	287
Interpeak	-789	276

Detailed assessment and recommendations

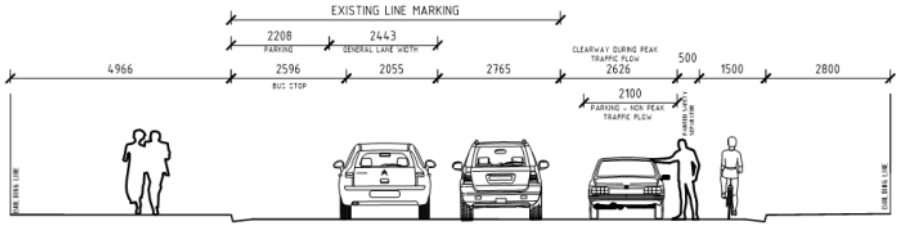
- Proposal provides sufficient capacity, vehicles are able to clear within a cycle for all time periods.
- Due to the changes at the intersection and upstream at Campbell Street a higher use of the left lane is anticipated than the initial capacity assessment indicates
- The proposed arrangement can operate all day

Appendices

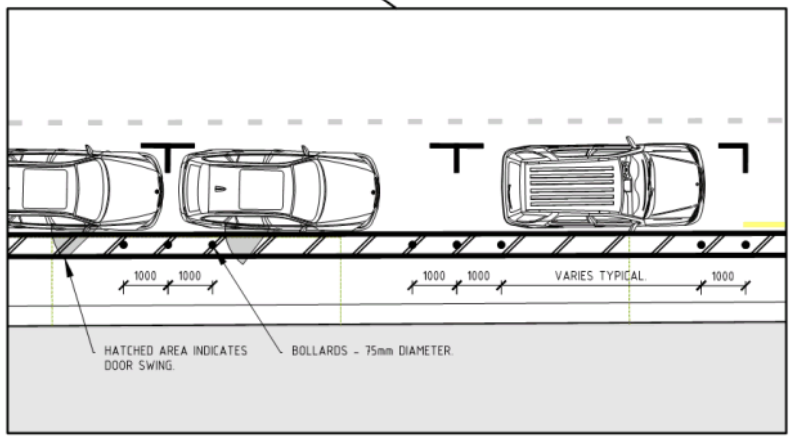
Appendix A – Concept Sketches as at 11 December 2019



PLAN - CAMPBELL STREET
BRISBANE STREET TO MELVILLE STREET
Scale 1:500



SECTION A
Scale 100



BOLLARD PLACEMENT ARRANGEMENT
Scale 100

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A	FOR CONSULTATION	03/12/19

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PROJECT DESCRIPTION: CAMPBELL STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - BRISBANE STREET TO MELVILLE STREET
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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03/12/19	SK01	A
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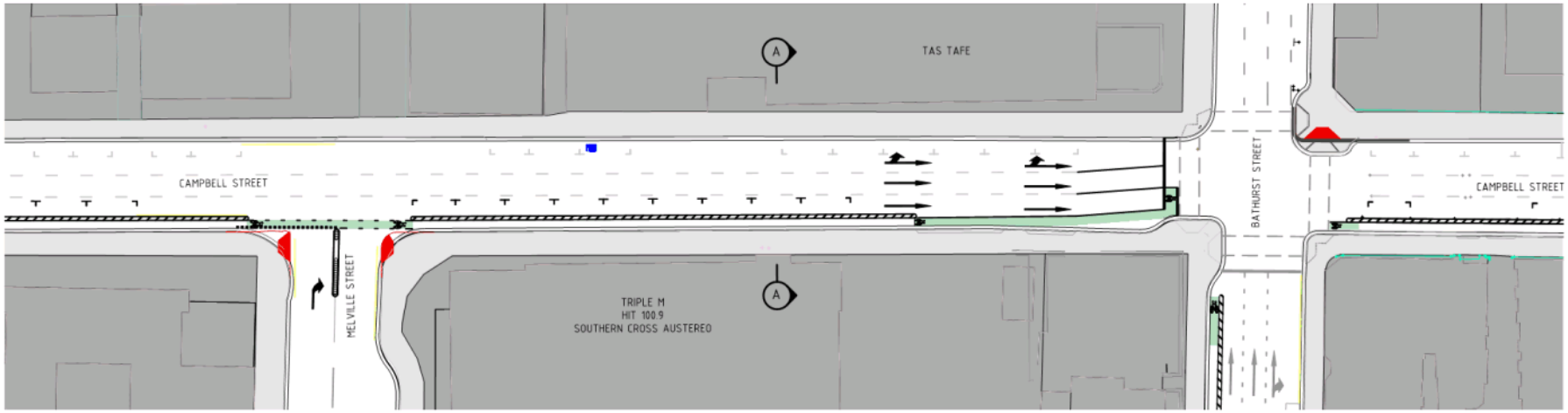
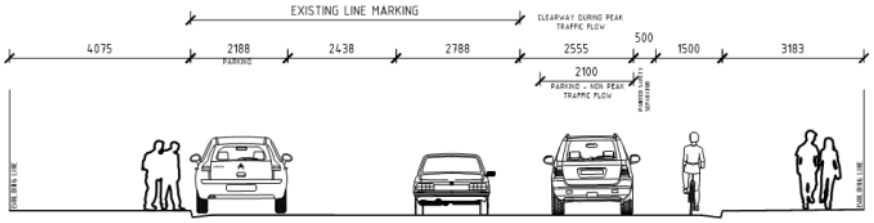


PLAN - CAMPBELL STREET
MELVILLE STREET TO BATHURST STREET
Scale 1:500



SECTION A
Scale 100

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REV	DESCRIPTION	DATE
A	RDF CONSULTATION	03/12/19

City of HOBART
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PROJECT DESCRIPTION: CAMPBELL STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - MELVILLE TO BATHURST
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING
DRAWN: GT
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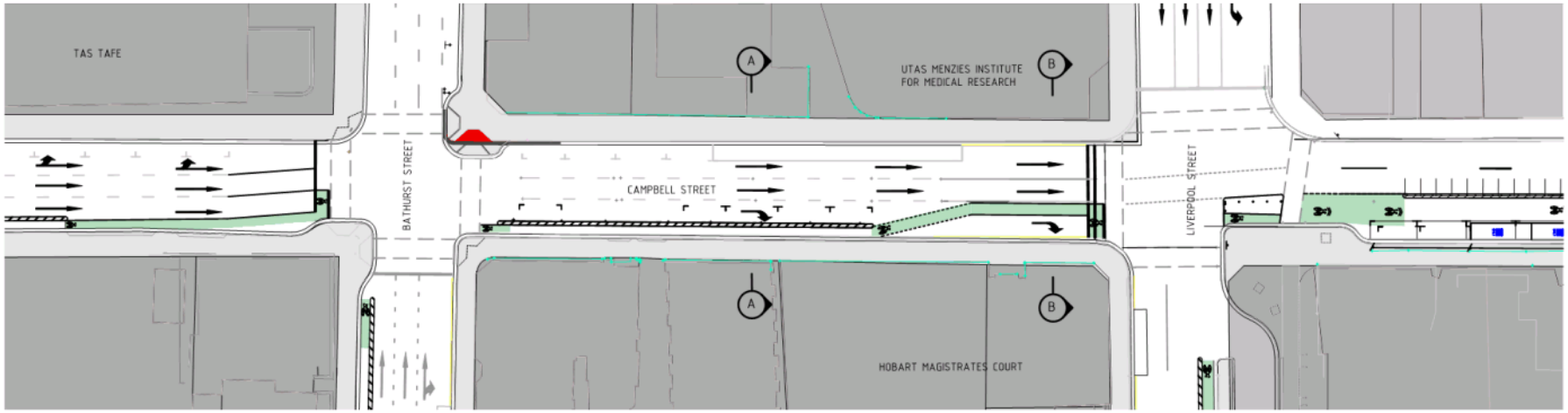
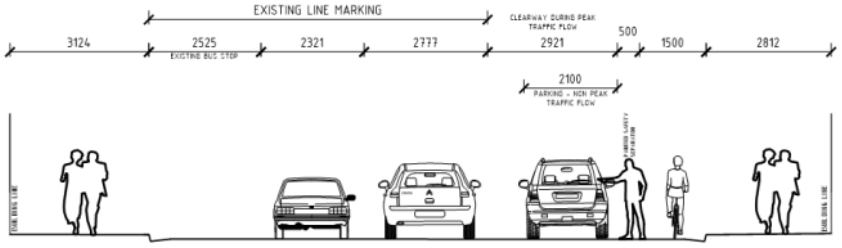
REVISION: A



PLAN - CAMPBELL STREET
BATHURST STREET TO LIVERPOOL STREET
Scale 1:500



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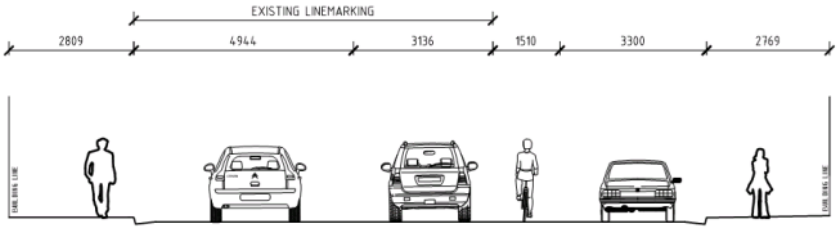

SECTION B
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REV	DESCRIPTION	DATE
A	RDF CONSULTATION	03/12/19

City of HOBART
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PROJECT DESCRIPTION: CAMPBELL STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - BATHURST TO LIVERPOOL
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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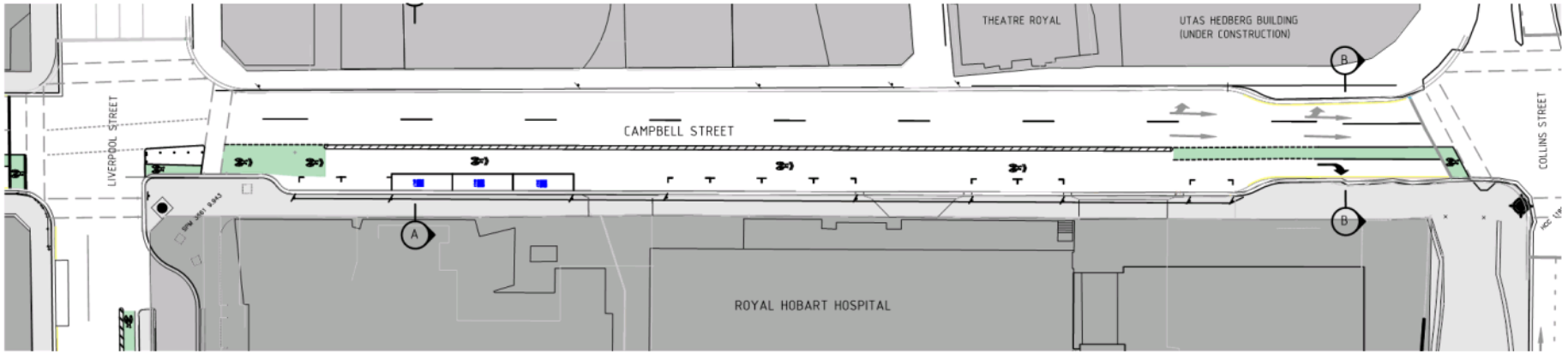
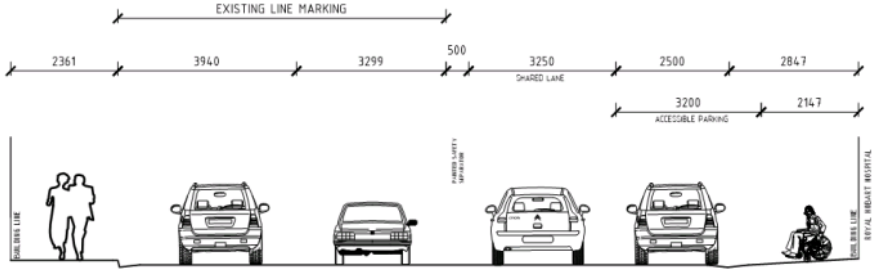


PLAN - CAMPBELL STREET
LIVERPOOL STREET TO COLLINS STREET
Scale 1:500



SECTION A
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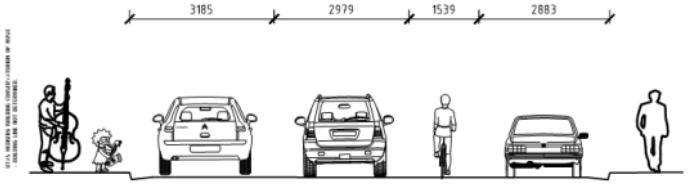

SECTION B
Scale 100

FOR CONSULTATION

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A	FOR CONSULTATION	03/12/19

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PROJECT DESCRIPTION: CAMPBELL STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - LIVERPOOL TO COLLINS
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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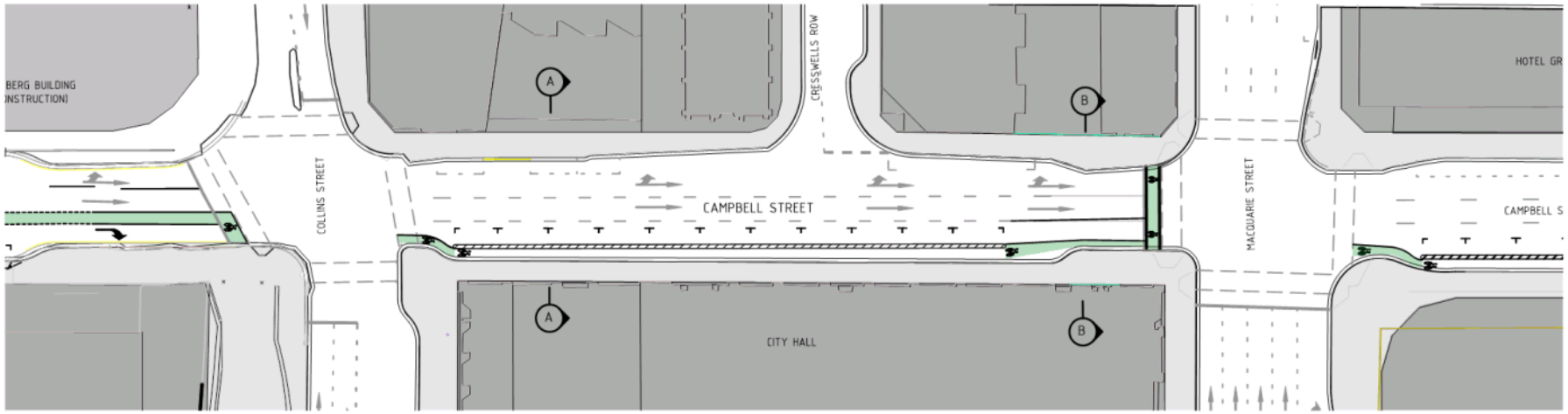
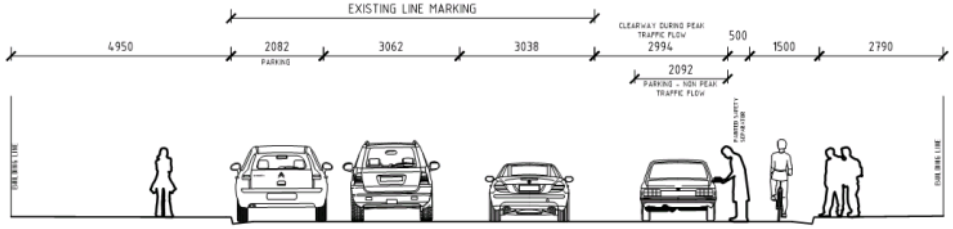


PLAN - CAMPBELL STREET
COLLINS STREET TO MACQUARIE STREET
Scale 1:500



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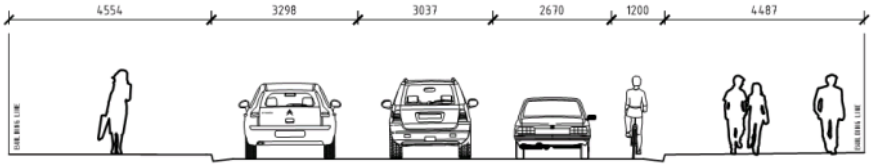

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FOR CONSULTATION

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A	RDF CONSULTATION	03/12/19

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PROJECT DESCRIPTION: CAMPBELL STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - COLLINS TO MACQUARIE
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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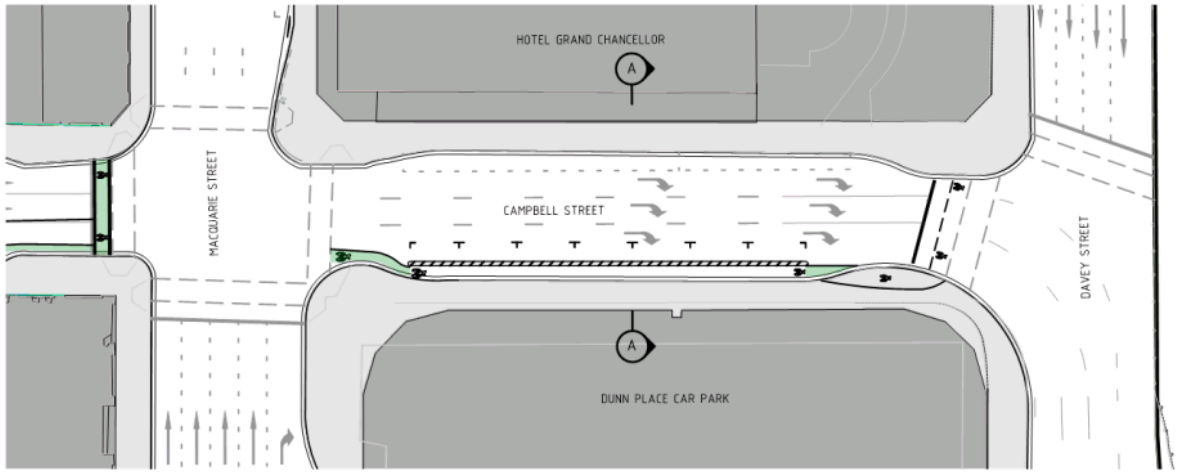

PLAN - CAMPBELL STREET
MACQUARIE STREET TO DAVEY STREET
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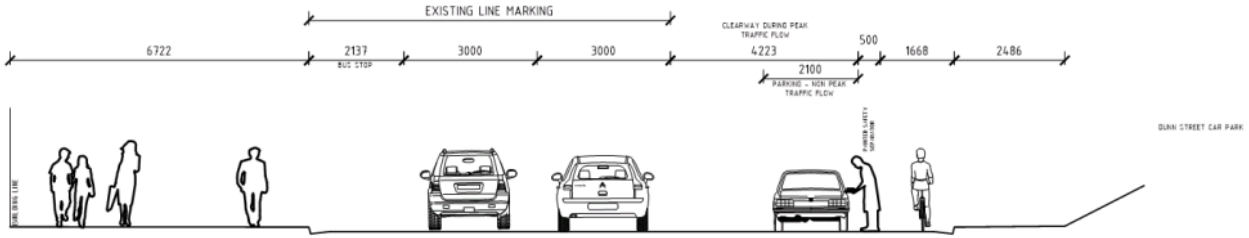

SECTION A
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CONCEPT PLAN FOR DISCUSSION
Scale NTS

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A	RDF CONSULTATION	03/12/19

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PROJECT DESCRIPTION: CAMPBELL STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - MACQUARIE TO DAVEY
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING
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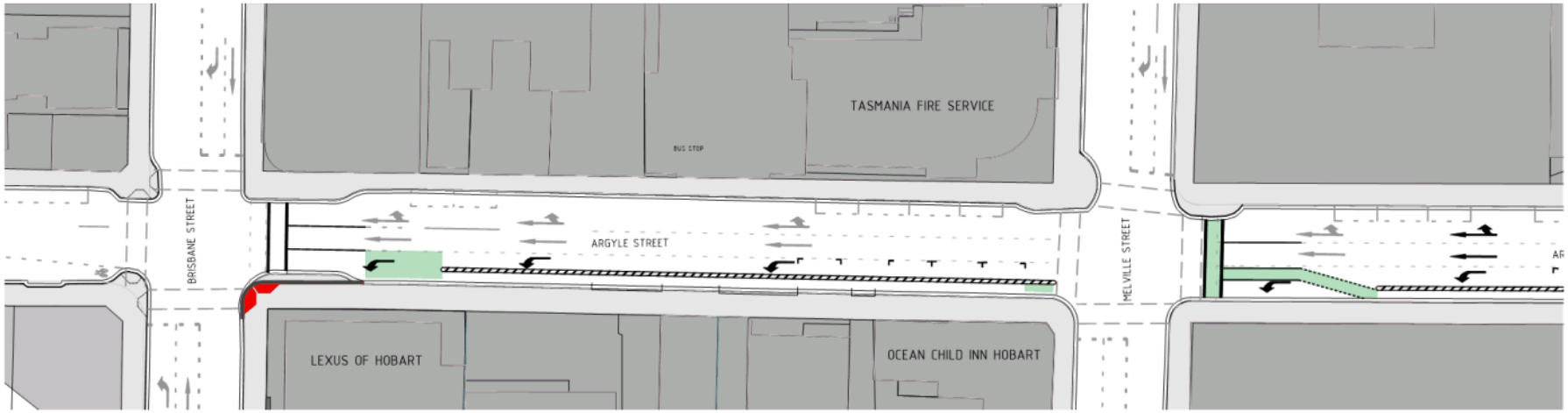

PLAN - ARGYLE STREET
BRISBANE STREET TO MELVILLE STREET
Scale 1:500

FOR CONSULTATION

REV	DESCRIPTION	DATE
A	FOR CONSULTATION	03/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - BRISBANE STREET TO MELVILLE STREET
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

DRAWN	RFC NUMBER	SHEET SIZE
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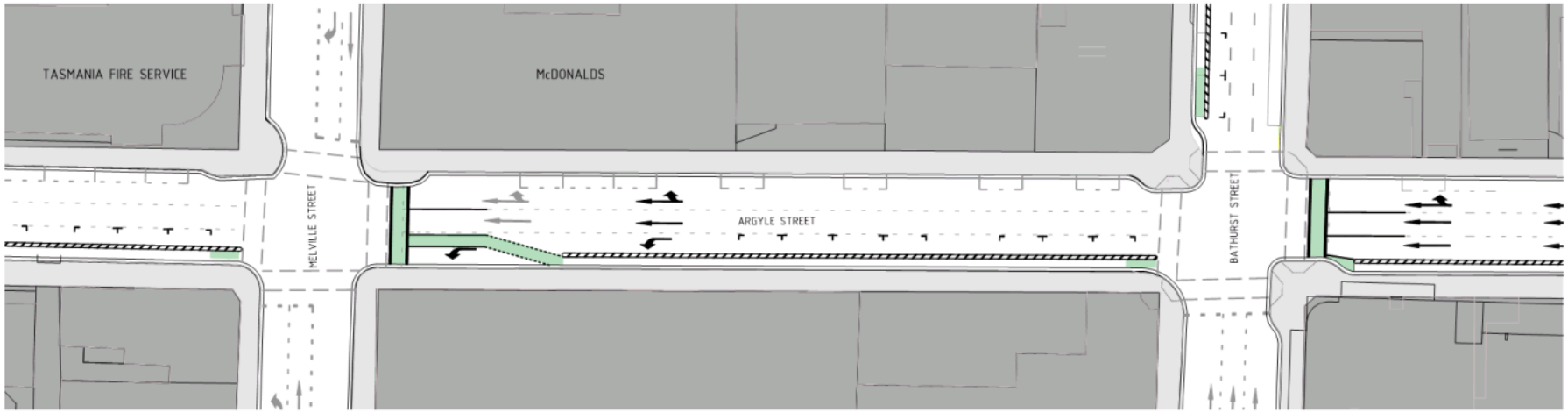

PLAN - ARGYLE STREET
MELVILLE STREET TO BATHURST STREET
Scale 1:500

FOR CONSULTATION

REV	DESCRIPTION	DATE
A	RDF CONSULTATION	05/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - MELVILLE TO BATHURST
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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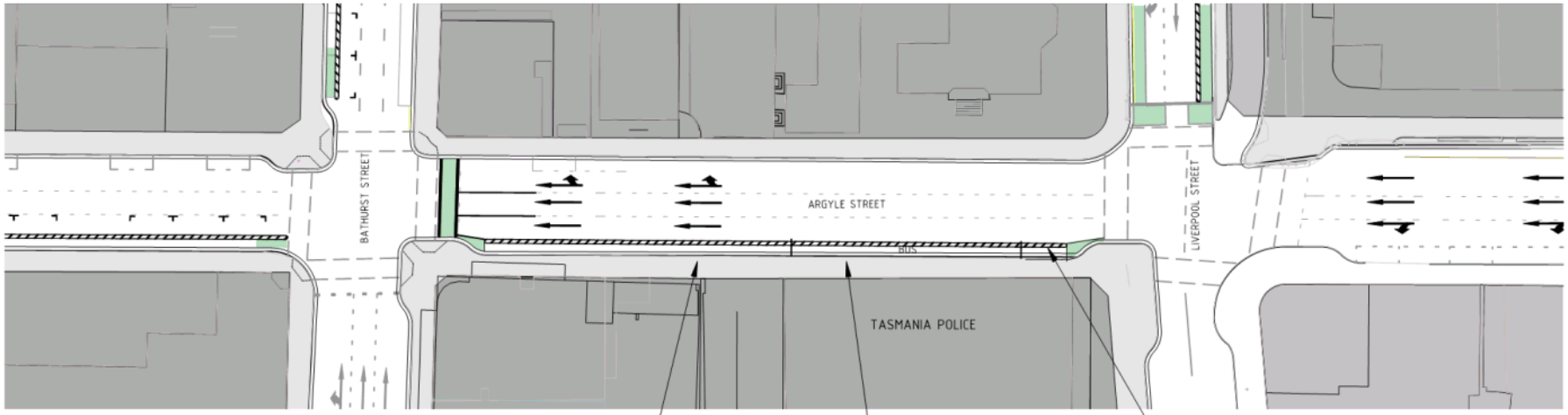

PLAN - CAMPBELL STREET
BATHURST STREET TO LIVERPOOL STREET
Scale 1:500

ACCESS TO VODAPHONE AND POLICE CARPARK TO BE MAINTAINED

BUS STOP TO REMAIN IN BICYCLE LANE

PAINTED BICYCLE LANE - NO BOLLARDS, IN THIS BLOCK OF ARGYLE STREET.

FOR CONSULTATION

REV	DESCRIPTION	DATE
A	RDF CONSULTATION	05/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - BATHURST TO LIVERPOOL
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

DRAWN	RFC NUMBER	SHEET SIZE
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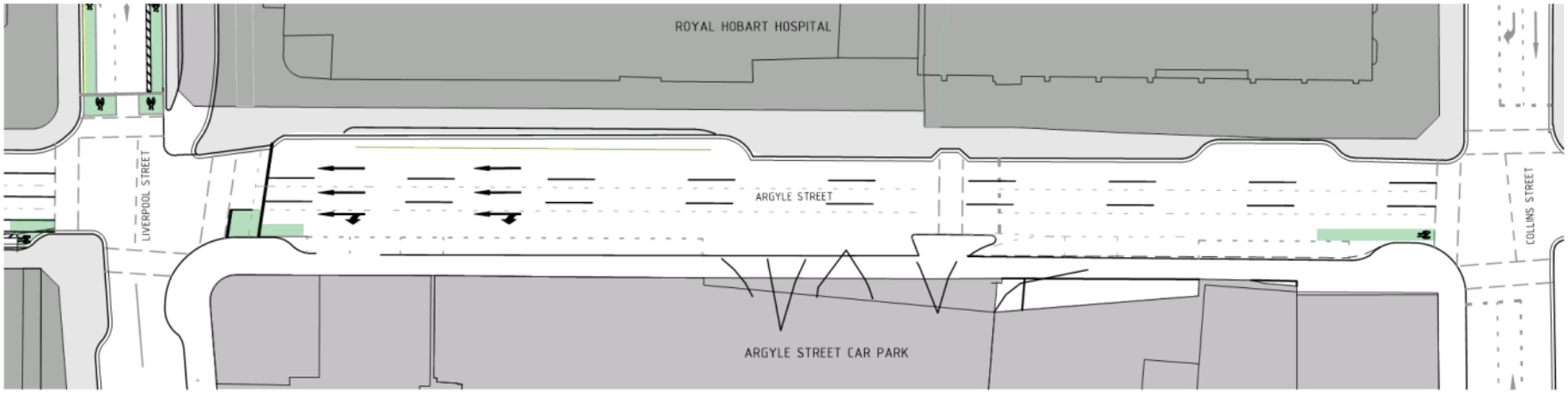

PLAN - CAMPBELL STREET
LIVERPOOL STREET TO COLLINS STREET
Scale 1:500

NO BICYCLE TREATMENT PROPOSED AT THIS STAGE. THIS BLOCK WITH HOSPITAL ACCESS AND ARGYLE STREET CARPARK ACCESS NEEDS FURTHER DESIGN DEVELOPMENT WORK.

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REV.	DESCRIPTION	DATE
A	RDR CONSULTATION	03/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - LIVERPOOL TO COLLINS
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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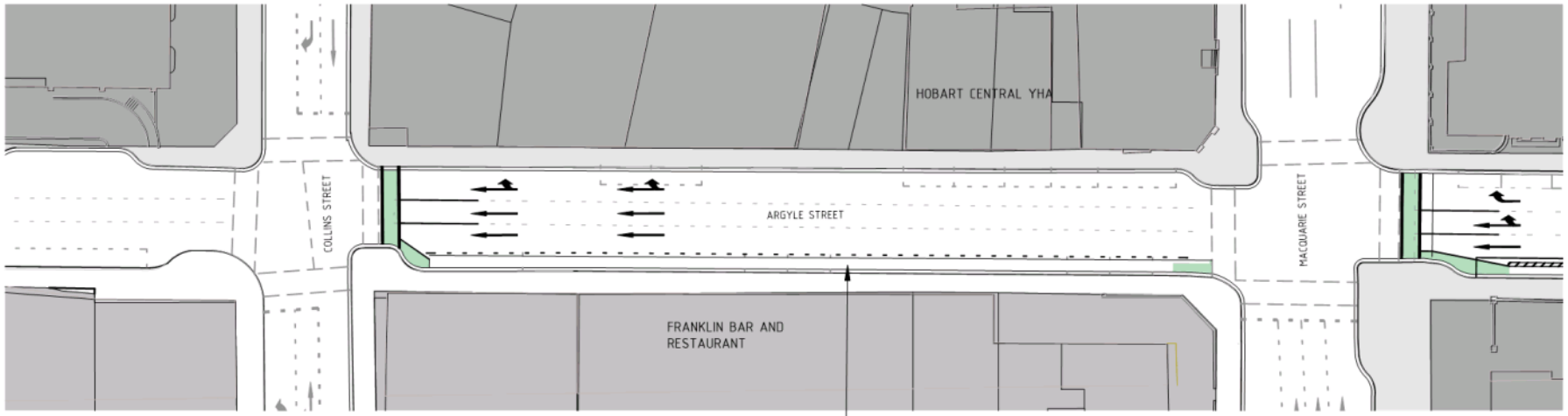

PLAN - ARGYLE STREET
COLLINS STREET TO MACQUARIE STREET
Scale 1:500

TRIAL PEAK HOUR BICYCLE LANE.
PARKING MAINTAINED AT OTHER TIMES.

FOR CONSULTATION

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A	RDF CONSULTATION	05/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - COLLINS TO MACQUARIE
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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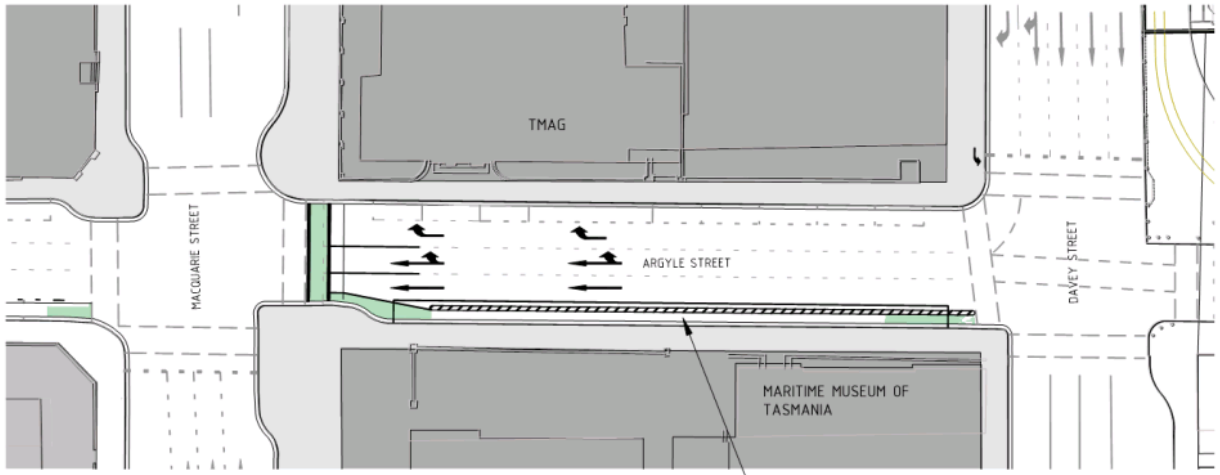

PLAN - ARGYLE STREET
MACQUARIE STREET TO DAVEY STREET
Scale 1:500

FOR CONSULTATION

REV	DESCRIPTION	DATE
A	RDF CONSULTATION	03/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - MACQUARIE TO DAVEY
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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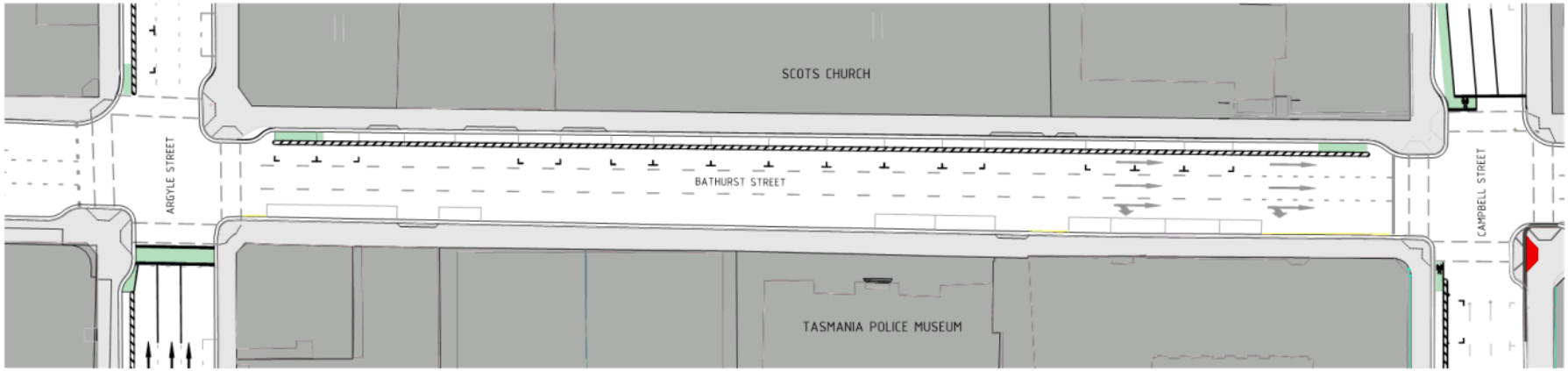

PLAN - BATHURST STREET
ARGYLE STREET TO CAMPBELL STREET
Scale 1:500

FOR CONSULTATION

REV	DESCRIPTION	DATE
A	RDF CONSULTATION	03/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - BATHURST STREET LINK - ARGYLE STREET TO CAMPBELL STREET
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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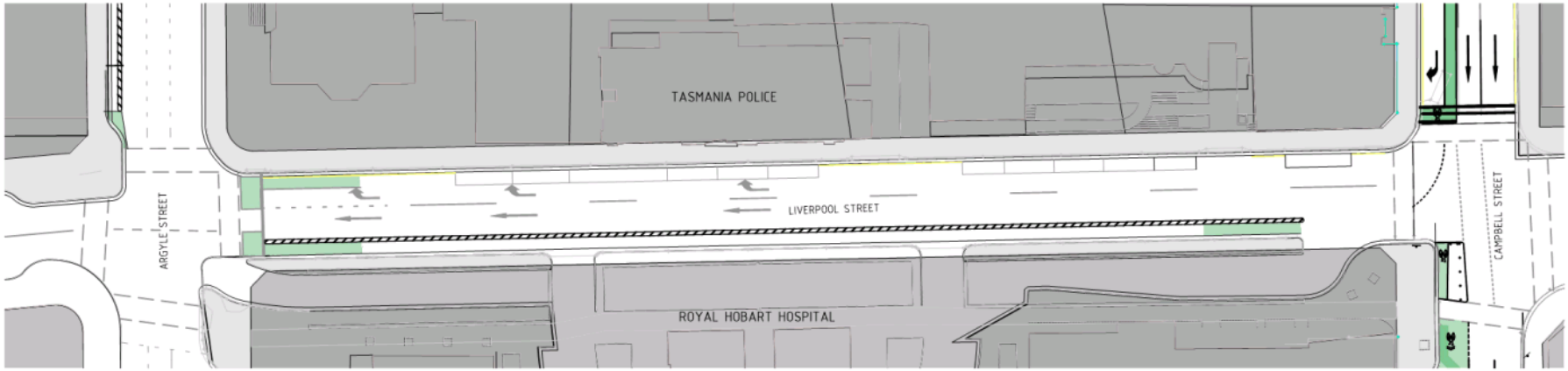

PLAN - LIVERPOOL STREET
ARGYLE STREET TO CAMPBELL STREET
Scale 1:500

FOR CONSULTATION

REV	DESCRIPTION	DATE
A	RDF CONSULTATION	05/12/2019

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PROJECT DESCRIPTION: ARGYLE STREET BICYCLE LANES - BRISBANE STREET TO DAVEY STREET
DRAWING TITLE: PLAN - LIVERPOOL STREET LINK - ARGYLE STREET TO CAMPBELL STREET
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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-	ARGYLE CONSULTATION DTU 03(19).dwg	
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Appendix B – Site Visit Observations 26 June 2019 and Summary Maps

B.1 Site conditions

During the site visits, the following prevailing conditions were present:

- The construction of the Brooker Highway pedestrian bridge. The left turn lane on Bathurst Street between Brooker Highway and Campbell Street was closed.
- Road closures due to Hedberg Campus construction. Collins Street was closed to eastbound traffic between Campbell Street and Terminus Row.
- Stop/go bat activity occurred within the survey periods on Campbell Street at the hospital and Argyle Street between Melville Street and Brisbane Street. Stop periods were short in duration and had minimal observed impacts on the network performance.
- The construction of the Royal Hobart Hospital. The reduced lane construction conditions were in place as shown in Figure B-1.

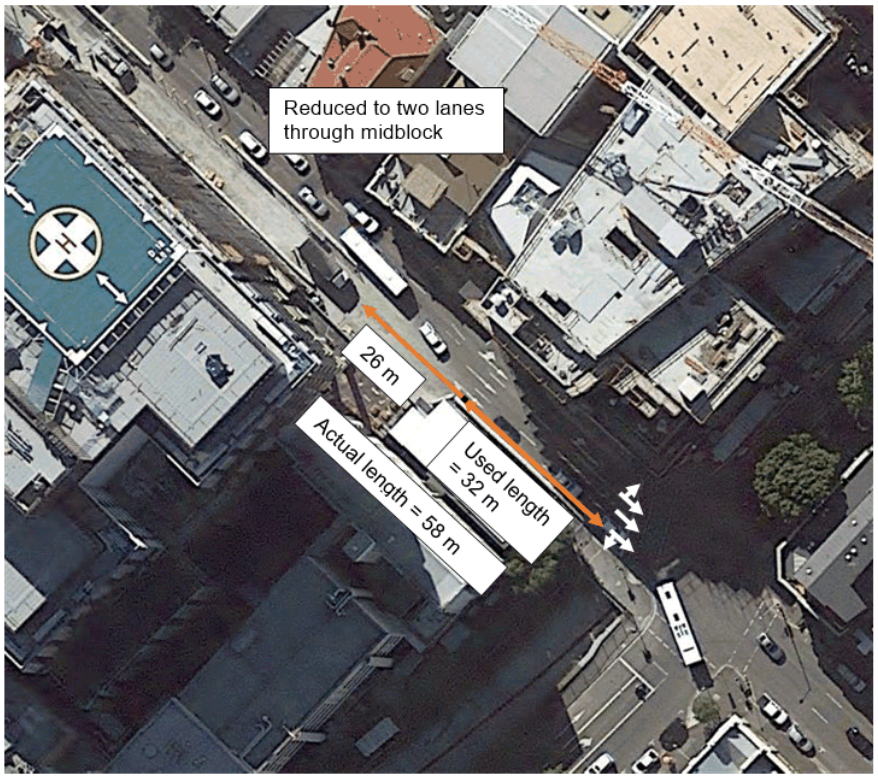

Figure B-1 Campbell Street short lane under hospital construction conditions

B.1.1 Lane utilisation

Campbell Street

Generally, no performance issues were identified on Campbell Street north of Liverpool Street with good coordination of traffic signals allowing traffic to freely flow.

On approach to Liverpool Street vehicles showed a strong tendency to use the middle lane, as presented in Figure B-2. This tendency was observed consistently throughout all time periods and appeared to be caused by downstream lane allocation, with vehicles avoiding lane changing. At this location the middle lane is the only lane that is continuous to south of Macquarie Street. The issue also appears further upstream, towards Melville Street, as shown in Figure B-3.

Figure B-2 Lane use Campbell Street on approach to Liverpool Street (inter-peak)

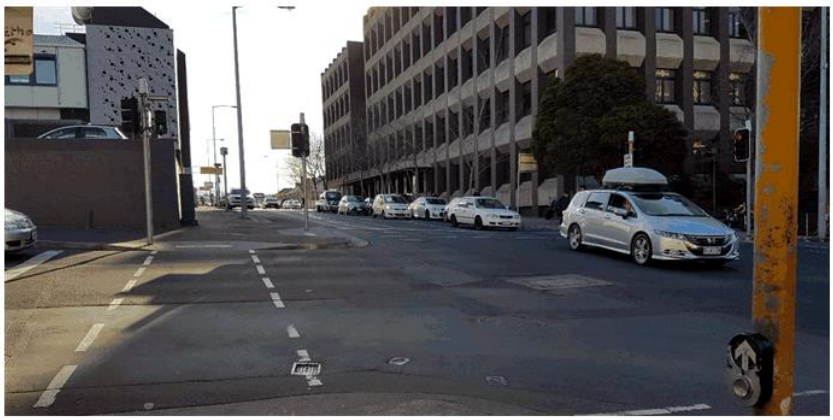

Figure B-3 Lane use Campbell Street on approach to Bathurst Street (inter-peak)

Between Liverpool Street and Collins Street, Campbell Street reduces to two lanes, until past the Royal Hobart Hospital works, where a right turn short lane is added on approach to Collins Street. A high number of right turn movements were observed at the intersection, as illustrated in Figure B-4, likely a result of numerous existing bus routes utilising this turn as well as this section of Collins Street facilitating access to the Argyle Street car park (opposite Royal Hobart Hospital). The storage space in the short lane sufficiently catered for the demand during the majority of the observed periods, however there were instances where the right turn lane overflowed and blocked the centre lane. The main contributors to the overflow of the short lane was the arrival of multiple buses within a single cycle and vehicles not utilising the taper due to the construction site.

Figure B-4 Campbell Street right turn lane onto Collins Street (inter-peak)

On approach to Macquarie Street the left lane consistently experienced higher traffic volumes and queue lengths than the adjacent lanes, as shown in Figure B-5. This lane provides for the left turn onto Macquarie Street, as well as the through movement. A relatively even distribution of both turning and through movements was observed during the observation period. In the AM peak period despite the left lane frequently queueing back to the Collins Street, lane changing was not observed. Therefore the cause of the queuing is considered to be a combination of delays for turning traffic onto Macquarie Street, due to pedestrians crossing, as well as the desire of road users to remain in the left most lane due to its connectivity with the left most lane on Davey Street. During the highest volume cycles in the PM observed period all lanes queued back to Collins Street as shown in Figure B-6.

Between Davey Street and Macquarie Street lane utilisation was generally even across the three lanes and would typically fill most cycles, as the overall length of block is less than the section between Collins Street and Macquarie Street.

Figure B-5 Lane use on Campbell Street approach to Macquarie Street (inter-peak)

Figure B-6 Queueing through Campbell Street/Macquarie Street intersection (PM peak)

Argyle Street

Generally no performance issues were identified on Argyle Street north of Liverpool Street. At the intersection with Bathurst Street a higher demand was observed for the right turn onto Bathurst Street, than for through movements on Argyle Street. The current lane allocation provides two dedicated through lanes and a shared through and right lane at this intersection.

Bathurst Street

In the PM peak, Bathurst Street between the Railway roundabout and Argyle Street experiences inconsistent levels of congestion. At times of high demand queuing would extend from the

Railway roundabout to Argyle Street, as shown in Figure B-7, but this would generally clear within one or two cycles of the traffic signals, to be followed by a sustained period of insignificant queuing.

Figure B-7 Bathurst Street lane utilisation on approach to Campbell Street (PM peak)

Liverpool Street

In all observation periods, Liverpool Street on approach to Campbell Street was observed to have low utilisation of the rightmost lane, as presented in Figure B-8. This is likely a result of this lane terminating at Argyle Street as a dedicated right turn movement.

The section of Liverpool Street between Campbell Street and Argyle Street was typically clear in all observed periods as shown in Figure B-9. There was extensive queuing observed past Argyle Street in the sections of Liverpool Street between Argyle Street and Murray Street, however this did not adversely impact vehicles on approach to Argyle Street.

Figure B-8 Liverpool Street lane utilisation on approach to Campbell Street (inter-peak)

Figure B-9 Liverpool Street lane utilisation on approach to Argyle Street (AM peak)

B.1.2 Traffic signal impacts

Campbell Street

Brisbane Street Intersection

In the AM peak period, queues were observed turning onto Brisbane Street from the Brooker Highway, see Figure B-10 and Figure B-11. This was due to the limited green time provided to Brisbane Street at the intersection with Campbell Street. Observations indicated that a higher allocation of green time could be provided to Brisbane Street at this location, without adversely impacting Campbell Street. This would assist in reducing queue lengths.

Figure B-10 Queueing on Brooker Highway turn lane (AM peak)

Figure B-11 Typical queue at Campbell Street/Brisbane Street intersection (AM peak)

Bathurst Street Intersection

In the PM peak period, between the Railway Roundabout and Campbell Street the traffic signals on Bathurst Street are offset in such a way that Bathurst Street rarely experiences uninterrupted flow. This results in Bathurst Street occasionally backing across midblocks between the Railway Roundabout and Argyle Street as shown in Figure B-12. The closure of the left turn lane onto Brooker Highway may have exacerbated this issue on the day of the observations. As a result, the left turn from Campbell Street onto Bathurst Street was blocked from turning. The queuing did not impact the through movement on Campbell Street.

Figure B-12 Bathurst Street queues on approach to Brooker Highway (PM peak)

Collins Street Intersection

During peak periods the right turn lane from Campbell Street into Collins Street frequently did not clear across traffic signal cycles. This was primarily due to an insufficient amount of green time provided for Campbell Street compared to Collins Street. Observations indicate that a higher allocation of green time could be provided to Campbell Street at this location, without adversely impacting Collins Street. This would assist in reducing queue lengths and delays.

Macquarie Street/Davey Street Intersections

Between Davey Street and Macquarie Street, the traffic signals on Campbell Street are offset in such a way that Campbell Street would rarely experience uninterrupted flow. In conjunction with the relatively short midblock length, the storage capacity was reached within each traffic signal cycle during the PM peak period.

The intersections of Campbell Street with Macquarie Street and Davey Street were also observed to complete one traffic signal cycle, for every two cycles called at the intersection of Campbell Street and Collins Street. Therefore every second cycle at the Campbell Street and Collins Street intersection during the peak was observed to be ineffective at clearing queued vehicles.

Liverpool Street

In the AM peak period vehicles turning right from Liverpool Street onto Argyle Street occasionally did not clear within one traffic signal cycle, as the available green time was often reduced due to high pedestrian volumes crossing Argyle Street, see Figure B-13. However, due to a low demand for this movement, this issue occurred infrequently.

Figure B-13 Liverpool Street right turn lane onto Argyle Street

Outside of the study area queues were observed on Liverpool Street, at the intersections with Elizabeth Street and Murray Street (See Figure B-14). At the Murray Street intersection left turning traffic from Liverpool Street was regularly blocked by pedestrians. At Elizabeth Street, Liverpool Street is provided only a short green phase. Observations indicated that a higher allocation of green time could be provided to Liverpool Street at this location, without adversely impacting Elizabeth Street. This would assist in reducing queue lengths, however it is noted that

the queuing may also assist in encouraging vehicles to re-route around Liverpool Street between Elizabeth Street and Murray Street given the traffic carrying function of this section has been reduced.

The taxi rank located on Liverpool Street (between Argyle Street and Elizabeth Street) also resulted in frequent disruptions to traffic flow, due to taxis occupying the through lane whilst manoeuvring into and out of parking bays.

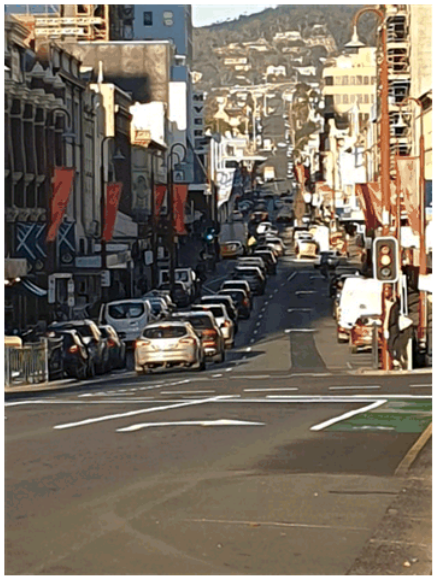

Figure B-14 Liverpool Street observations

B.1.3 Other network observations

Parking

Observations indicated that turnover of on-street car parking within the study area was reasonably infrequent, and as a result on-street parking did not appear to impact on network performance. Parking supply on Campbell Street was observed to be highly utilised throughout the day. Argyle Street, north of Liverpool Street saw moderate levels of parking utilisation in the AM peak, but was highly utilised during the inter peak and PM peak.

The Melville Street off-street car park (located at 70 – 82 Melville Street) was previously flagged as a source of potential disruption to traffic flow within the study area. The off-street car park was full by the start of the AM survey period so no queues were observed.

Pedestrians

Campbell Street

Pedestrian volumes on Campbell Street were not observed to be particularly high and did not impact the network performance adversely. The largest pedestrian volume was observed crossing to and from the hospital at the intersection at Liverpool Street. It is anticipated that with the completion of the construction of the Royal Hobart Hospital K Block, and associated re-opening of the footpath, as well the development of new UTAS campuses and accommodation on and around Campbell Street, that pedestrian activity in the area will increase significantly.

The left lane on Campbell Street on approach to Macquarie Street, was noted as experiencing some queueing as a result of the pedestrian crossing, however, this queuing cleared within one cycle.

Vehicles turning left from Campbell Street onto Bathurst Street were observed failing to give way to pedestrians crossing Bathurst Street. The sequencing of the traffic signals at this intersection results in delays for this left turn movement.

Argyle Street

The highest pedestrian concentration was observed at the intersection of Argyle Street and Liverpool Street, the impact on vehicles turning from Liverpool Street was noted in previously, however, due to low vehicle volumes, the pedestrians did not have an adverse impact on vehicular traffic performance. In general on Argyle Street north of Bathurst Street, traffic was sufficiently sparse that pedestrians were frequently crossing at the midblock, as opposed to the signalised crossings.

Cyclists

Moderate levels of cycling activity was observed in the study area. The cyclists observed on Campbell Street appeared to be travelling at a considerable speed due to the steep descent on approach to Liverpool Street.

Buses

Campbell Street is a major bus route, with bus routes from the north and east converging at the intersection of Liverpool Street and Campbell Street. The current road geometry causes buses on Liverpool Street to occupy two lanes in order to complete the left turn into Campbell Street. At the intersection of Campbell Street and Collins Street, the short right turn lane had insufficient storage for multiple buses, and as such buses would spill from the lane and block through traffic.

Emergency vehicles

Due to the proximity of the hospital and fire station within the study area frequent disruptions were observed by emergency service vehicle movements. However, the residual impacts of emergency vehicles dispersed quickly.

B.2 Summary maps

The observations were summarised into the attached series of maps.

Appendix C – Road Network Capacity Assessment – *Traffic Observations Report*

Estimated capacity

Theoretically the capacity of a single lane of traffic on a major urban arterial roadway, such as Macquarie Street and Davey Street, is approximately 1,650 vehicles per hour per lane. In urban situations, capacity is reduced largely by the amount of green time allocated to an approach at signalised intersections.

Based on the percentage of green time that each road allocated, the per-lane capacity for each road is estimated as follows:

- 500 vehicles per hour per lane on Argyle Street and Campbell Street on approach to Macquarie Street and Davey Street.
- 800 vehicles per hour per lane on all other approaches along Campbell Street.
- 990 vehicles per hour per lane on all other approaches along Argyle Street.
- 825 vehicles per hour per lane on Liverpool Street and Bathurst Street on approach to Campbell Street.
- 660 vehicles per hour per lane on Liverpool Street and Bathurst Street on approach on approach to Argyle Street.

Other conditions can also reduce capacity such as high volumes of heavy vehicles, and narrow lane widths. But these conditions have not been considered at this stage.

Peak hour performance

Traffic volume data for the study area was obtained from the Department of State Growth for the week of the observations. The data was used, and cross referenced against turning movement counts provided by City of Hobart, to ensure the observations were representative of a typical weekday. Peak hour volumes in each block are summarised in Table C-1 to Table C-4.

The tables indicate the peak hourly traffic volume recorded, and the volume to capacity (V/C) ratio, which represents the utilisation percentage of the lanes, for a roadway with the current number of lanes as well as with one lane removed allowing reallocation of road space.

Table C-1 Campbell Street

Location	AM Peak			PM Peak Hour		
	Volume [veh/hr]	V/C Ratio		Volume [veh/hr]	V/C Ratio	
		2 lanes	3 lanes		2 lanes	3 lanes
Approaching Brisbane Street	1000	0.61	0.40	931	0.56	0.38
Approaching Bathurst Street	928	0.56	0.37	962	0.58	0.39
Approaching Liverpool Street	1025	0.62	0.41	880	0.53	0.36
Approaching Collins Street	Error in data					
Approaching Macquarie Street	562	0.56	0.37	809	0.81	0.54
Approaching Davey Street	494	0.49	0.33	738	0.74	0.49

Table C-2 Argyle Street

Location	AM Peak	PM Peak Hour

	Volume [veh/hr]	V/C Ratio		Volume [veh/hr]	V/C Ratio	
		2 lanes	3 lanes		2 lanes	3 lanes
Approaching Brisbane Street	883	0.54	0.36	1,060	0.64	0.43
Approaching Melville Street	840	0.51	0.34	880	0.53	0.36
Approaching Bathurst Street	970	0.59	0.39	1,312	0.80	0.53
Approaching Liverpool Street	884	0.54	0.36	1,284	0.78	0.52

Table C-3 Liverpool Street

Location	AM Peak			PM Peak Hour		
	Volume [veh/hr]	V/C Ratio		Volume [veh/hr]	V/C Ratio	
		3 lanes	4 lanes		3 lanes	4 lanes
Approaching Campbell Street	973	0.39	0.29	440	0.18	0.13
Location	Volume [veh/hr]	V/C Ratio		Volume [veh/hr]	V/C Ratio	
		2 lanes	3 lanes		2 lanes	3 lanes
Approaching Argyle Street	1029	0.78	0.52	546	0.41	0.28

Table C-4 Bathurst Street

Location	AM Peak			PM Peak Hour		
	Volume [veh/hr]	V/C Ratio		Volume [veh/hr]	V/C Ratio	
		2 lanes	3 lanes		2 lanes	3 lanes
Approaching Campbell Street	550	0.33	0.22	1,056	0.64	0.43

In general a volume to capacity ratio of less than 0.85, indicates that adequate capacity is available. Based on the above assessment all locations are currently operating with spare capacity, even with a reduction of one lane to accommodate a bicycle lane or 'super stop'. The volume/capacity ratios provided in the above tables are also presented graphically in Figure C-1, to Figure C-4.

Figure C-1 AM peak period v/c ratio (current conditions)

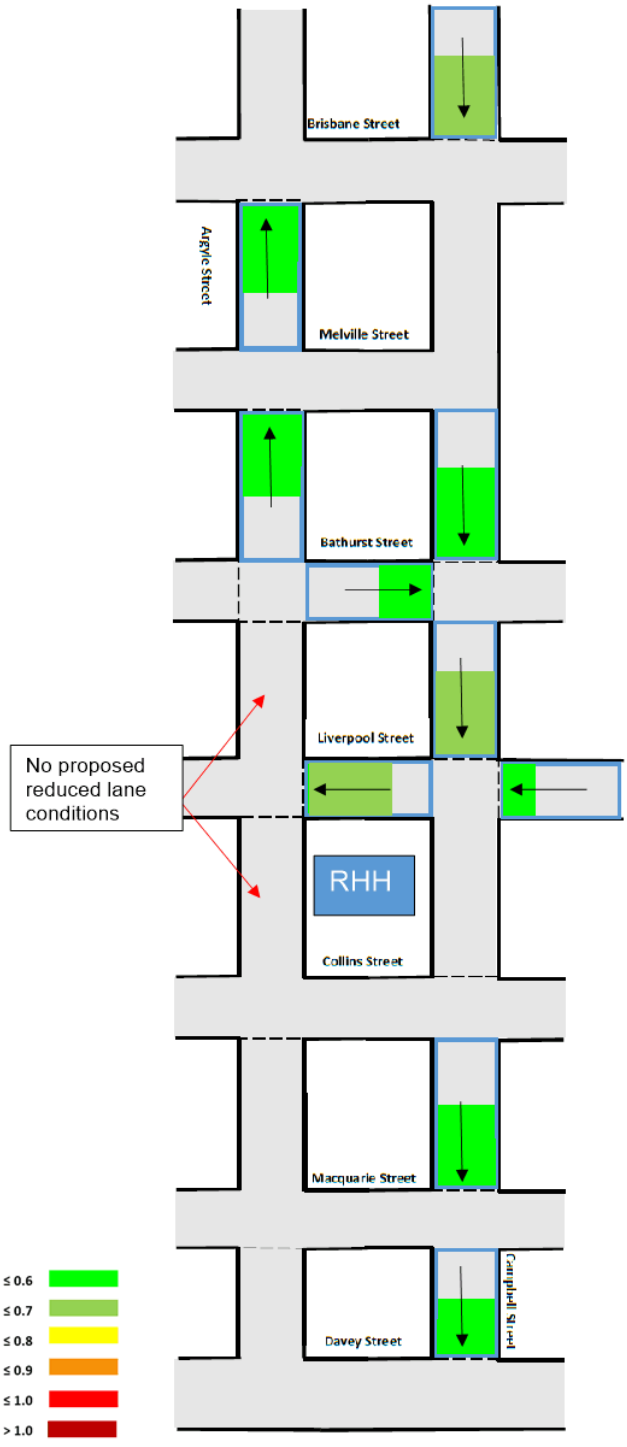

Figure C-2 AM peak period theoretical v/c ratio (reduced lane conditions)

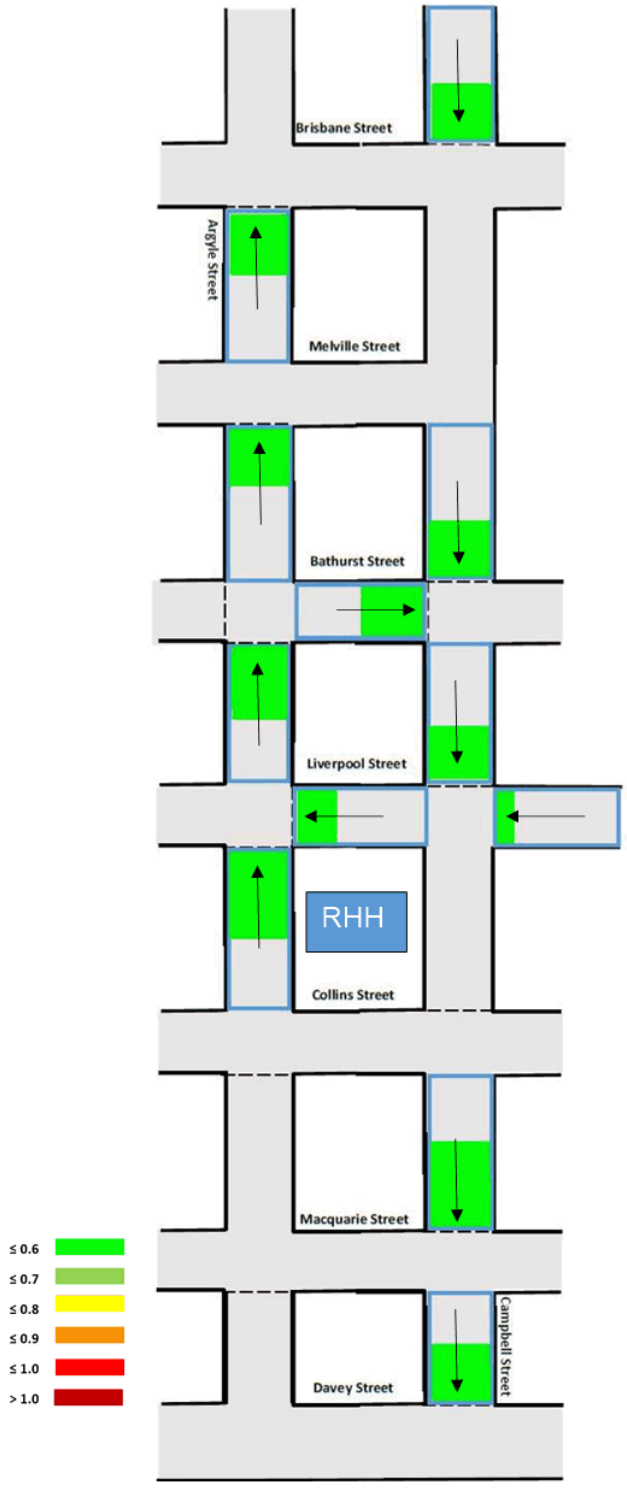

Figure C-3 PM peak period v/c ratio (current conditions)

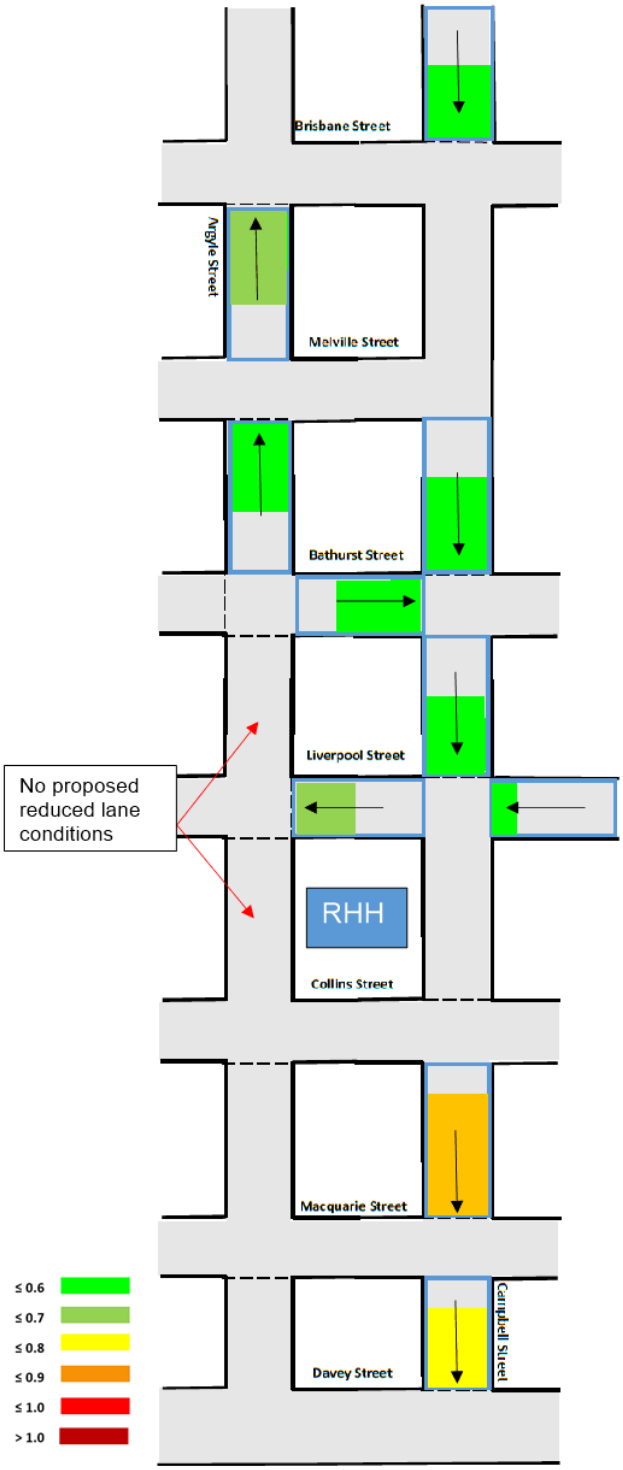

Figure C-4 PM peak period theoretical v/c ratio (reduced lane conditions)

Appendix D – Capacity Assessment by Austroads Method – *Junction Capacity Assessment*

6.1 D.1 Methodology - Austroads capacity analysis

Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods, 2020 (the Austroads Guide) prescribes the following for capacity analysis:

For interrupted flow facilities, such as where traffic flow conditions are subject to the influence of traffic signals, on urban arterial roads the method for assessing capacity is prescribed in sections 6.2 and 7.4.2 of the Austroads Guide. The assessment follows the following process:

1. Determine limiting mid-block capacity based on type of lane (Section 6.2, Table 6.1)
2. Determine base saturation flow based on the environment class (Section 7.4.2, Table 7.4)
3. Adjust base saturation flow based on lane width, gradient and traffic composition factors (Section 7.4.2, Eq 23)
4. Determine the capacity of a movement based on adjusted base saturation flow, cycle time and effective green time (Section 7.4.2, Eq 17)

D.2 Factor calculation

A first principles assessment of the capacity (by lane) for each midblock is undertaken using the method described. Following the advice in Austroads a more precise assessment to account for factors such as short lanes and lane blockages can be done using computer traffic modelling programs, so for this assessment a simplified approach is considered appropriate.

The assessment does not consider the impacts of short lanes. In order to provide a conservative assessment, short lanes were not included within the assessment and adjacent lanes were required to provide sufficient capacity. This approach allows identification of intersection that have sufficient capacity without the provision of short auxiliary lanes and those intersections that require additional assessment to include the additional capacity provided by the short lanes.

D.2.1 Limiting mid-block capacity

Table D-1 is extracted from the Austroads Guide and provides the limiting values for urban roads with interrupted flow.

Table D-1 Typical mid-block capacities for urban roads with interrupted flow

Type of lane	One-way midblock capacity (pc/h)
Median or inner lane	
Divided road	1000
Undivided road	900
Middle lane (of 3 lane carriageway)	
Divided road	900
Undivided road	1000
Kerb lane	
Adjacent to parking lane	900
Occasional parked vehicles	600
Clearway conditions	900

Austroads Guide to Traffic Management – Part 3: Transport Studies and Analysis Methods, 2020

The mid-block lanes are allocated limiting values in Table D-2, with reference to Table D-1. To simplify the assessment, short lanes are not considered for the capacity and hence a more conservative result is produced.

Table D-2 Limiting capacity value assessment for mid-block approaches

Junction	Limiting capacity value			
	Left lane	Middle lane	Right lane	Approach total
Campbell Street				
Brisbane Street	900	1000	Short lane (RT)	1900
Bathurst Street (NC)	900	900	Short lane	>1800
Liverpool Street (NC)	900	900	Short lane (RT)	1800
Collins Street	900	900	Short lane (RT)	1800
Macquarie Street (NC)	900	900	Short lane	>1800
Davey Street (NC)	900	1000	Short lane	>1900
Argyle Street				
Bathurst Street	900	1000	900 (LT only)	2800
Melville Street	Short lane (LT)	900	900	1800
Brisbane Street	Short lane (LT)	900	900	1800
Liverpool Street				
Campbell Street	Bus and LT	1000	900	1900
Argyle Street	-	900	900	1800
Bathurst Street				
Argyle Street	Short lane	900	900	1800
Campbell Street (NC)	Short lane	900	900	1800

NC refers to non-clearway conditions being assessed

D.2.2 Base saturation flow

The base saturation flow is determined in terms of 'through-car units' (tcu). The base saturation flow is determined in the first instance based on environment class and lane type. The environment classes are defined as follows:

- *Class A – ideal or nearly ideal conditions for the free movement of vehicles on both approach and exit sides, including good visibility, very few pedestrians, and almost no interference due to loading and unloading of goods vehicles or parking turnover (typically, but not necessarily, on a suburban residential or parkland area).*
- *Class B – average conditions, including adequate intersection geometry, small to moderate numbers of pedestrians, some interference by loading and unloading of goods vehicles or parking turnover and vehicles entering and leaving premises (typically, but not necessarily, in an industrial or shopping area).*
- *Class C – poor conditions, including large numbers of pedestrians, poor visibility, interference from standing vehicles, loading and unloading of goods vehicles, taxis and buses, and high parking turnover (typically, but not necessarily, in a central city area).*

Lane types are defined as follows:

- *Type 1 – through lane – a lane containing through vehicles only*
- *Type 2 – turning lane – a lane that contains any type of turning traffic, such as an exclusive left-turn lane, an exclusive right-turn lane, or a shared lane from which vehicles may turn left or right or continue straight through. There should be an adequate turning radius, and negligible pedestrian interference to turning vehicles.*
- *Type 3 – restricted turning lane – a lane similar to a type 2 lane, but with turning vehicles subject to a small turning radius and some pedestrian interference.*

The base saturation flows for each lane were determined based on the environment and lane type classification, using Table 7.4 of the Austroads Guide. The resultant saturation flows are provided in Table D-3Table D-. The environmental class was selected with reference to the traffic observations (refer Section 3.1).

Table D-3 Base saturation flows

Junction	Left lane	Middle lane	Right lane
Campbell Street			
Brisbane Street	1570 (B3)	1700 (B1)	
Bathurst Street (NC)	1570 (B3)	1700 (B1)	
Liverpool Street (NC)	1700 (B1)	1700 (B1)	
Collins Street	1270 (C3)	1580 (C1)	
Macquarie Street (NC)	1270 (C3)	1580 (C1)	
Davey Street (NC)	1550 (C2)	1550 (C2)	
Argyle Street			
Bathurst Street	1700 (B1)	1700 (B1)	1570 (B3)
Melville Street		1700 (B1)	1570 (B3)
Brisbane Street		1700 (B1)	1570 (B3)
Liverpool Street			
Campbell Street	1270 (C3) *	1580 (C1)	1580 (C1)
Argyle Street		1580 (C1)	1270 (C3)
Bathurst Street			
Argyle Street		1700 (B1)	1700 (B1)
Campbell Street (NC)		1580 (C1)	1270 (C3)

**left general lane*

D.2.3 Adjusted base saturation flow

The base saturation flows, determined in Table D-3, must be adjusted to account for various factors which influence the practical capacity of the road section, namely:

- Lane width
- Gradient
- Traffic composition (both vehicle type and movement type)

The adjustment is made by multiplying the base saturation flow by the lane width and gradient factors and dividing by the traffic composition factor (*Austroads, 2020* - Equation 23).

Lane width factor

The lane width factor, f_w, is defined in *Austroads* as follows:

- 0.55 + 0.14w for lane widths between 2.4 and 3.0 m
- 1.00 for lane widths between 3.0 and 3.7 m
- 0.83 + 0.05w for lane widths between 3.7 and 4.6 m.

Where, w is the width of the lane at the narrowest point within 30 m of the stop line.

The lane width factors are provided in Table D-4.

Table D-4 Lane width factors

Junction	Left lane	Middle lane	Right lane
Campbell Street			
Brisbane Street	1	0.942	

Bathurst Street (NC)	0.886	0.928	
Liverpool Street (NC)	0.872	0.928	
Collins Street	0.9	0.942	
Macquarie Street (NC)	0.942	1	
Davey Street (NC)	0.83	0.956	
Argyle Street			
Bathurst Street	0.872	0.956	0.928
Melville Street		0.97	0.928
Brisbane Street		0.956	0.956
Liverpool Street			
Campbell Street	1	1	1
Argyle Street		1.03	0.886
Bathurst Street			
Argyle Street		0.956	0.9
Campbell Street (NC)		0.956	0.928

Gradient factor

The gradient factor, f_g, is defined in *Austroads* as follows:

- 1 + 0.5g (for an uphill gradient)
- 1 – 0.5g (for a downhill gradient)

Where, g is the percentage grade.

The gradient factors are provided in Table D-5. The percentage grade has been approximated based on 5 m contours provided by *theLIST*.

Table D-5 Gradient factors

Junction	Gradient factor
Campbell Street	
Brisbane Street	1.00
Bathurst Street (NC)	0.99
Liverpool Street (NC)	0.99
Collins Street	0.97
Macquarie Street (NC)	0.98
Davey Street (NC)	1.00
Argyle Street	
Bathurst Street	1.04
Melville Street	1.02
Brisbane Street	1.01
Liverpool Street	
Campbell Street	1.02
Argyle Street	1.00
Bathurst Street	
Argyle Street	1.00
Campbell Street (NC)	0.97

Traffic composition factor

The gradient factor, f_c, is defined in *Austroads* as follows:

$$\sum_{e_i} {}^{Q_i}/_{Q}$$

Where, Q_i is the flow in vehicles per hour per vehicle type and movement (i)

Q is the total movement flow in vehicles per hour

e_i is the through-car equivalent of vehicle traffic and movement, defined in Table D-6.

Table D-6 Through-car equivalent, e_i

Vehicle	Through	Unopposed turn		Opposed turn
		Normal	Restricted	
Car	1	1	1.25	e_o
Heavy vehicles	2	2	2.5	e_{o+1}

The parameter, e_o is estimated in an iterative fashion, as e_o is affected by signal phasings and timings and e_o affects the signal timings. A good first approximation is to use a value of e_o equal to 3.

The traffic composition factors are provided in Table D-7 to Table D-9. The factor e_o has been taken as 3.

Table D-7 Traffic composition factors for AM peak

Junction	Left lane	Middle lane	Right lane
Campbell Street			
Brisbane Street	1.22	1.03	
Bathurst Street (NC)	2.07	1.04	
Liverpool Street (NC)	1.06	1.06	
Collins Street	1.80	1.09	
Macquarie Street (NC)	1.96	1.06	
Davey Street (NC)	1.33	1.33	
Argyle Street			
Bathurst Street	1.04	1.04	1.87
Melville Street		1.04	1.34
Brisbane Street		1.04	1.82
Liverpool Street			
Campbell Street	3.00	1.06	1.06
Argyle Street		0.51	4.20
Bathurst Street			
Argyle Street	1.45	2.34	1.06
Campbell Street (NC)		1.06	3.00

Table D-8 Traffic composition factors for PM peak

Junction	Left lane	Middle lane	Right lane
Campbell Street			
Brisbane Street	1.46	1.02	
Bathurst Street (NC)	2.42	1.01	
Liverpool Street (NC)	1.03	1.03	
Collins Street	1.58	1.05	
Macquarie Street (NC)	1.70	1.03	
Davey Street (NC)	1.33	1.33	
Argyle Street			
Bathurst Street	1.02	1.02	2.39
Melville Street		1.02	1.25
Brisbane Street		1.02	1.83
Liverpool Street			
Campbell Street	3.16	1.05	1.05
Argyle Street		0.49	4.19
Bathurst Street			
Argyle Street	1.42	2.20	1.02
Campbell Street (NC)		1.02	2.55

Table D-9 Traffic composition factors for inter peak

Junction	Left lane	Middle lane	Right lane
Campbell Street			
Brisbane Street	1.35	1.03	
Bathurst Street (NC)	2.24	1.02	
Liverpool Street (NC)	1.04	1.04	
Collins Street	2.01	1.07	
Macquarie Street (NC)	1.81	1.04	
Davey Street (NC)	1.33	1.33	
Argyle Street			
Bathurst Street	1.03	1.03	2.45
Melville Street		1.03	1.34
Brisbane Street		1.03	1.85
Liverpool Street			
Campbell Street	3.17	1.06	1.06
Argyle Street		0.46	4.20
Bathurst Street			
Argyle Street	1.46	2.32	1.04
Campbell Street (NC)		1.04	2.90

Assessment

Based on the calculated factors the adjusted base saturation flows are provided in Table D-10.

Table D-10 Adjusted base saturation flows

Junction	AM Peak			PM Peak			Inter peak		
	Left	Middle	Right	Left	Middle	Right	Left	Middle	Right
Campbell Street									
Brisbane Street	1291	1553		1075	1569		1166	1561	

Junction	AM Peak			PM Peak			Inter peak		
	Left	Middle	Right	Left	Middle	Right	Left	Middle	Right
Bathurst Street (NC)	664	1503		568	1542		614	1522	
Liverpool Street (NC)	1380	1469		1426	1518		1403	1493	
Collins Street	615	1326		700	1377		550	1351	
Macquarie Street (NC)	600	1472		693	1505		652	1488	
Davey Street (NC)	966	1112		966	1112		966	1112	
Argyle Street									
Bathurst Street	1480	1622	809	1512	1657	633	1495	1639	617
Melville Street		1625	1111		1660	1198		1642	1118
Brisbane Street		1580	832		1614	828		1597	819
Liverpool Street									
Campbell Street	432	1525	1525	409	1527	1527	409	1526	1526
Argyle Street		3203	268		3354	269		3534	269
Bathurst Street									
Argyle Street	1142	695	1438	1163	738	1504	1137	701	1470
Campbell Street (NC)		1378	382		1441	449		1409	395

D.3 Capacity calculation

The Capacity, *c*, is defined in *Austroads* as the product of the saturation flow rate and the effective green time of the movement in seconds, divided by the total cycle time in seconds.

D.3.1 Cycle time and effective green time

The cycle times and effective green times have been sourced from the SCATS data provided for the *Traffic Observations Analysis Report* and are presented in Table D-11.

Austroads (2020) states: *the difference between movement lost time and movement inter-green time will vary from site to site. However, in general, movement lost time can be assumed to be equal to the inter-green time or taken as the inter-green time plus one second.* As such the effective green time will be taken as the green time for the movements minus the inter-green time plus one second (the lost time).

The ratio of effective green time to cycle time, *u,* is calculated as the effective green time as a proportion of the total cycle time.

Table D-11 Cycle times and effective green times

Junction	Cycle time (c)	Effective green time (g)	u = g / c
Campbell Street			
Brisbane Street	60	25	0.42
Bathurst Street (NC)	60	23	0.38
Liverpool Street (NC)	60	25	0.42
Collins Street	60	28	0.47
Macquarie Street (NC)	120	41	0.34
Davey Street (NC)	120	33	0.28
Argyle Street			
Bathurst Street	60	31	0.52
Melville Street	60	25	0.42
Brisbane Street	60	28	0.47

Junction	Cycle time (c)	Effective green time (g)	u = g / c
Liverpool Street			
Campbell Street	60	21	0.35
Argyle Street	60	16	0.27
Bathurst Street			
Argyle Street	60	15	0.25
Campbell Street (NC)	60	23	0.38

D.3.2 Capacity

The resultant capacities are presented in Table D-12 through to Table D-14.

Table D-12 Calculated capacity values AM

Junction	Capacity			
	Left lane	Middle lane	Right lane	Approach total
Campbell Street				
Brisbane Street	538	647		1185
Bathurst Street (NC)	255	576		831
Liverpool Street (NC)	575	612		1187
Collins Street	287	619		906
Macquarie Street (NC)	205	503		708
Davey Street (NC)	266	306		571
Argyle Street				
Bathurst Street	765	838	418	2021
Melville Street		677	463	1140
Brisbane Street		737	388	1126
Liverpool Street				
Campbell Street	151	534	534	1219
Argyle Street		854	71	926
Bathurst Street				
Argyle Street	286	174	360	819
Campbell Street (NC)		528	146	675

Table D-13 Calculated capacity values PM

Junction	Capacity			
	Left lane	Middle lane	Right lane	Approach total
Campbell Street				
Brisbane Street	448	654		1102
Bathurst Street (NC)	218	591		809
Liverpool Street (NC)	594	633		1227
Collins Street	327	643		969
Macquarie Street (NC)	237	514		751
Davey Street (NC)	266	306		571
Argyle Street				
Bathurst Street	781	856	327	1964
Melville Street		692	499	1191
Brisbane Street		753	386	1140
Liverpool Street				
Campbell Street	143	534	534	1212
Argyle Street		894	72	966
Bathurst Street				

Junction	Capacity			
	Left lane	Middle lane	Right lane	Approach total
Argyle Street	291	185	376	851
Campbell Street (NC)		552	172	725

Table D-14 Calculated capacity values inter peak

Junction	Capacity			
	Left lane	Middle lane	Right lane	Approach total
Campbell Street				
Brisbane Street	486	650		1136
Bathurst Street (NC)	235	583		819
Liverpool Street (NC)	585	622		1207
Collins Street	257	630		887
Macquarie Street (NC)	223	508		731
Davey Street (NC)	266	306		571
Argyle Street				
Bathurst Street	772	847	319	1938
Melville Street		684	466	1150
Brisbane Street		745	382	1127
Liverpool Street				
Campbell Street	143	534	534	1211
Argyle Street		942	72	1014
Bathurst Street				
Argyle Street	284	175	368	827
Campbell Street (NC)		540	151	692

D.4 Assessment of available capacity

Traffic volume data was obtained during the *Traffic Observations Analysis Report* including SCATS data and turning movement counts. For each time period the resultant capacity values presented in Table D-12 to Table D-14 were subtracted from the lane traffic volumes to identify any capacity deficits in the proposal. The results and commentary are provided in Table D-15 to Table D-17.

Table D-15 Available capacity assessment AM peak

Junction	Capacity			Comments
	Left	Middle	Right	
Campbell Street				
Brisbane Street	-186	-31		Sufficient capacity under proposal
Bathurst Street (NC)	76	-15		Review further
Liverpool Street (NC)	-264	-53		Sufficient capacity under proposal
Collins Street	-168	211		Review further
Macquarie Street (NC)	21	-199		Sufficient capacity under proposal, noting lane allocation and use of left lane by through movements.
Davey Street (NC)	-101	-9		Sufficient capacity under proposal
Argyle Street				
Bathurst Street	-560	-454	-77	Sufficient capacity under proposal
Melville Street		-67	-266	Sufficient capacity under proposal
Brisbane Street		-142	-136	Sufficient capacity under proposal

Junction	Capacity			Comments
	Left	Middle	Right	
Liverpool Street				
Campbell Street	80	-262	-119	Sufficient capacity under proposal, noting improved operation of left lane with separate bus lane.
Argyle Street		-505	584	Review further
Bathurst Street				
Argyle Street	-185	11	-291	Sufficient capacity under proposal, lane utilisation likely to change under proposal.
Campbell Street (NC)		-175	15	Sufficient capacity under proposal, lane utilisation anticipated to change under proposal.

Table D-16 Available capacity assessment PM peak

Junction	Capacity			Comments
	Left	Middle	Right	
Campbell Street				
Brisbane Street	-83	-107		Sufficient capacity under proposal
Bathurst Street (NC)	155	-14		Review further
Liverpool Street (NC)	-305	8		Sufficient capacity under proposal. Middle lane exceeds capacity due to existing lane utilisation only.
Collins Street	-162	30		Review further
Macquarie Street (NC)	59	-28		Likely sufficient capacity under proposal, noting lane allocation and use of left lane by through movements. Consider further review or provide clearway in PM peak.
Davey Street (NC)	-56	173		Review further
Argyle Street				
Bathurst Street	-530	-364	217	Likely sufficient capacity under proposal, given through traffic removed from right lane.
Melville Street		-20	-322	Sufficient capacity under proposal
Brisbane Street		-47	-57	Sufficient capacity under proposal
Liverpool Street				
Campbell Street	-51	-407	-355	Sufficient capacity under proposal
Argyle Street		-716	287	Review further
Bathurst Street				
Argyle Street	-108	155	-251	Review further.
Campbell Street (NC)		68	245	Review further

Table D-17 Available capacity assessment inter peak

Junction	Capacity			Comments
	Left	Middle	Right	
Campbell Street				
Brisbane Street	-209	-224		Sufficient capacity under proposal

Junction	Capacity			Comments
	Left	Middle	Right	
Bathurst Street (NC)	64	-126		Review further
Liverpool Street (NC)	-340	-63		Sufficient capacity under proposal
Collins Street	-174	-50		Sufficient capacity under proposal
Macquarie Street (NC)	16	-204		Sufficient capacity under proposal, noting lane allocation and use of left lane by through movements.
Davey Street (NC)	-96	18		Sufficient capacity under proposal, given additional capacity provided by short lane.
Argyle Street				
Bathurst Street	-558	-450	155	Likely sufficient capacity under proposal, given through traffic removed from right lane.
Melville Street		-92	-320	Sufficient capacity under proposal
Brisbane Street		-132	-108	Sufficient capacity under proposal
Liverpool Street				
Campbell Street	12	-423	-347	Sufficient capacity under proposal, noting improved operation of left lane with separate bus lane.
Argyle Street		-789	276	Considered to have sufficient capacity under proposal as all traffic from removed lane was allocated to right lane when this does not represent actual redistribution.
Bathurst Street				
Argyle Street	-123	118	-264	Review further
Campbell Street (NC)		-114	125	Review further

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Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
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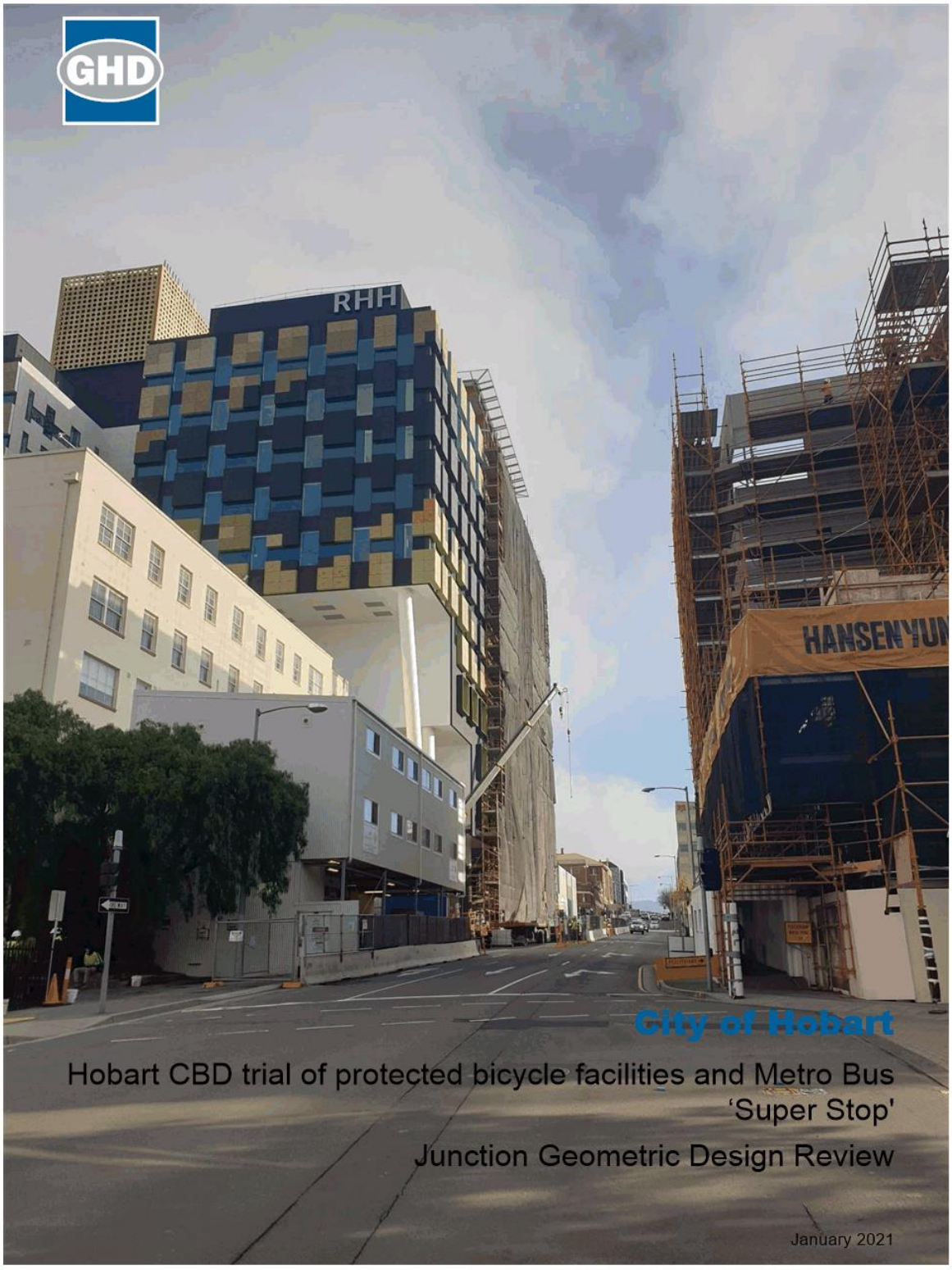

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1. Introduction

GHD was engaged by City of Hobart (CoH) to undertake traffic observations and analysis to support changed traffic arrangements for the trial of protected bicycle facilities and a 'Metro bus super stop' ('super stop'). An assessment of the performance of the Campbell Street, Argyle Street, Liverpool Street and Bathurst Street corridors was undertaken to ensure the feasibility of any proposed change in the allocation of road space. The assessment is required to provide an understanding of all transport modes, their operational and performance needs, how they impact on road capacity and the reliability of travel.

1.1 Background

During the reconstruction of the Royal Hobart Hospital (2016 – 2019) the traffic carrying capacity of Campbell Street was reduced from three lanes to two lanes between Liverpool Street and Collins Street. The third lane was used as an access lane to support construction activities and was not available to general traffic. At the completion of works the City of Hobart is trialling the use of the third lane as a 'shared use' hospital service lane rather than returning it to use as a general traffic lane. The CoH is also considering the allocation of road space on surrounding midblocks of Campbell Street, Argyle Street, Liverpool Street and Bathurst Street with the intention to efficiently use road space and adequately provide for various transport modes.

1.2 Network aspirations

The CoH is considering the potential future use of the third lane on Campbell Street, with an aim of utilising this space for a purpose other than providing more capacity for cars. The future function of the Campbell Street corridor is influenced by the following characteristics:

- Anecdotally the Department of State Growth indicated that during construction of the Royal Hobart Hospital, a decrease in traffic flow occurred on Campbell Street.
- There is an anticipated rise in pedestrian activity due the presence of new and existing pedestrian generators (such as the Royal Hobart Hospital, the new UTAS Performing Arts Centre, the Theatre Royal, the University's Medical Science precinct buildings).
- Plans to expand the city's bicycle network.
- Campbell Street continuing to be a key corridor for public transport.

1.3 Purpose of this report

Previously GHD prepared the Traffic Observation Analysis Report for CoH, to document traffic operations and analysis to support changed traffic arrangements for the trial of protected bicycle facilities and 'super stop'. This included documenting the current operations and transport related impacts occurring within the study area and extrapolation of the performance considering the potential changes in the use of the road space and the feasibility of these proposed changes.

This report further details the junction geometry of the proposed arrangements to ensure geometric design concerns are satisfied.

1.4 Study area

For the purpose of this project, the study area (as presented in Figure 1) includes:

- Campbell Street between Brisbane Street and Davey Street
- Argyle Street between Brisbane Street and Davey Street
- Liverpool Street and Bathurst Street between the Railway roundabout and Argyle Street.

Connections between or across each street, and other influences caused by adjacent streets have also been considered.

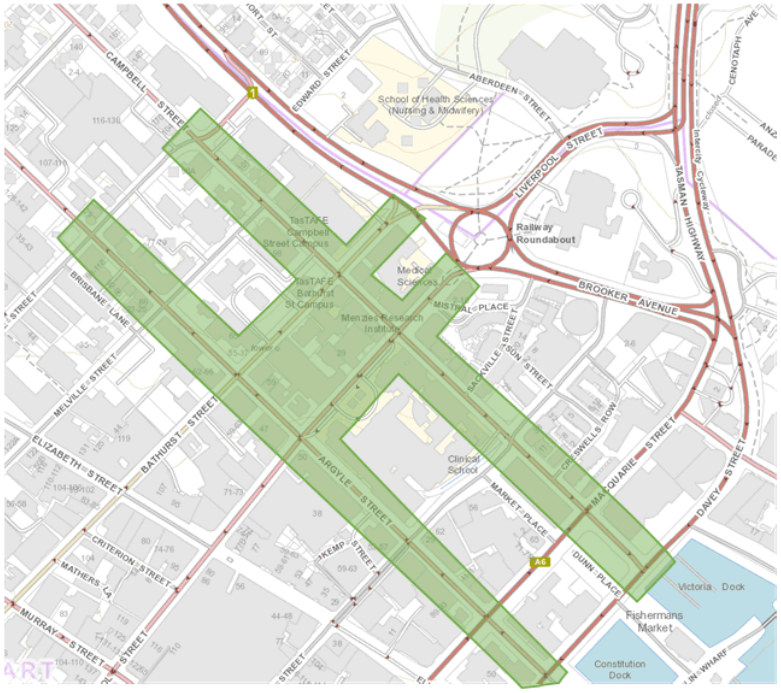


Image source: thelist.tas.gov.au

Figure 1 Study area

1.5 Methodology

The assessment was developed in line with the following methodology:

- Review of CoH's Design Guidance for Lateral Shifts
- Identification of intersections requiring review
- Review of junction designs against the guidance note
- Reporting of recommendations

1.6 Scope and limitations

This report has been prepared by GHD for City of Hobart and may only be used and relied on by City of Hobart for the purpose agreed between GHD and the City of Hobart as set out in this report.

GHD otherwise disclaims responsibility to any person other than City of Hobart arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Hobart and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

This assessment is based on the design drawing set provided by City of Hobart on 10 March 2020. An updated drawing set as well as the stakeholder consultation drawings were provided on 11 June 2020. The stakeholder consultation drawings have been referred to for Campbell Street / Bathurst Street junction.

1.7 Design guidance for lateral shifts

The CoH Design Guidance Note #2, Lateral Shifts – Traffic Lanes past Objects / Obstructions summarises the expectations for the design of lateral shifts, where traffic lanes transition around obstructions. The guidance note makes reference to AS1742.3, AS1742.2 and Austroads Guide to Road Design – Part 3: Geometric Design. The guidance note is provided in Appendix A, however a summary of the key criteria is provided here for reference.

On the low speed urban roads typical in the City of Hobart, our experience has been that utilising a lateral shift of 1.0 metres per second results in designs that are accepted and operate appropriately for the reasonable majority of our road users.

It is recommended that the following formula be used for determining the minimum transition length of lateral shift on low speed urban roads in the City of Hobart:

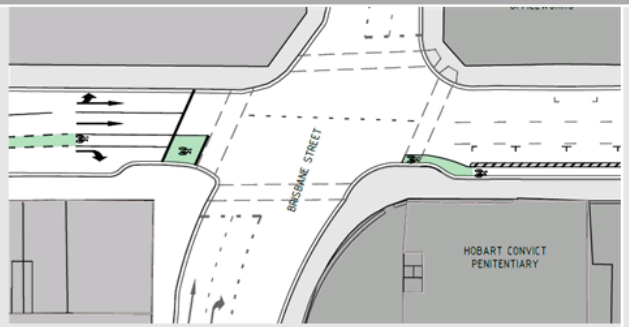
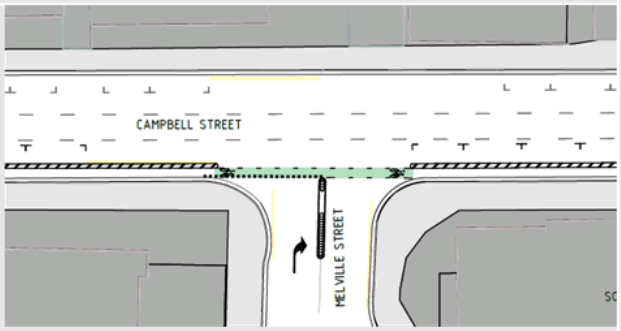
- *L = 0.28VW, where:*
  - *L = length of transition in metres;*
  - *V = 85 percentile operating speed (or speed limit) in km/h;*
  - *W = Lateral Shift of traffic lane in metres.*

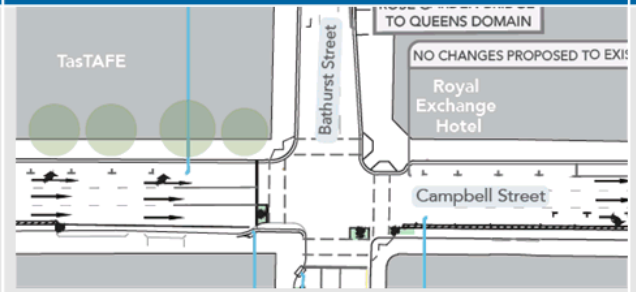
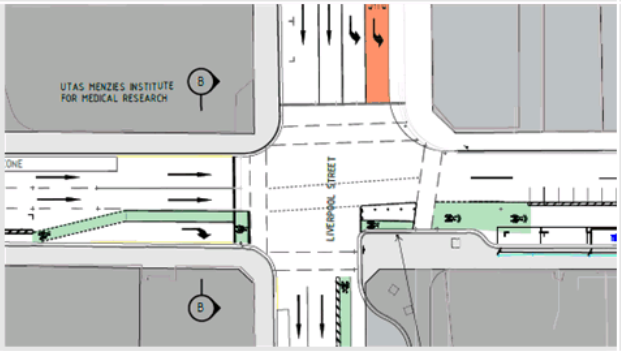
For the assessments in Section 3 the speed limit has been assumed for 'V'. On 1 February 2021 the Hobart CBD will have the posted speed limit reduced to 40 km/h. Calculations have been undertaken primarily for 50 km/h to determine the length of the transition. The length required at the reduced speed of 40 km/h has also been provided.

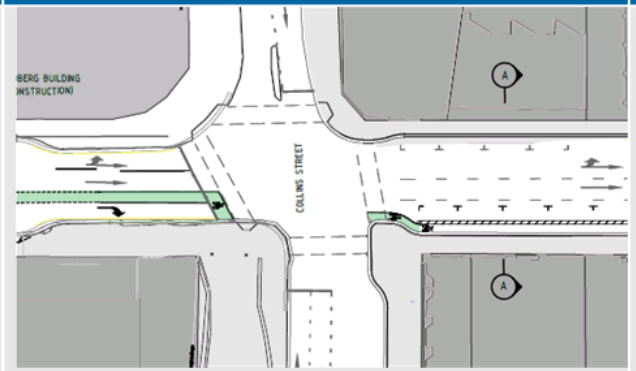
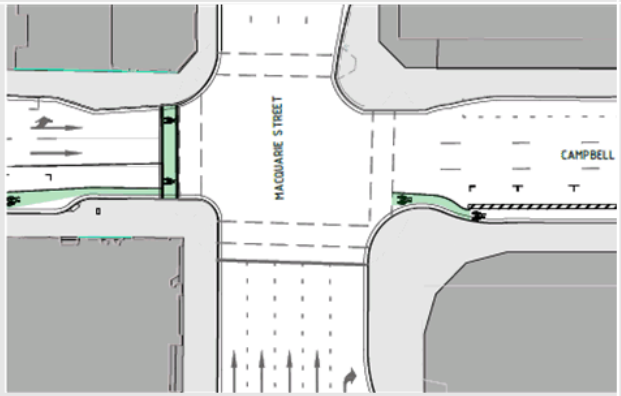
2. Preliminary geometry review

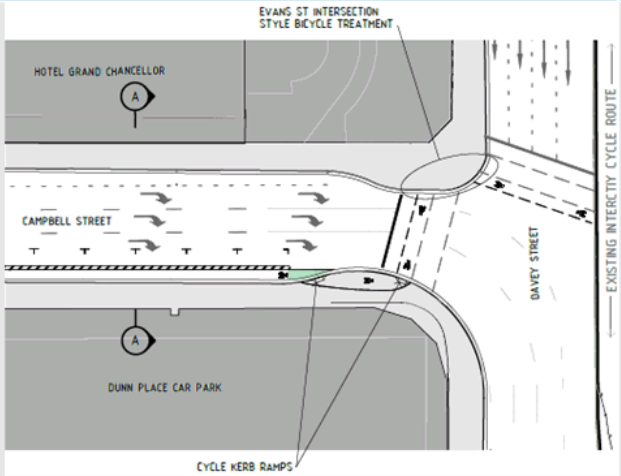
The study area (as shown in Figure 1) includes a number of junctions as listed in Table 1. The following provides a preliminary assessment of the proposal to determine within the concept designs which intersections require assessment against the guidance note.

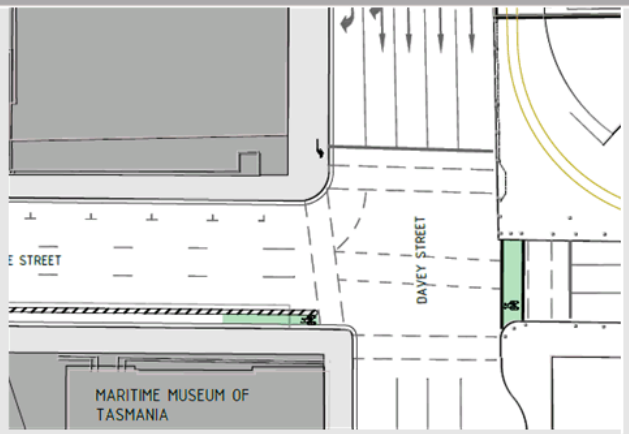
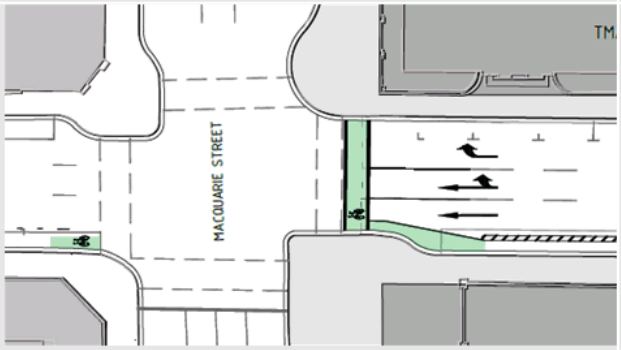
Table 1 Study area intersection review

Junction	Proposal	Design	Potential deficiency	Further review
Campbell Street				
Brisbane Street	***Approach*** Existing through and right lane converted to right only. Upgrade of bicycle facilities at intersection. ***Departure*** Protected bicycle lane with parking / clearway in third traffic lane		***Clearway conditions*** Middle lane diverges into two lanes downstream. Right departure lane is of reduced width. ***Non-clearway conditions*** No change to geometry of left two lanes	Review geometry of diverge and departure lanes. (refer Section 3.2.1)
Melville Street	Protected bicycle lane with parking / clearway in third traffic lane. Bicycle lane extends across intersection.		***Clearway conditions*** No change ***Non-clearway conditions*** Increase in distance from hold line to traffic lane for turning vehicles, vehicles may 'nudge' out over bicycle and parking lane.	No further review required

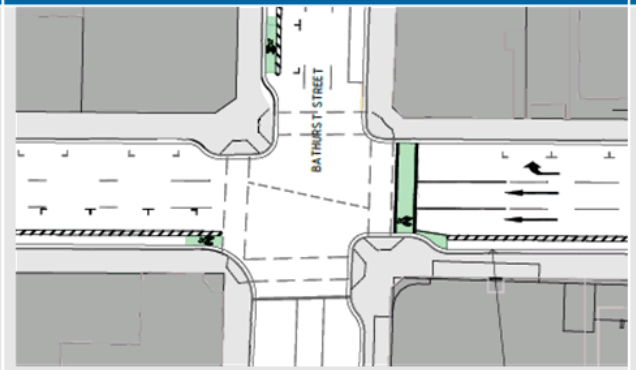
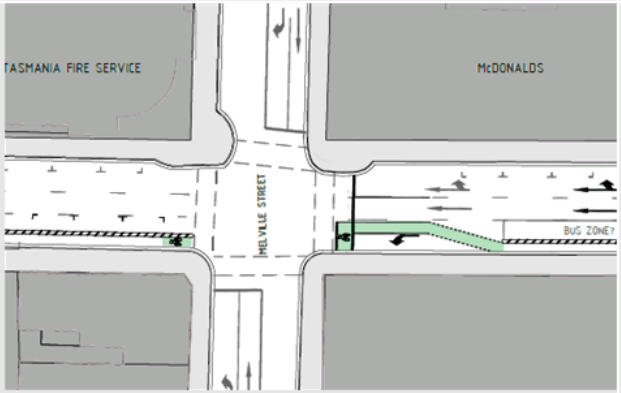
Junction	Proposal	Design	Potential deficiency	Further review
Bathurst Street	***Approach*** Protected bicycle lane with parking / clearway in rightmost traffic lane. ***Departure*** Protected bicycle lane with parking / clearway in rightmost traffic lane		***Clearway conditions*** No change. Right lane must turn right at next downstream junction. ***Non-clearway conditions*** Right lane provides auxiliary lane through intersection.	Review geometry of auxiliary lane (refer Section 3.2.2)
Liverpool Street	***Approach*** Protected bicycle lane with parking / clearway in rightmost traffic lane. Short lane provided for right turns at intersection. ***Departure*** Hospital service lane shared zone in rightmost traffic lane.		***Trial conditions*** No change.	No further review required

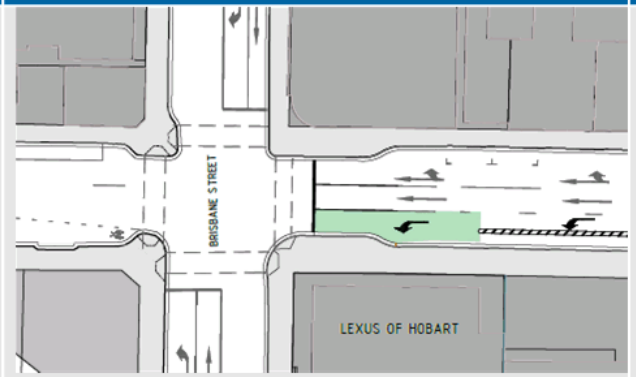
Junction	Proposal	Design	Potential deficiency	Further review
Collins Street	***Approach*** Hospital service lane shared zone in rightmost traffic lane. Convert the right most lane to a dedicated right turn lane. ***Departure*** Protected bicycle lane with parking / clearway in third traffic lane.		***Clearway conditions*** Middle lane diverges to two lanes downstream. Bicycle lane and outstand lie within rightmost downstream lane. ***Non-clearway conditions*** No change.	Review geometry of diverge and departure lanes (refer Section 3.2.3)
Macquarie Street	***Approach*** Bicycle storage box across all three approach lanes. Protected bicycle lane with parking / clearway in rightmost traffic lane. ***Departure*** Protected bicycle lane with parking / clearway in third traffic lane.		***Clearway conditions*** Bicycle lane and outstand lie within rightmost downstream lane. Right lane becomes short auxiliary lane. ***Non-clearway conditions*** No geometric change to two left lanes.	Review geometry of departure lanes and auxiliary lane. (refer Section 3.2.4)

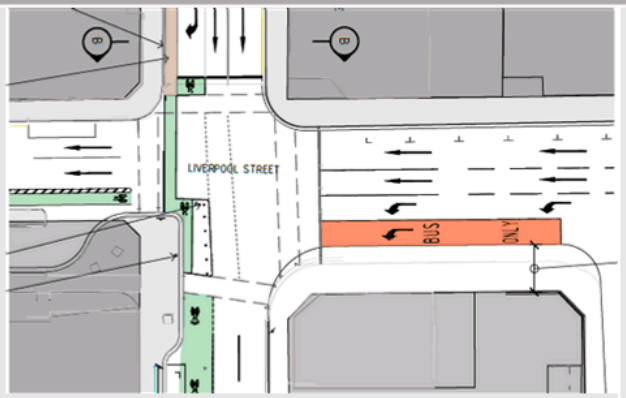
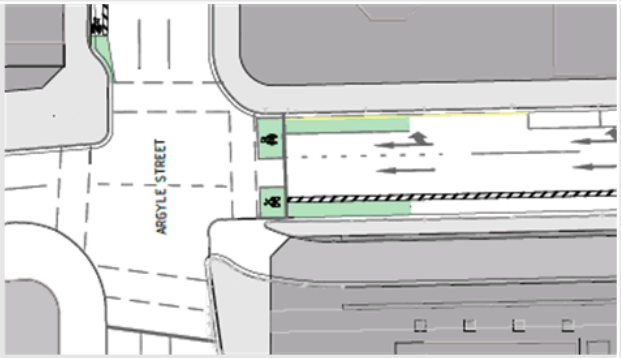
Junction	Proposal	Design	Potential deficiency	Further review
Davey Street	***Approach*** Protected bicycle lane with parking / clearway in rightmost traffic lane.		***Clearway conditions*** No change. ***Non-clearway conditions*** Rightmost lane becomes short auxiliary lane allocated to two lanes on Davey Street, capacity of middle lane and auxiliary lane requires assessment.	Review lane allocation, lane capacity to be reviewed in capacity assessment (refer Section 3.2.5 and *Traffic Observations and Analysis Report*).

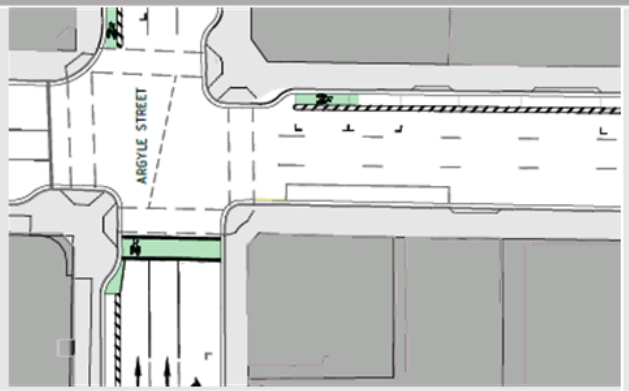
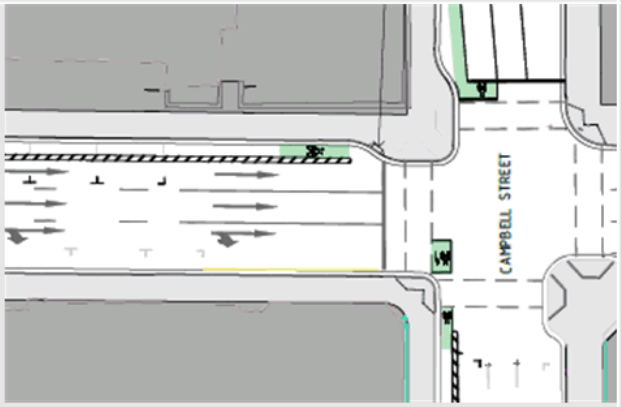
Junction	Proposal	Design	Potential deficiency	Further review
Argyle Street				
Davey Street	***Approach*** Bicycle storage box across all three approach lanes. ***Departure*** Protected bicycle lane in existing left side parking lane.		***Proposed conditions*** No change. Lane width increased due to bicycle lane replacing parking downstream.	No further review required.
Macquarie Street	***Approach*** Protected bicycle lane in existing parking lane. Bicycle storage box across all three approach lanes. ***Departure*** Peak hour bicycle lane in existing left side parking lane.		***Proposed conditions*** No change. Downstream lane width increased during peak due to bicycle lane replacing parking.	Review geometry of approach lanes. (refer Section 3.2.6)

Junction	Proposal	Design	Potential deficiency	Further review
Collins Street	***Approach*** Peak hour bicycle lane in existing parking lane. Bicycle storage box across all three approach lanes. ***Departure*** No change.		***Proposed conditions*** No change.	Review geometry of approach lanes. (refer Section 3.2.7)
Liverpool Street	***Approach*** No change. ***Departure*** Bicycle lane in existing left side parking lane, no bollards to allow retention of bus stop.		***Proposed conditions*** No change. Left lane width increased due to bicycle lane replacing parking downstream.	No further review required

Junction	Proposal	Design	Potential deficiency	Further review
Bathurst Street	***Approach*** Bicycle lane in existing left side parking lane. Conversion of right lane to right turn only. ***Departure*** Protected bicycle lane in existing left side parking lane. Parking implemented in the left lane.		***Proposed conditions*** Lateral shift introduced to left two lanes.	Review lateral shift (refer Section 3.1.1)
Melville Street	***Approach*** Protected bicycle lane in existing parking lane. Left lane converted to short dedicated left turn lane. Parking and bus zone retained in the left lane upstream of short lane for the entire day. ***Departure*** Protected bicycle lane in existing parking lane. Parking implemented in the left lane for the entire day.		***Proposed conditions*** No geometric change to the two right lanes.	No further review required

Junction	Proposal	Design	Potential deficiency	Further review
Brisbane Street	***Approach*** Protected bicycle lane in existing parking lane. Left lane converted to short dedicated left turn lane. Parking implemented in the left lane upstream of short lane for entire day. ***Departure*** No change.		***Proposed conditions*** No change.	No further review required

Junction	Proposal	Design	Potential deficiency	Further review
Liverpool Street				
Campbell Street	***Approach*** Lanes rearranged to provide Metro bus super stop in leftmost lane, left turn lane and reduction to two dedicated through lanes. ***Departure*** Bicycle lane in leftmost traffic lane.		***Proposed conditions*** No change. Lane width increased due to bicycle lane replacing third traffic lane.	No further review required
Argyle Street	***Approach*** Bicycle lane in leftmost traffic lane. Right lane converted to through and right lane. ***Departure*** No change.		***Proposed conditions*** Lateral shift introduced to both lanes. Right lane converted from dedicated lane to shared through and right reducing capacity.	Review lateral shift (refer Section 3.1.2)

Junction	Proposal	Design	Potential deficiency	Further review
Bathurst Street				
Argyle Street	***Approach*** No change. ***Departure*** Leftmost lane is converted to parking / clearway with protected bicycle lane provided.		***Clearway conditions*** No change. ***Non-clearway conditions*** Left lane is temporally left turn only, vehicles may continue through and collide with parked vehicles or merge into middle lane traffic.	Review left lane geometry and use. (refer Section 3.2.8)
Campbell Street	***Approach*** Leftmost lane is converted to parking / clearway with protected bicycle lane provided. Short auxiliary lane provided at intersection. ***Departure*** No change. New Rose Garden Bridge over Brooker Highway provides cycling connection.		***Clearway conditions*** No change. ***Non-clearway conditions*** Left lane provides short auxiliary lane for through traffic prior to intersection.	Review auxiliary lane geometry (refer Section 3.2.9)

3. Junction review

The preliminary review in Section 2 identified a number of intersections requiring further assessment. It should be noted that a capacity analysis is being undertaken and documented in a separate report. The following analysis related to the changes in geometry of proposed junctions, in particular lateral shifts.

The review of intersections summarised in Table 1 identified the need for additional investigations, as follows:

- Campbell Street:
  - Brisbane Street geometry of diverge and departure lanes
  - Bathurst Street geometry of auxiliary lane
  - Collins Street geometry of diverge and departure lanes
  - Macquarie Street geometry of departure lanes and auxiliary lane.
  - Davey Street lane allocation
- Argyle Street:
  - Macquarie Street geometry of approach lanes
  - Collins Street geometry of approach lanes
  - Bathurst Street lateral shift in left two lanes
- Liverpool Street:
  - Argyle Street lateral shift in both lanes
- Bathurst Street:
  - Argyle Street left lane geometry and use
  - Campbell Street auxiliary lane geometry

3.1 Lateral shift review

The assessment in Section 2 indicated two lateral shifts, which are reviewed in the following sections.

3.1.1 Argyle Street at Bathurst Street junction

The lateral shift criteria for the middle lane on Argyle Street at the Bathurst Street junction are summarised in Table 2.

Table 2 Lateral shift review at Argyle Street / Bathurst Street

Feature	Value
Length of transition provided (Lx)	26.5 m
Lateral shift (W)	2.95 m
Length of transition required (L_{50}) at V = 50 km/h	41.3 m (L_{50} > Lx, Not acceptable)
Length of transition required (L_{40}) at V=40 km/h	33.1 m (L_{40} > Lx, Not acceptable)

It is identified that the design lateral shift is not acceptable with respect to the CoH design standards discussed in Section 1.7. In the drawing set provided on 11 June 2020 an updated design for Argyle Street at Bathurst Street is proposed to remove the lateral shift from the intersection by removing three car parking spaces downstream of the intersection, as shown in Figure 2.

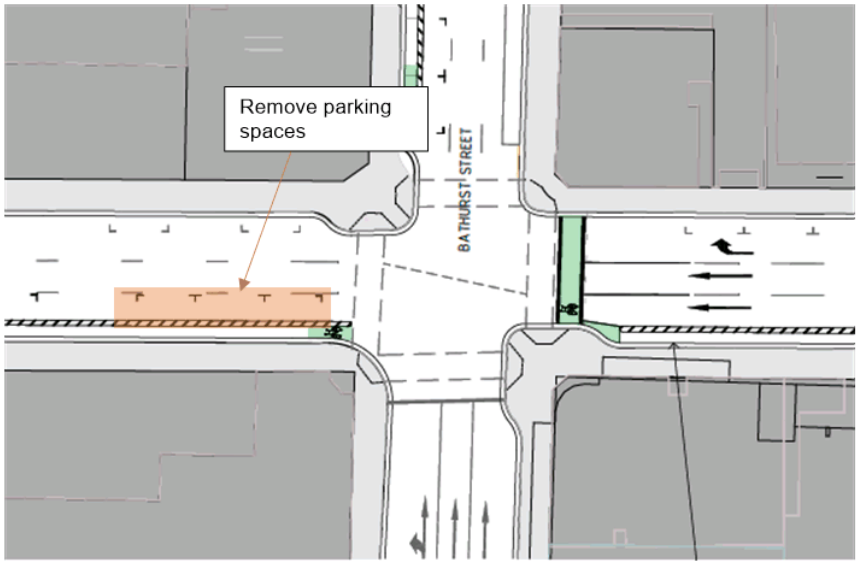


Figure 2 Lateral shift on Argyle Street at Bathurst Street junction

This removes the lateral shift from the intersection however does require vehicles to shift after the intersection. The new lateral shift is reviewed in Table 3.

Table 3 Updated lateral shift review at Argyle Street / Bathurst Street

Feature	Value
Length of transition provided (Lx)	18.0 m
Lateral shift (W)	2.0 m
Length of transition required (L_{50}) at V = 50 km/h	28.0 m (L_{50} > Lx, Not acceptable)
Length of transition required (L_{40}) at V=40 km/h	22.4 m (L_{40} > Lx, Not acceptable)

The lateral shift is still not acceptable, however it is possible to extend the transition length of the shift by 10 m by removing lane line marking. By extending the shift, as shown in Figure 3, the lateral shift is within the criteria set in the Design Guidance. The blue measurement illustrated in Figure 3 shows that this is achievable without removing further car parking spaces.

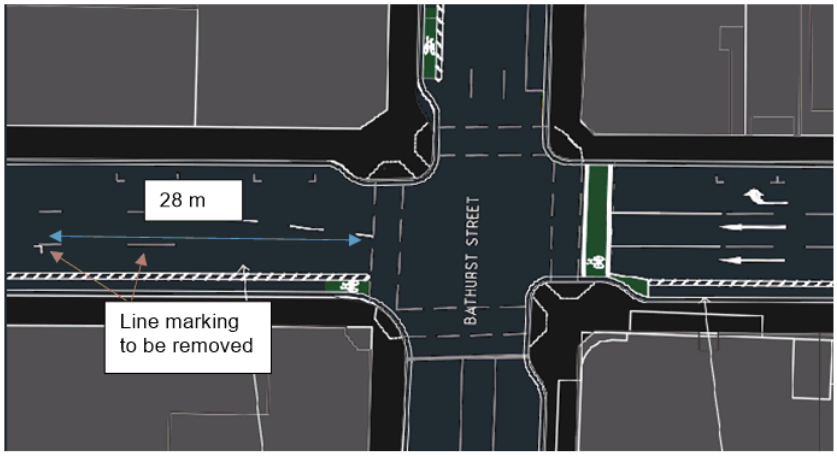


Figure 3 Updated proposal for Argyle Street at Bathurst Street junction

3.1.2 Liverpool Street at Argyle Street junction

The lateral shift criteria for the middle lane on Liverpool Street at the Argyle Street junction are summarised in Table 4.

Table 4 Lateral shift review at Liverpool Street / Argyle Street

Feature	Value
Length of transition provided (Lx)	31.6 m
Lateral shift (W)	2.55 m
Length of transition required (L_{50}) at V = 50 km/h	35.7 m (L_{50} > Lx, Not acceptable)
Length of transition required (L_{40}) at V=40 km/h	28.6 m (L_{40} < Lx, Acceptable)

It is identified that the design lateral shift is not acceptable with respect to the CoH design standards discussed in Section 1.7, however less than 4 m is required for the transition to comply at a speed of 50 km/h and at the reduced speed of 40 km/h the shift is considered to be compliant under the assessment criteria. The proposed intersection layout is illustrated in Figure 4.

Figure 4 Design drawing for Liverpool Street at Argyle Street

It is observed in Figure 4 that the line marking through the intersection has not been updated. In order to resolve the lateral shift three options are proposed:

1. The lane widths on Liverpool Street on approach to Argyle Street are unevenly distributed with the right lane being approximately 4.0 m wide and the left lane approximately 2.5 m wide, by redistributing the lane widths the lateral shift through the intersection will be reduced. The lateral shift (W) needs to be reduced to 2.25 m to comply under the existing transition length.
2. Terminate the cycle lane prior to the intersection to allow improvement to the intersection alignment.
3. Reduce the kerb bulbing on departure side of the intersection.

Option 1 is the recommended treatment option in order to provide an appropriate lateral shift on Liverpool Street through the Argyle Street junction. Option 1 is recommended to be included even with the implementation of the 40 km/h reduced speed limit as redistributing the lane widths provides a better outcome for both the midblock and the intersection.

3.2 Additional junction geometry review

Additional junction geometry concerns identified in Section 2 are reviewed in the following sections.

3.2.1 Campbell Street at Brisbane Street junction

Due to the proposed bicycle lane being continued around existing kerb outstands on the departure side of Campbell Street at the Brisbane Street junction, there may not be sufficient width at the intersection for all traffic lanes plus the bicycle lane when operating under clearway conditions.

Figure 5 shows the reduced traffic lane width of 2.25 m (in the leftmost clearway lane) at the intersection which is well below the minimum traffic lane width for a general traffic lane on an urban arterial road of 3.0 m (*Austroads Guide to Road Design – Part 3: Geometric Design*, Table 4.3).

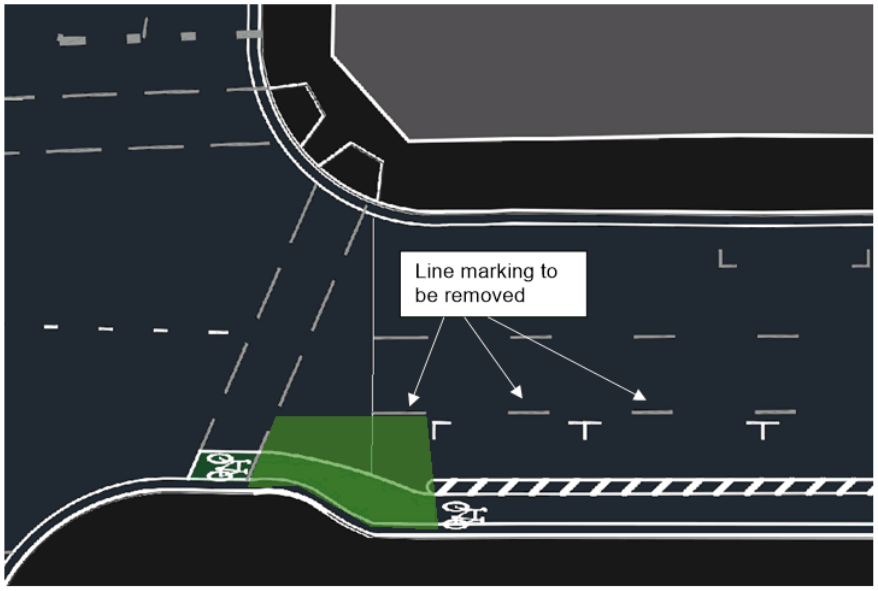


Figure 5 Recommended surfacing for departure lanes

3.2.2 Campbell Street at Bathurst Street junction

During non-clearway conditions there is significant length on approach to the junction that is available in the rightmost lane. Drivers may misinterpret this lane to be an additional traffic lane through the intersection, however a parking space is located close to the intersection on the departure side. Removing this parking space results in approximately 26 m of departure lane to allow drivers to merge into the middle traffic lane, as shown in Figure 6.

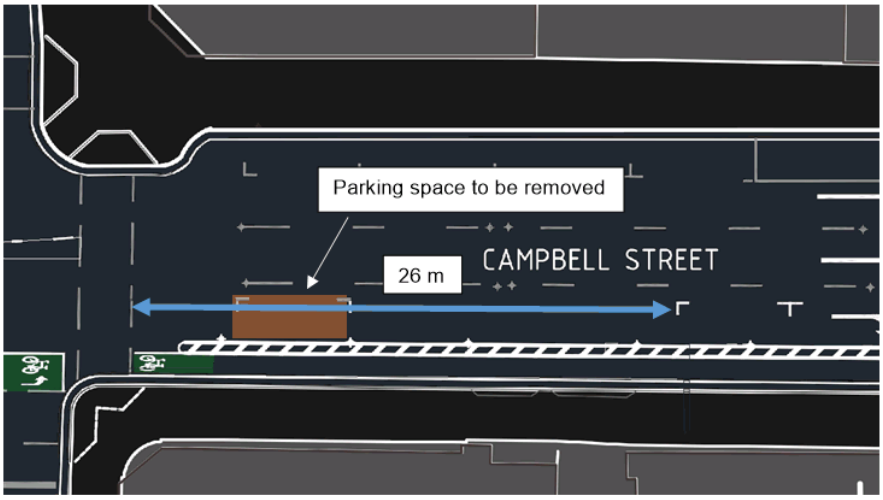


Figure 6 Campbell Street / Bathurst Brisbane Street departure lanes

3.2.3 Campbell Street at Collins Street junction

The departure side of Campbell Street at the Collins Street junction has a similar issue to the Campbell Street / Brisbane Street junction. The width of the right most departure lane is shown in Figure 7.

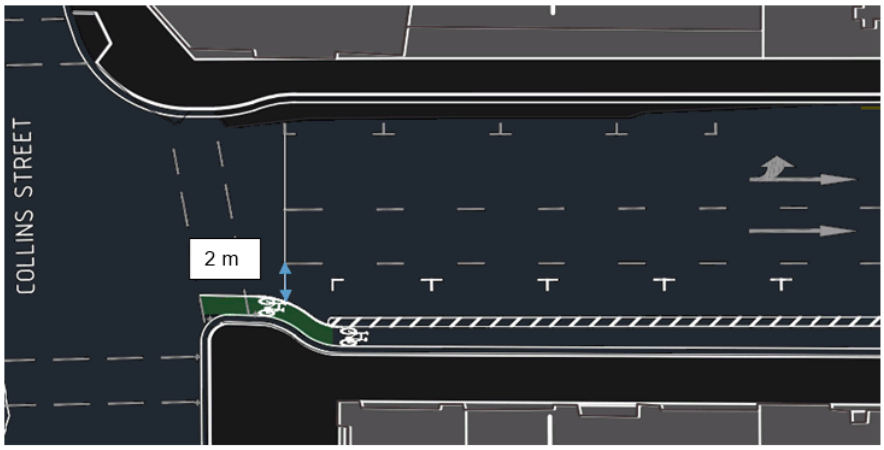


Figure 7 Campbell Street / Collins Street departure lanes

It is considered that the same treatment as at Brisbane Street is appropriate – to remove some of the dashed centreline marking further downstream of the intersection. It is also recommended to provide extended green surfacing as shown in Figure 5, to address the insufficient departure lane width at the junction.

3.2.4 Campbell Street at Macquarie Street junction

The approach to Macquarie Street on Campbell Street has a clearway arrangement both upstream and downstream of the intersection, however it may be preferable for capacity to provide three lanes through the intersection, this will be further reviewed in the capacity assessment (separate report). The width of the right most lane is shown in Figure 8.

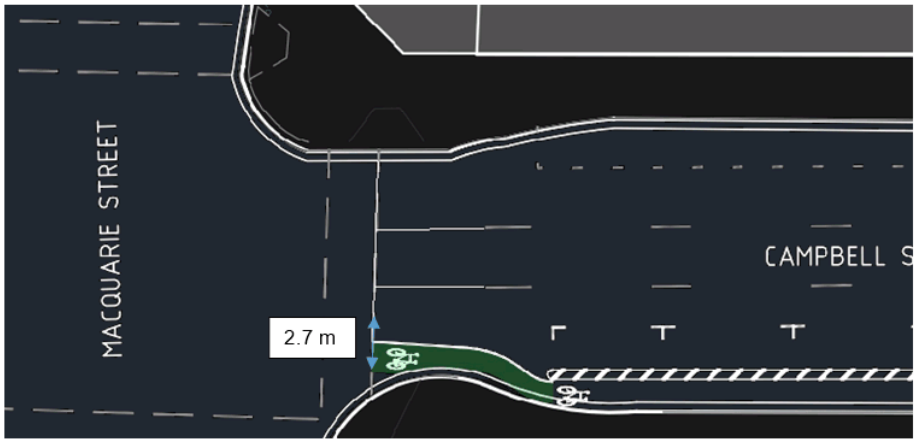


Figure 8 Campbell Street / Macquarie Street departure lanes

It is considered that sufficient width is provided for the departure lane during clearway conditions, however it may be necessary to adjust delineation at the intersection to ensure vehicles use the lane correctly and to prevent cyclists from having a false sense of security. It is recommended to extend the green surfacing to the full lane width and up to the first car parking space. This treatment would be consistent with recommendations at other intersections along the route including at Brisbane Street and Collins Street.

3.2.5 Davey Street lane allocation

The lane allocation of Davey Street under clearway conditions was identified as requiring consideration in the *Traffic Observations Analysis Report (*GHD, 2020). The concept drawings indicate that the proposed solution has been adopted of:

- *Lane allocation remains as existing during clearway times. The existing middle lane would be used to access the three right lanes during parking times.*

The capacity of the middle lane to service three lanes on Davey Street was assessed based on SCATS traffic data within the *DRAFT Traffic Observations and Analysis Report (*GHD, 2020). The assessment indicated the middle lane will likely provide sufficient capacity within the AM and interpeak periods with some minor lane reallocation to the left lane to support the parking arrangement.

3.2.6 Argyle Street at Macquarie Street junction

The approach to Macquarie Street on Argyle Street has three traffic lanes. The width of the left most approach lane is shown in Figure 9.

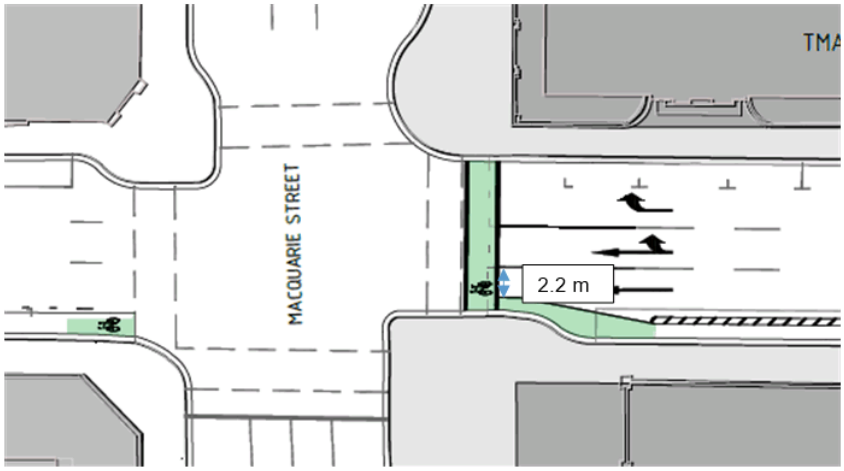


Figure 9 Macquarie Street / Argyle Street approach lanes

It is considered that insufficient width is provided for the approach lane and as such it may be necessary to adjust delineation at the intersection to ensure vehicles use the lane correctly and to prevent cyclists from having a false sense of security. It is recommended to extend the green surfacing for the full lane width and back at the end of the protected cycleway (as shown in Figure 10).

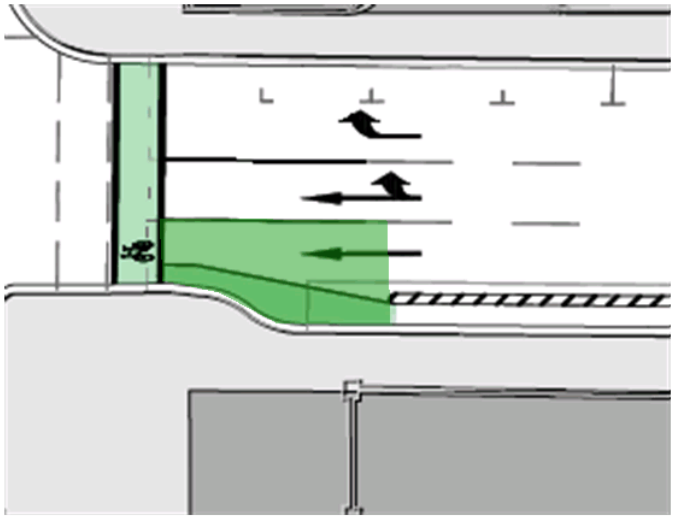


Figure 10 Extended green surfacing

3.2.7 Argyle Street at Collins Street junction

The approach to Collins Street on Argyle Street has three traffic lanes. The width of the left most approach lane is shown in Figure 11.

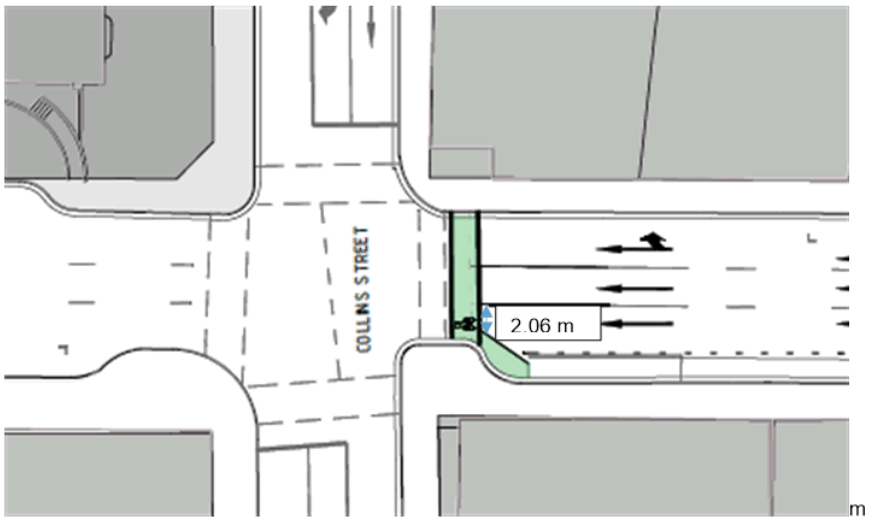


Figure 11 Collins Street / Argyle Street approach lanes

It is considered that insufficient width is provided for the approach lane and as such it may be necessary to adjust delineation at the intersection to ensure vehicles use the lane correctly and to prevent cyclists from having a false sense of security. As at the Macquarie Street junction, it is recommended to extend the green surfacing for the full width of the traffic lane back to the end of the protected cycleway (similar to the arrangement shown in Figure 10).

3.2.8 Bathurst Street at Argyle Street junction

When there is parking in the clearway on the approach to Argyle Street on Bathurst Street the approach becomes a short auxiliary lane that is maintained to allow left turning vehicles. During the clearway this approach is through and left however parking is located immediately downstream of the intersection during off-peaks (non-clearway). It is recommended to provide an increased length of clearway lane at all times downstream by removing two parking spaces, to provide the through movement in the left lane at all times. In this instance line marking from the departure side should commence immediately after the intersection.

Figure 12 shows the length of downstream merge provided by removing two parking spaces.

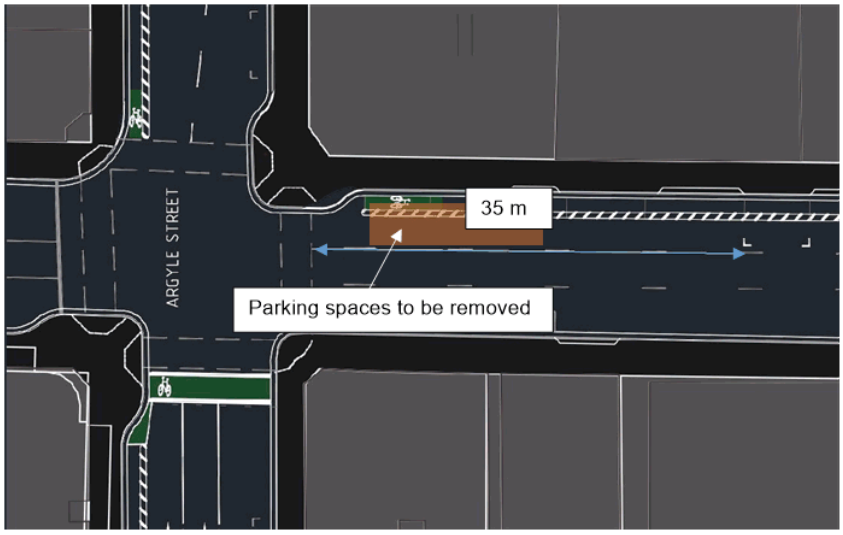


Figure 12 Bathurst Street / Argyle Street departure lanes with car parking spaces removed

3.2.9 Bathurst Street at Campbell Street junction

The approach to Campbell Street on Bathurst Street has a clearway arrangement upstream of the intersection with existing conditions remaining downstream of the intersection. In order to avoid introducing conflict on the downstream side of the intersection, it is recommended to maintain a length of the clearway lane at all times on approach to the intersection to allow vehicles to enter the lane before the intersection. In this instance line marking from the departure side should commence immediately after the intersection.

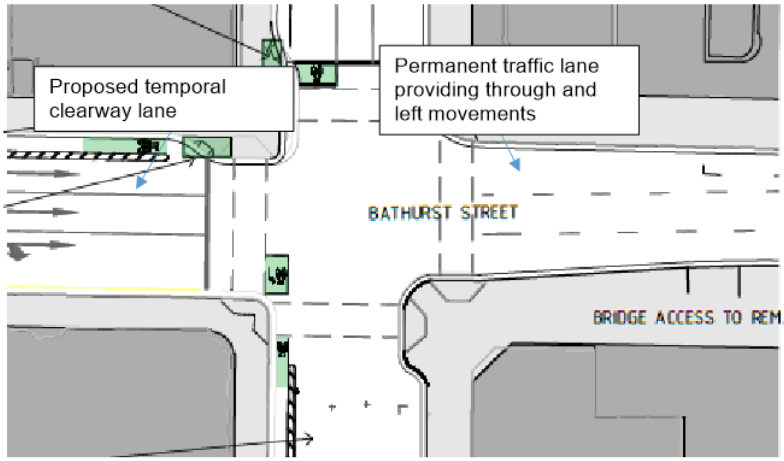


Figure 13 Bathurst Street / Campbell Street departure lanes

4. Recommendations

A summary of the recommendations for the intersection approaches reviewed is provided in Table 5.

Table 5 Recommendations summary

Junction	Geometry issue identified	Recommendation
Campbell Street		
Brisbane Street	Middle lane diverges into two lanes downstream. Right clearway lane entry is narrowed due to bicycle infrastructure.	Start lane line marking further downstream of intersection. Clearway lane to commence downstream of intersection. Extend green bicycle surfacing across full lane width to the back of the parking.
Melville Street	No issue identified.	
Bathurst Street	Right lane is short auxiliary lane through intersection	Remove one parking space downstream of intersection to provide auxiliary lane during non-clearway conditions.
Liverpool Street	No issue identified.	
Collins Street	Middle lane diverges into two lanes downstream. Downstream lane widths.	Start lane line marking further downstream of intersection. Extend green bicycle surfacing across full lane width to the back of the parking.
Macquarie Street	Downstream lane widths.	Extend green surfacing across full lane width to start of clearway lane.
Davey Street	Lane allocation.	Lane allocation remains as existing during clearway times. The existing middle lane would be used to access the three right lanes during parking times.
Argyle Street		
Davey Street	No issue identified.	
Macquarie Street	Geometry of approach lanes	Extend green surfacing across full lane at approach to intersection.
Collins Street	Geometry of approach lanes	Extend green surfacing across full lane at approach to intersection.
Liverpool Street	No issue identified.	
Bathurst Street	Lateral shift.	Remove three parking spaces and adjacent lane line marking downstream. Extend transition 10 m further than shown in updated concept designs (11 June 2020).
Melville Street	No issue identified.	
Brisbane Street	No issue identified.	
Liverpool Street		
Campbell Street	No issue identified.	
Argyle Street	Lateral shift.	Lateral shift is considered 'acceptable' at 40 km/h however not at 50 km/h. It is recommended to adjust upstream lane width to address the lateral shift and improve the general geometry through the midblock and intersection.
Bathurst Street		
Argyle Street	Left lane is temporally left turn only.	Remove two parking spaces downstream of intersection to provide auxiliary lane on

Junction	Geometry issue identified	Recommendation
		departure side and have left lane operate as a left and through lane at all times.
Campbell Street	Left lane provides short auxiliary lane	Line marking should commence immediately after the intersection.

Appendices

Appendix A – Design Guidance Note

City of HOBART

Traffic Engineering Unit
Design Guidance Note #2

TITLE	:	Lateral Shifts – Traffic Lanes past Objects / Obstructions
DATE	:	22 October 2019 (Rev 00)
OFFICER	:	**SENIOR ENGINEER – ROADS & TRAFFIC**

1. OVERVIEW

1.1. This design guidance note summarises the expectations for the design of lateral shifts, where traffic lanes transition around obstructions.

2. BACKGROUND

2.1. A lateral shift is a "sideways" movement in a traffic lane, where a road user in a lane is required to move their vehicle sideways to avoid an object / stay in their traffic lane:

2.1.1. In the urban environment, this most commonly occurs when we are trying to include parking, median islands, and bicycle lanes as well as general traffic lanes, and the general traffic lanes move laterally through these treatments (and require the driver in the general traffic lane to do the same);

2.1.2. If lateral shifts that are not appropriate for the speed environment on a section of road are installed, there is an increased risk that road users will not successfully negotiate a transition and will drive into / over a parked vehicle, bicycle lane or pedestrian island, resulting in a risk of injury and property damage.

3. GUIDANCE

3.1. The Australian Standard AS1742.3 – Manual of Uniform Traffic Control Devices – Traffic Control for Works on Roads – 2009 sets out a recommended maximum lateral shift of 1.0 metre per second for transitions at roadwork sites.

3.2. The Australian Standard AS1742.2 – Manual of Uniform Traffic Control Devices – Traffic Control Devices for General Use – 2009 provides advice on the length of edge line required to guide road users past objects and width changes. This advice is in Section 5.3.5. and is provided in the extract below. This formula equates to a rate of lateral shift of about 0.55 metres per second.

(c) *Guidance past objects and through width transitions*

Short lengths of edge line or a local widening of a continuing edge line may be used to guide traffic past an object that is close enough to the road to constitute a hazard, or to transition the road past a traffic island or at a narrowing of the pavement.

Where used to deflect traffic at a pavement narrowing, the length (L) of the edge lined transition shall be determined as follows:

$$L = 0.5 V W$$

where

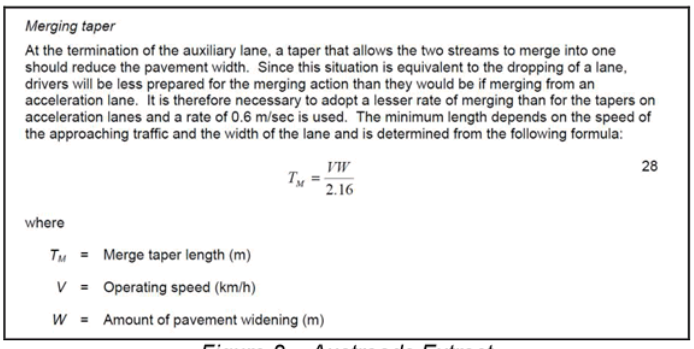
V = 85^{th} percentile speed, in kilometres per hour

W = lateral offset, in metres

Figure 1 – AS1742.2 Extract

3.3. The AustRoads Guide to Road Design – Part 3: Geometric Design', discusses lateral shifts in Section 9.9.2. These are discussed in the context of taper lengths, the rate of lateral movement is taken as 1.0 m/sec for diverge tapers (essentially a taper where the driver does not have to change position unless the driver wishes to do so), and 0.6 m/sec for merge

tapers. The merge taper formula (shown in Figure 2) equates to a lateral shift rate of 0.6 metres per second.



Merging taper

At the termination of the auxiliary lane, a taper that allows the two streams to merge into one should reduce the pavement width. Since this situation is equivalent to the dropping of a lane, drivers will be less prepared for the merging action than they would be if merging from an acceleration lane. It is therefore necessary to adopt a lesser rate of merging than for the tapers on acceleration lanes and a rate of 0.6 m/sec is used. The minimum length depends on the speed of the approaching traffic and the width of the lane and is determined from the following formula:

$$T_M = \frac{VW}{2.16} \qquad 28$$

where

T_M = Merge taper length (m)

V = Operating speed (km/h)

W = Amount of pavement widening (m)

Figure 2 – Austroads Extract

3.4. The design guidance offered in the AustRoads and Australian Standard guides described above are typically focussed on design requirements for high speed roads.

3.5. On the low speed urban roads typical in the City of Hobart, our experience has been that utilising a lateral shift of 1.0 metres per second results in designs that are accepted and operate appropriately for the reasonable majority of our road users.

3.6. This is likely due to road users being more alert in low speed urban environments, and the low speed environment being more forgiving of mistakes than would be a high speed environment.

3.7. It is recommended that the following formula be used for determining the minimum transition length of lateral shift on low speed urban roads in the City of Hobart:

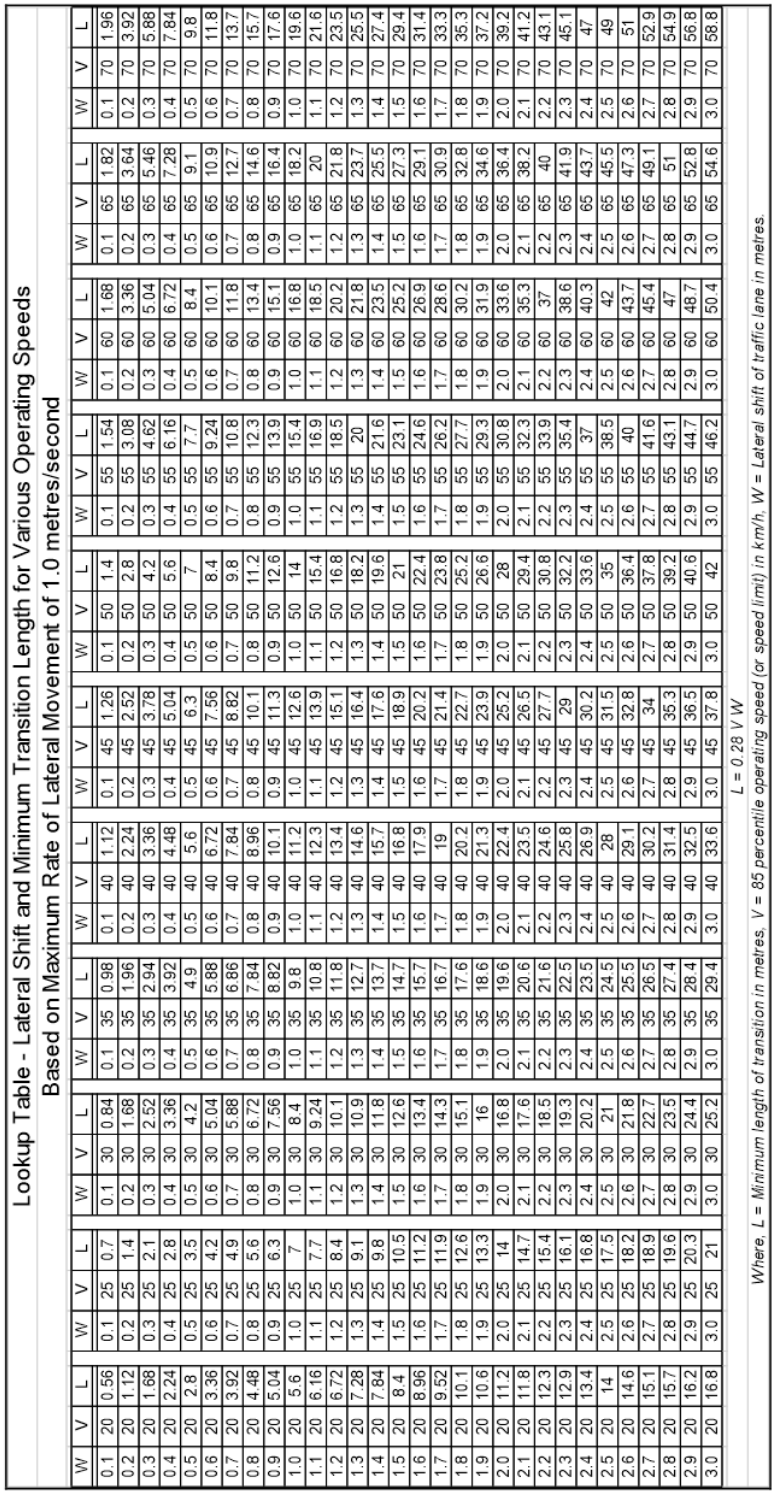
L = 0.28VW, where:

L = length of transition in metres;
V = 85 percentile operating speed (or speed limit) in km/h;
W = Lateral Shift of traffic lane in metres.

3.8. Unless observation at the site, or traffic data suggests an operating speed significantly higher or lower than the posted speed limit, the posted speed limit should be used in making calculations.

3.9. If conflicting demands, and the limits of available space require a length of transition that does not comply with the above, this needs to be discussed with and considered by a qualified person before any such design is progressed.

3.10. Figure 3.1 provides a lookup table for this formula.



Lookup Table - Lateral Shift and Minimum Transition Length for Various Operating Speeds

Based on Maximum Rate of Lateral Movement of 1.0 metres/second

W	V	L	W	V	L	W	V	L	W	V	L	W	V	L	W	V	L	W	V	L	W	V	L
0.1	20	0.56	0.1	25	0.7	0.1	30	0.84	0.1	35	0.98	0.1	40	1.12	0.1	45	1.26	0.1	50	1.4	0.1	55	1.54	0.1	60	1.68	0.1	65	1.82	0.1	70	1.96
0.2	20	1.12	0.2	25	1.4	0.2	30	1.68	0.2	35	1.96	0.2	40	2.24	0.2	45	2.52	0.2	50	2.8	0.2	55	3.08	0.2	60	3.36	0.2	65	3.64	0.2	70	3.92
0.3	20	1.68	0.3	25	2.1	0.3	30	2.52	0.3	35	2.94	0.3	40	3.36	0.3	45	3.78	0.3	50	4.2	0.3	55	4.62	0.3	60	5.04	0.3	65	5.46	0.3	70	5.88
0.4	20	2.24	0.4	25	2.8	0.4	30	3.36	0.4	35	3.92	0.4	40	4.48	0.4	45	5.04	0.4	50	5.6	0.4	55	6.16	0.4	60	6.72	0.4	65	7.28	0.4	70	7.84
0.5	20	2.8	0.5	25	3.5	0.5	30	4.2	0.5	35	4.9	0.5	40	5.6	0.5	45	6.3	0.5	50	7	0.5	55	7.7	0.5	60	8.4	0.5	65	9.1	0.5	70	9.8
0.6	20	3.36	0.6	25	4.2	0.6	30	5.04	0.6	35	5.88	0.6	40	6.72	0.6	45	7.56	0.6	50	8.4	0.6	55	9.24	0.6	60	10.1	0.6	65	10.9	0.6	70	11.8
0.7	20	3.92	0.7	25	4.9	0.7	30	5.88	0.7	35	6.86	0.7	40	7.84	0.7	45	8.82	0.7	50	9.8	0.7	55	10.8	0.7	60	11.8	0.7	65	12.7	0.7	70	13.7
0.8	20	4.48	0.8	25	5.6	0.8	30	6.72	0.8	35	7.84	0.8	40	8.96	0.8	45	10.1	0.8	50	11.2	0.8	55	12.3	0.8	60	13.4	0.8	65	14.6	0.8	70	15.7
0.9	20	5.04	0.9	25	6.3	0.9	30	7.56	0.9	35	8.82	0.9	40	10.1	0.9	45	11.3	0.9	50	12.6	0.9	55	13.9	0.9	60	15.1	0.9	65	16.4	0.9	70	17.6
1.0	20	5.6	1.0	25	7	1.0	30	8.4	1.0	35	9.8	1.0	40	11.2	1.0	45	12.6	1.0	50	14	1.0	55	15.4	1.0	60	16.8	1.0	65	18.2	1.0	70	19.6
1.1	20	6.16	1.1	25	7.7	1.1	30	9.24	1.1	35	10.8	1.1	40	12.3	1.1	45	13.9	1.1	50	15.4	1.1	55	16.9	1.1	60	18.5	1.1	65	20	1.1	70	21.6
1.2	20	6.72	1.2	25	8.4	1.2	30	10.1	1.2	35	11.8	1.2	40	13.4	1.2	45	15.1	1.2	50	16.8	1.2	55	18.5	1.2	60	20.2	1.2	65	21.8	1.2	70	23.5
1.3	20	7.28	1.3	25	9.1	1.3	30	10.9	1.3	35	12.7	1.3	40	14.6	1.3	45	16.4	1.3	50	18.2	1.3	55	20	1.3	60	21.8	1.3	65	23.7	1.3	70	25.5
1.4	20	7.84	1.4	25	9.8	1.4	30	11.8	1.4	35	13.7	1.4	40	15.7	1.4	45	17.6	1.4	50	19.6	1.4	55	21.6	1.4	60	23.5	1.4	65	25.5	1.4	70	27.4
1.5	20	8.4	1.5	25	10.5	1.5	30	12.6	1.5	35	14.7	1.5	40	16.8	1.5	45	18.9	1.5	50	21	1.5	55	23.1	1.5	60	25.2	1.5	65	27.3	1.5	70	29.4
1.6	20	8.96	1.6	25	11.2	1.6	30	13.4	1.6	35	15.7	1.6	40	17.9	1.6	45	20.2	1.6	50	22.4	1.6	55	24.6	1.6	60	26.9	1.6	65	29.1	1.6	70	31.4
1.7	20	9.52	1.7	25	11.9	1.7	30	14.3	1.7	35	16.7	1.7	40	19	1.7	45	21.4	1.7	50	23.8	1.7	55	26.2	1.7	60	28.6	1.7	65	30.9	1.7	70	33.3
1.8	20	10.1	1.8	25	12.6	1.8	30	15.1	1.8	35	17.6	1.8	40	20.2	1.8	45	22.7	1.8	50	25.2	1.8	55	27.7	1.8	60	30.2	1.8	65	32.8	1.8	70	35.3
1.9	20	10.6	1.9	25	13.3	1.9	30	16	1.9	35	18.6	1.9	40	21.3	1.9	45	23.9	1.9	50	26.6	1.9	55	29.3	1.9	60	31.9	1.9	65	34.6	1.9	70	37.2
2.0	20	11.2	2.0	25	14	2.0	30	16.8	2.0	35	19.6	2.0	40	22.4	2.0	45	25.2	2.0	50	28	2.0	55	30.8	2.0	60	33.6	2.0	65	36.4	2.0	70	39.2
2.1	20	11.8	2.1	25	14.7	2.1	30	17.6	2.1	35	20.6	2.1	40	23.5	2.1	45	26.5	2.1	50	29.4	2.1	55	32.3	2.1	60	35.3	2.1	65	38.2	2.1	70	41.2
2.2	20	12.3	2.2	25	15.4	2.2	30	18.5	2.2	35	21.6	2.2	40	24.6	2.2	45	27.7	2.2	50	30.8	2.2	55	33.9	2.2	60	37	2.2	65	40	2.2	70	43.1
2.3	20	12.9	2.3	25	16.1	2.3	30	19.3	2.3	35	22.5	2.3	40	25.8	2.3	45	29	2.3	50	32.2	2.3	55	35.4	2.3	60	38.6	2.3	65	41.9	2.3	70	45.1
2.4	20	13.4	2.4	25	16.8	2.4	30	20.2	2.4	35	23.5	2.4	40	26.9	2.4	45	30.2	2.4	50	33.6	2.4	55	37	2.4	60	40.3	2.4	65	43.7	2.4	70	47
2.5	20	14	2.5	25	17.5	2.5	30	21	2.5	35	24.5	2.5	40	28	2.5	45	31.5	2.5	50	35	2.5	55	38.5	2.5	60	42	2.5	65	45.5	2.5	70	49
2.6	20	14.6	2.6	25	18.2	2.6	30	21.8	2.6	35	25.5	2.6	40	29.1	2.6	45	32.8	2.6	50	36.4	2.6	55	40	2.6	60	43.7	2.6	65	47.3	2.6	70	51
2.7	20	15.1	2.7	25	18.9	2.7	30	22.7	2.7	35	26.5	2.7	40	30.2	2.7	45	34	2.7	50	37.8	2.7	55	41.6	2.7	60	45.4	2.7	65	49.1	2.7	70	52.9
2.8	20	15.7	2.8	25	19.6	2.8	30	23.5	2.8	35	27.4	2.8	40	31.4	2.8	45	35.3	2.8	50	39.2	2.8	55	43.1	2.8	60	47	2.8	65	51	2.8	70	54.9
2.9	20	16.2	2.9	25	20.3	2.9	30	24.4	2.9	35	28.4	2.9	40	32.5	2.9	45	36.5	2.9	50	40.6	2.9	55	44.7	2.9	60	48.7	2.9	65	52.8	2.9	70	56.8
3.0	20	16.8	3.0	25	21	3.0	30	25.2	3.0	35	29.4	3.0	40	33.6	3.0	45	37.8	3.0	50	42	3.0	55	46.2	3.0	60	50.4	3.0	65	54.6	3.0	70	58.8

$L = 0.28\ V\ W$

Where, L = Minimum length of transition in metres, V = 85 percentile operating speed (or speed limit) in km/h, W = Lateral shift of traffic lane in metres.

Figure 3 – Lookup Table

4. EXAMPLE

4.1. An example of a lateral shift that was the focus of careful consideration during the design process is shown in Figure 4.1.

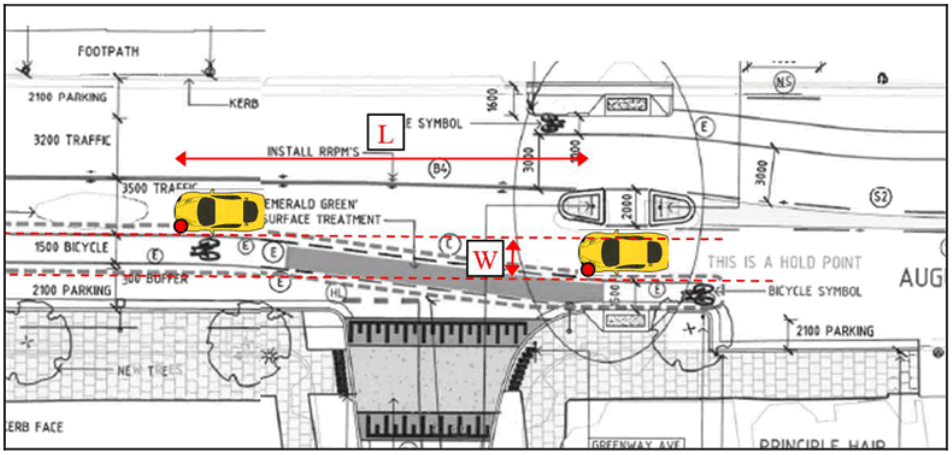


Figure 4.1 – Example – Lateral Shift

4.2. In relation to Figure 4.1:

4.2.1. The driver of the vehicle is required to shift laterally (sideways) a distance of "W" over a length "L".

4.2.2. In this design "L" = 21.0m, "W=2.3m. The road is subject to a 50 km/h speed limit (which for this exercise will be considered the 85th percentile vehicle speed);

4.2.3. Based on AS1742.2, L = 0.5VW, therefore L = 0.5 * 50 * 2.3 = 57.5m.

4.2.4. Based on the maximum lateral shift of 1.0 m/s used in AS1742.3, L = 0.28VW, therefore L = 0.28*50*2.3 = 32.2m.

4.2.5. Based on AustRoads Part 5, which uses a 0.6m/sec lateral shift for merging tapers, L = 0.46VW, therefore L = 0.46 * 50 * 2.3 = 52.9m.

4.2.6. As described in 3.7, the recommended approach in the City of Hobart is to use the L = 0.28VW as the basis for the calculation (a maximum lateral shift of 1.0 m/s).

4.3. In this case, the proposed design (with a L of 21.0 metres and a W of 2.3 metres) would require a driver to slow from 50 km/h (the general operating speed on this section of road) to a speed of 32.6 km/h to achieve the minimum level of comfort associate with the 1.0 metres / second lateral shift on which the formula is based.

4.4. To alter this design to have a suitable layout for road users in a 50 km/h speed environment, either the length of the transition would need to be increased from 21.0 metres to 32.2 metres (by banning parking on the eastern side of the intersection), or reducing the width of the lateral shift from 2.3m to 0.91m by either removing the bicycle lane or the pedestrian median island.

4.5. Other potential treatments would include installing a series of traffic calming treatments that effectively reduce the operating speed of general traffic to the approximately 30 to 35 km/h range.

5. REFERENCE DOCUMENTS

5.1. The following were considered in the preparation of this document:

5.1.1. Guide to Road Design – Part 3: Geometric Design - 2010

5.1.2. AS1742.2 – Manual of Uniform Traffic Control Devices – Traffic Control Devices for General Use – 2009;

5.1.3. AS1742.3 – Manual of Uniform Traffic Control Devices – Traffic Control for Works on Roads - 2009;

6. ENDORSED

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	S.Chapman	A.Moore		A.Moore		29/01/2021

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TECHNICAL NOTE

To	City of Hobart	Date	27 November 2020
From	C. Munro	Project No.	0175
Subject	Argyle St – Campbell St Bicycle Lanes		

1. Introduction

The City of Hobart is considering options to improve cyclist connectivity on Argyle Street and Campbell Street between Brisbane Street and Davey Street, and on adjoining roads. The intention is to connect the existing network of the on-road bicycle lanes on Argyle Street and Campbell Street north of Brisbane Street to the Intercity Cycleway along the waterfront and east near the Cenotaph via the new pedestrian and cycle bridge over the railway roundabout. To assess the impact of the proposal on bicycle riders and on the traffic network more broadly the City is considering deploying a trial of low-cost treatments to assess the benefits and costs of such a network.

The City has requested an independent review of the concept plans that have been prepared for this corridor. This review is based on plans dated 9 November 2020 and an analysis of traffic capacity undertaken by GHD on behalf of the City of Hobart (October 2020). For clarity I break this discussion into each of the main segments, identify the key elements of the proposal, my general opinion, and then identify any recommendations, as necessary.

2. Background

2.1 Crash types

In considering this review it is noted that the City has resolved to implement a 40 km/h speed limit within the inner city in February 2021. This speed limit reduction is strong supported and, based on overwhelming evidence where such lower limits have been introduced elsewhere, will markedly improve safety for all road users.

The reduced speed limit will reduce the likelihood of riders incurring serious or fatal injury from a collision with a motor vehicle. However, it is likely to shift the risk profile towards hazards for which speed is not a primary factor. In our judgement the greatest risk of fatal injury will be from heavy vehicles overrunning bicycle riders, either as a result of (a) a rider being struck by a parked car door and falling into the path of a heavy vehicle, or (b) being "caught" between the kerb and a turning heavy vehicle. The general midblock configuration whereby riders are positioned alongside the kerb and parking is "floating" between the bicycle lane and general-purpose traffic lane will ensure scenario (a) does not occur. The risk remains for scenario (b), although along Campbell Street the risks are reduced as riders will be positioned (unusually) to the *right* of vehicles and so the blind spot will be substantially reduced. However, there is strong evidence that these crashes do occur and often have catastrophic consequences. While the City has extremely limited control over vehicle design rules it is suggested the City can ensure their vehicles and those of their contractors (such as garbage trucks) have side underrun protection to reduce this risk.

The optimum design to minimise the collision risk between left-turning motorists and through-riders would be temporal (i.e. signal) separation of the movements. In practice this is unlikely to be tenable given the traffic capacity demands and the risk that reducing the signal phasing for bicycle riders would only encourage riders to ignore a dedicated bicycle phase and instead follow the general traffic phase.

2.2 Roadspace allocation

The GHD capacity analysis suggests that there is an excess of road space within the study area under typical traffic conditions. However, at times the sequencing of traffic signals (especially the priority given to the Macquarie Street / Davey Street couplet) reduces the capacity along Campbell Street and Argyle Street. These issues create both traffic delays and potential queuing across intersections, which can then have a cascading effect on the rest of the network. These effects are most prevalent during the PM peak, and hence GHD recommend clearways be introduced on several blocks in conjunction with the trial.

The GHD observations suggest that the right-hand lane on Campbell Street is underutilised relative to the other traffic lanes. This is particularly true southbound on Campbell Street approaching Liverpool Street where the right turn lane becomes an exclusive right turn lane approaching the hospital. This is advantageous from the point of view of the proposed bicycle lane insofar as it suggests less impact on traffic capacity than otherwise may be the case and, moreover, that interactions between bicycle riders and motorists will be less than may otherwise be the case.

In general, we note that the on-street parking represents an inefficient use of the carriageway, especially given ample off-street parking provision in the Hobart CBD. Nonetheless, it is acknowledged that there will always be a requirement for special purpose parking close to businesses to facilitate deliveries and to provide access for mobility impaired visitors. Where parking can be rationalised opportunities will arise to provide a higher level of service and safety to motorists, bicycle riders and pedestrians.

3. Campbell Street

3.1 Brisbane Street to Bathurst Street

This block consists of a protected bicycle lane along the right kerb with a 0.5 m buffer and bicycle lane varying in width but generally around 1.5 m wide. The new bicycle lane would extend the existing bicycle lane that runs from Burnett Street down to Brisbane Street. The design of the buffer is not yet finalised but is likely to consist of a painted buffer supported by vertical separators such as frangible bollards. This treatment is similar to that used on the protected bicycle lane in Albert Street in East Melbourne (Figure 3.1). To the immediate left of

the buffer would be parallel parking; the GHD traffic analysis recommends a PM peak period clearway[1].

3.1.1 Bicycle lane buffer

The buffer is narrow at 0.5 m; by way of comparison the buffer is 0.8 m for the Albert Street bicycle lane. Moreover, the typical opening distance of a car door is in the order of 0.8 m. However, assuming for a typical bicycle the outer protrusions (handlebar, pedal and rider) usually extend no more than 0.4 m from the rider centreline. A rider travelling in the centre of the bicycle lane would then extend to 1.15 m from the kerb and an open door to 1.20 m. In other words, in *most* instances we would expect an open door not to strike a rider even with this somewhat suboptimal cross-section.

By swapping bicycle riders and parking the risk of a rider being struck by an open door and flung into the path of moving traffic is eliminated. Experience elsewhere suggests that, while being struck by an opening door can lead to serious injury, it is the secondary collision once the rider is flung into the path of moving vehicles that has the most severe (and sometimes catastrophic) consequences. However, while the severity will be reduced the likelihood of a dooring collision may not be. On Campbell Street riders would be repositioned from the passenger side of parked vehicles to the driver side, which will increase the likelihood of being exposed to an opening door[2]. It is difficult to ascertain how the balance between likelihood and consequence in this situation will balance in terms of the overall hazard, but in our judgement the severity of any injury will clearly be lower but the likelihood could vary from being somewhat lower to somewhat higher. However, if the buffer can be maintained as at least 0.5 m and the physical layout ensure motorists are kept off this buffer then, on balance, our view is that the likelihood should be reduced.

Given the intention is towards a low-cost trial, our assumption is that more permanent and expensive infrastructure such as concrete kerb and islands are not options under consideration. Nonetheless, some form of physical separation is probably warranted – mainly for off-peak periods to ensure motorists do not park within the bicycle lane. To achieve this outcome whilst still providing drainage and avoiding a trip hazard some form of frangible bollard is warranted. These need not be positioned too frequently – the 12 m spacing on Albert Street appears to be adequate to discourage motorists from encroaching into the bicycle lane (Figure 3.1). It is recommended that a high visibility bollard be placed at the start of each section of separation as well as along the length to deter motorists from entering the lane.

[1] It is not clear from the GHD analysis whether the clearway would be required from Melville Street to Bathurst Street or all the way back to Brisbane Street. Whatever the extent of the clearway, it does not alter the view expressed in this section.
[2] All parking events will involve a driver-side door opening and closing, but only a fraction will involve a passenger side door opening and closing.

Figure 3.1: Albert Street (East Melbourne) - bicycle lane is 1.4 m wide and buffer is 0.8 m wide)

The bicycle lane width of around 1.5 m would be too narrow to allow riders to comfortably pass one another. In the downhill (Campbell Street) direction this is unlikely to be a major issue as riders will travel at similar speeds, but in the uphill direction along Argyle Street the speed differentials between riders will be wider. In practice along Albert Street overtaking in the uphill direction does occur, primarily where slower riders track to the left near the kerb and passing riders use the space in the buffer (especially between bollards). It is also common to observe faster riders move out into the traffic lane to pass slower riders during clearway periods. These behaviours may be expected along Campbell and Argyle Streets too and are unlikely to represent safety concerns. Indeed, an advantage of the bollard-based buffer is that allows riders to readily move out (and into) the bicycle lane to avoid other riders and hazards.

The proposed treatment includes green surface treatments at Melville Street and, although not marked on the plans, it is assumed a similar treatment would be used at the two crossovers between Melville Street and Bathurst Street. To reduce the risks of conflict between motorists emerging from Melville Street and bicycle riders, and to improve pedestrian safety and amenity, it is suggested that a kerb outstand could be constructed on Melville Street as illustrated in Figure 3.2. We do not see a case to incorporate a green surface on the bicycle lane where the buffer is present except potentially as a means of warning pedestrians (especially parked vehicle occupants) of the presence of riders. Unless such incidents occur however the cost of doing so is likely to exceed the benefits.

Figure 3.2: Melville Street approach to Campbell Street (proposed outstand shown in green)

3.1.2 Intersection approach

The approach to Bathurst Street involves termination of the bicycle lane buffer around 30 m ahead of the hold line and instead having a solid edge line to the intersection. Riders would then have a choice to either merge left into the traffic lane, where a bicycle storage box would be located at the hold line or move onto the kerb outstand at the intersection using a pram ramp. In general, we are not comfortable with the approach of mixing riders with pedestrians at the existing outstands:

- doing so would not provide an attractive level of service (i.e. comfort) to either group – that is, it feels too compromised for both groups, and
- bicycle riders would be interacting with pedestrians walking or waiting at right angles or in line with the rider; this is a more complex situation than is present at other locations on the network where both users tend to be travelling in parallel.

It seems unlikely faster riders would choose the footpath, and so the likelihood of serious injury crashes between bicycle riders and pedestrians is unlikely.

Providing a segregated on-road alternative at this intersection would be difficult; the right traffic lane is around 3.0 m at the hold line which is too narrow to accommodate a bicycle lane. In practice we expect experienced riders would merge into the traffic lane and would not have difficulty doing so given that (a) this traffic lane is underutilised, and (b) there are no right-turn movements. In lieu of any other option it is suggested sharrows, or simply standard bicycle symbols, could be used as a gentle reminder of the likelihood of riders merging into the lane.

If the outstand alternative were to proceed it is suggested that large area of green pavement on the outstand be avoided so as not to falsely suggest that the footpath is a bicycle lane. Equally, and consistent with the road rules, the treatment should reflect that pedestrians have priority over bicycle riders on footpaths. It is suggested that a treatment of subtle pavement

markings similar to those used in Sydney in Figure 3.3 may be appropriate to reinforce this message.

Figure 3.3: Shared path symbols (College Street, Sydney)

3.2 Bathurst Street to Liverpool Street

This block consists of a protected bicycle lane along the right kerb before transitioning to a half-height kerb design approaching the intersection of Liverpool Street. The right traffic lane is an exclusive right-turn traffic lane and bicycle riders in the intersection would be supported by a green surface treatment. The GHD analysis suggested a clearway is not required in this block, although they suggest it could be considered to maintain consistency with the block to the north where it is warranted. Our preference from a cyclist safety perspective would be not to have a clearway as this will encourage more motorists to turn right from the right through lane and hence position themselves more right-on to riders.

In our view the half-height kerb option would be unnecessarily expensive at this location and have only modest benefit over continuing the buffered and bollard-protected bicycle lane to the hold line.

The greatest risk in this block is for riders to be struck in the intersection by right-turning motorists. These events are most likely to occur during the stale green phase and when traffic is running freely (especially when there are no pedestrians on the adjacent crossing). The left-

turn side swipe crash has proven to be a significant problem on protected bicycle lanes in other cities (e.g. Latrobe Street, Melbourne and Frome Street, Adelaide), and especially on downhill slopes where riders are likely to be travelling faster. One factor that may reduce the prevalence of this crash type at this location may be that motorists will be turning right (not left) and so riders will be on their nearside of the vehicle; this will hopefully increase the likelihood motorists will see and react accordingly. While no countermeasure appears to be entirely satisfactory the use of the green surface in the intersection is strongly recommended as a low-cost mitigation, as is ensuring sightlines of the bicycle lane are not impeded by parked vehicles.

An alternative approach would be to temporally separate the conflict by introducing a right-turn motorist phase and holding bicycle riders. In theory this would eliminate the conflict. In practice the challenge would be ensuring an adequate level of service is provided to riders that they are compliant with the bicycle red signal. Experience elsewhere, especially in Sydney, where riders were presented with comparatively short cycle time, is that many riders ignore the bicycle signal and instead follow the main traffic signal. This can potentially lead to worse safety outcomes than doing nothing. If this option were pursued it is suggested that every effort be made to ensure bicycle riders receive as much of the traffic green signal phase as possible. It may also make sense, at least from a rider perspective, to clear right-turning motorists at the start of the green through phase (effectively holding back riders). Rider compliance with this option is likely to be greater than towards the end of the green through phase.

3.3 Liverpool Street to Collins Street

This block would consist of an island and feeder bicycle lane on the departure side of the intersection leading into a service lane to the hospital. Motorists turning into the service lane would be required to give way to riders, which would be supported through a green surface treatment and sharrows. While motorist movements in this service lane are likely to be complex, involving entering and leaving parking, speeds would be sufficiently low that sharing the lane seems an appropriate design response.

The approach to Collins Street would again offer riders the option of staying in the traffic lane (which becomes an exclusive right-turn lane) or use a kerb ramp to move onto the footpath. The right traffic lane at this intersection is 3.3 m wide, which could potentially accommodate a very narrow feeder bicycle lane. However, this would place riders to the right of right-turning vehicles and could present serious injury risks if it were to encourage riders to track to the right of large vehicles without underrun protection. As such, our preferred option here would be to encourage lane sharing. Doing so would mean a green lane within the intersection (as per Liverpool Street) would not be required. One option, as per the current plans, is not to explicitly have any markings to reinforce sharing. This may well be sufficient, depending primarily on the demand from motorists turning right onto Collins Street who have not used the service lane. One possibility may be to use green lateral striping to reinforce the “look for

bicycles" message without a full green surface, which could be interpreted as a designated bicycle lane[3].

3.4 Collins Street to Macquarie Street

In this block the protected midblock cross-section would continue as at other intersections, and a PM peak period clearway would apply. Our concern in this block is the approach to Macquarie Street; the plans in our view have a transition too abrupt and close to the intersection (Figure 3.4).

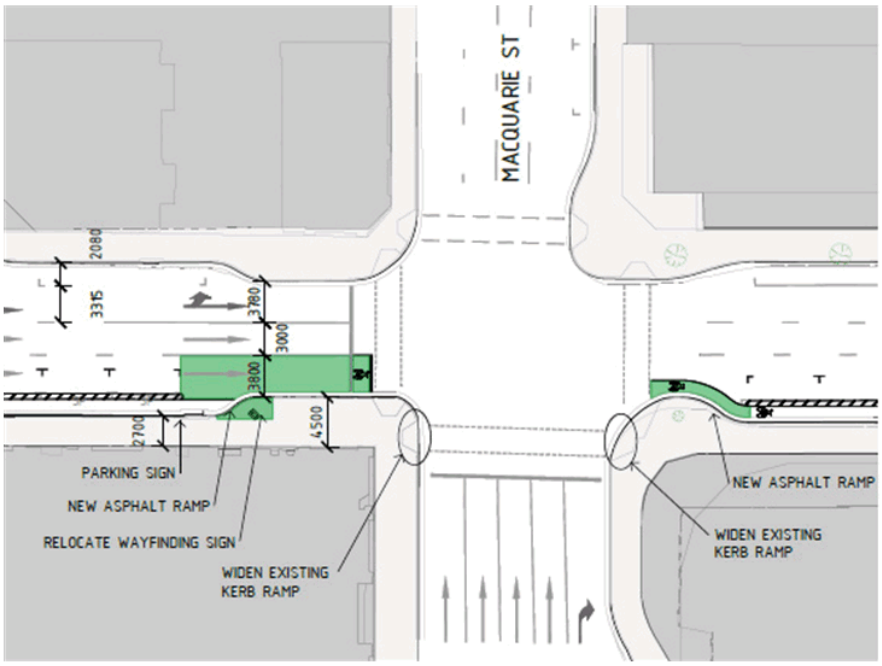

Figure 3.4: Intersection approach detail - Campbell Street at Macquarie Street

As drawn the buffer terminates around 4 m before an existing kerb outstand and bicycle riders are assisted in their left merge through a green pavement treatment. The road rules are clear that in this situation the rider is making a lane change and therefore must give way to vehicles in the adjacent lane. The risk in our view is that the green treatment on the traffic lane suggests to the contrary that it is instead a continuation of the bicycle lane. It is also noted that

[3] The risk of a full green surface may be that it dilutes the strength of green at other locations where it is used to indicate a bicycle-only lane.

the last parking bay, if occupied, would impede visibility towards the bicycle lane by motorists, exacerbating the risks.

It is suggested that a superior design would be as illustrated in Figure 3.5. The key feature of this design is the protected lane would transition to a green painted bicycle lane of around 1.4 m width around the kerb outstand to the intersection hold line. The 3.8 m right traffic lane would be narrowed to 3.2 m and the left lane from 3.8 m to 3.3 m. This lane would be supported by current motorist behaviour, which is to position laterally away from the right kerb as shown in Figure 3.6.

Ideally the bicycle lane would be further protected using either:

- Separators that deter motorists from entering the bicycle lane but require very little width – an example shown in Figure 3.7 uses plastic separators that are 120 mm wide and 50 mm high.
- Audio tactile line marking (ATLM) as illustrated in Figure 3.8.

Should this design be able to be accommodated in full there would be less need to provide the footpath alternative, which would avoid the cost of introducing a pram ramp and the conflict risk with pedestrians.

It is noted that changing the lane widths across the carriageway would be a more expensive proposition than simply modifying the right lane. Moreover, there is a need to accommodate heavy vehicles turning left. At this intersection it is suggested there is little need for a wide traffic lane as large turning vehicles can turn into a farside traffic lane on Macquarie Street without needing to move out of the lane on Campbell Street[4]. However, even if it were deemed infeasible to narrow the left traffic lane a narrow feeder bicycle lane of at least 0.8 m seems likely. To provide a level of service consistent with the protected midblock treatment however a wider lane of at least 1.2 m is desirable. At this width the use of ATLM becomes an option, and at 1.5 m higher quality separation such as the Zebra separations are practicable.

[4] Put another way, there does not appear to be a need to design for a swept path from the left lane on Campbell Street to the leftmost lane on Macquarie Street.

Figure 3.5: Feeder bicycle lane to Macquarie Street

Figure 3.6: Current motorist behaviour at Macquarie Street

Figure 3.7: Protected 1.5 m feeder bicycle lane (Barrack Street, Perth) using Zicla Zebra separators

Figure 3.8: Audio-tactile line marking (Rathdowne Street, Carlton, Melbourne)

3.5 Macquarie Street to Davey Street

In this block riders transition to the kerb outstand at Davey Street and then cross Macquarie Street towards the Grand Chancellor Hotel and then across Davey Street to the Intercity Cycleway (Figure 3.9). While this is a rather awkward movement it appears to be safe. While the interaction with pedestrians on the outstand is not ideal the pedestrian demand and space at this location is likely to be sufficient such that it won't be a major issue. It is however suggested that the linemarking and bicycle symbol on the outstand is unnecessary; riders will almost certainly move farther right on the footpath to position themselves facing the signalised crossing, even if simply to avoid the traffic signal.

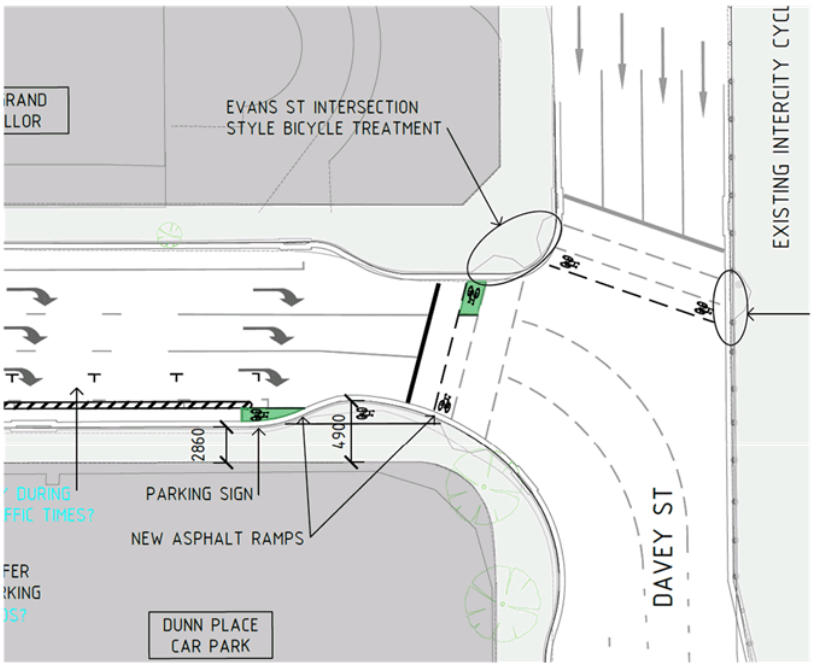

Figure 3.9: Concept plans for Campbell Street / Davey Street

4. Argyle Street

4.1 Davey Street to Macquarie Street

A short section of protected bicycle lane is proposed in this block, followed by a clearway bicycle lane in the block between Macquarie Street and Collins Street and then no provision to Liverpool Street. The protected bicycle lane would extend over around 30 m of the block, with provision for a bus stop near Davey Street. It is understood the tourist bus using this stop does so infrequently and, when it does stop, stops for only a short period. Given the infrequent bus use this is not considered to be detrimental to either safety or level of service for riders.

The approach to Macquarie Street requires riders to either merge with the left traffic lane or merge onto the footpath (Figure 4.1). Our previous concerns about riding on the footpath are relevant here, but moreover in general along Argyle Street it is noted the quality of cyclist provision is lower and patchier than is proposed for Campbell Street. This is likely to deter inexperienced or unconfident riders irrespective of whether this intersection detail is provided. As such, we would err towards not providing a footpath option along Argyle Street in particular.

If anything, there may be an increased risk of injury from the proposed design compared to the current situation as riders would leave the main traffic stream to enter the short bicycle lane before "popping" back out near the intersection. This reduction in visibility and predictability may increase the risk of sideswipe and rear-end collisions near the intersection.

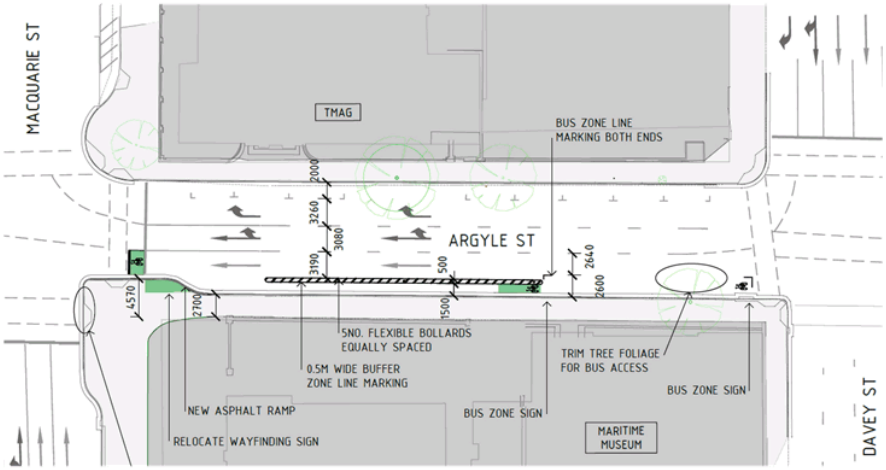

Figure 4.1: Argyle Street (Davey Street to Macquarie Street)

In our view the protected lane in this block only makes sense if it could extend to the intersection hold line. Doing so would require the loss of a traffic lane, parking on the farside of the road or removal of the existing kerb outstand at Macquarie Street. It is assumed the

latter would be the most likely option. Although it would be a somewhat retrograde step to reduce pedestrian space it is noted the cycle times are long across Argyle Street, and there are no motorist movements into Argyle Street, so the impact on pedestrian crossing movements would be minimal.

4.2 Macquarie Street to Collins Street

A peak period clearway bicycle lane (weekdays 7 – 9 am and 4 – 6 pm) is proposed for this block. This design is supported, at least insofar as it is understood permanent parking removal is not currently achievable. We see the main advantage of this design as being that it will reduce the car dooring risk when the clearway is in operation, albeit by increasing the risk somewhat at the approach to Collins Street where riders will need to merge into traffic in the 3.2 m traffic lane.

4.3 Collins Street to Liverpool Street

No treatment is proposed for this block. It is noted however that the Argyle Street car park entry likely makes this one of the most unattractive blocks to ride within the study area. Over the longer term a solution is warranted in this block, but it is understood this may come after further developments at the hospital.

4.4 Liverpool Street to Bathurst Street

This uphill block would feature a protected bicycle lane with long breaks near the police and Vodafone car park crossovers. The right traffic lane would be converted from right/through to right-only movements.

Given the uphill slope the midblock protection for riders is warranted and the presence of the car park crossovers should not present a hazard as riders will be travelling at modest speeds. Again, the issue at the kerb outstand at Bathurst Street is difficult to resolve given the very narrow road width (each of the three traffic lanes are less than 3.0 m wide). In our view the lowest value roadspace in this block is the kerbside parking which serves few retail businesses in the immediate vicinity. Removing these eight parking bays would provide ample roadspace to accommodate both wider traffic lanes and a high-quality protected bicycle lane that extends to the hold line. Alternatively, removing the five bays nearest Bathurst Street would allow the lanes to be reconfigured to fit the bicycle lane.

4.5 Bathurst Street to Brisbane Street

The protected bicycle lane would extend over the first two thirds of the block from Bathurst Street to Melville Street with a Metro bus stop near the latter (Figure 4.2). It is understood this stop is very infrequently used currently but may become busier should the adjacent buildings be redeveloped. The concept has a green painted left-turn lane at the Melville Street intersection. Our preference would be to have a painted bicycle lane extending to the bicycle storage box; there is ample space within the 4.8 m of the kerbside lane to accommodate an unprotected bicycle lane at this intersection.

A similar treatment is proposed for the block from Melville Street to Brisbane Street (Figure 4.3). Green surface treatments are recommended for the crossovers. At the intersection with Brisbane Street a narrow feeder bicycle lane may be possible next to the outstand.

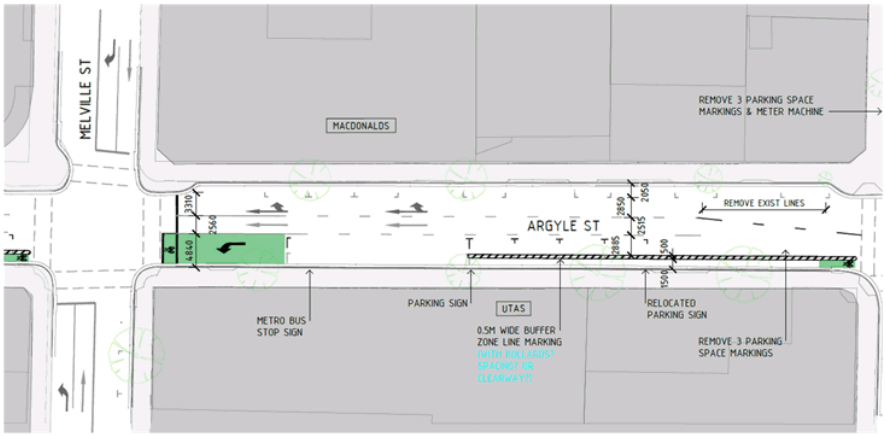

Figure 4.2: Argyle Street (Bathurst Street to Melville Street)

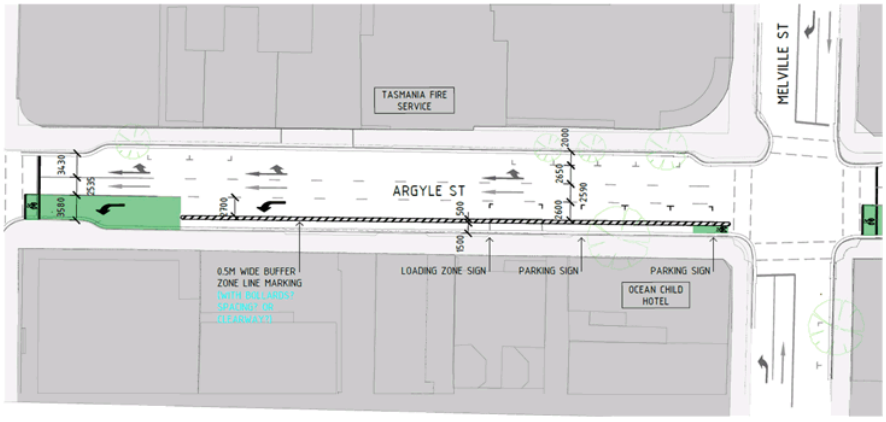

Figure 4.3: Argyle Street (Melville Street to Brisbane Street)

5. Bathurst Street

The block between Argyle Street and Campbell Street will have a protected bicycle lane to the left of the carriageways (Figure 5.1). A PM peak period clearway would apply to the floating parking.

While not marked on the concept plan it is assumed there would be a green surface treatment across the entry and exit to the Scots Church parking. It is also recommended that there be no parking within *at least* 6 m behind the entry crossover to allow sufficient visibility during non-clearway periods for entering motorists of bicycle riders.

It is understood that most riders travelling northeast on Bathurst Street are expected to either be turning right onto Campbell Street or will undertake a two-stage crossing to the Royal Exchange Hotel and then onto the new bridge over Brooker Highway. As such, there is no need to accommodate riders continuing along Bathurst Street towards Brooker Highway. In this situation the proposed pram ramp to the kerb outstand is a reasonable compromise, as is the provision of the hook turn box.

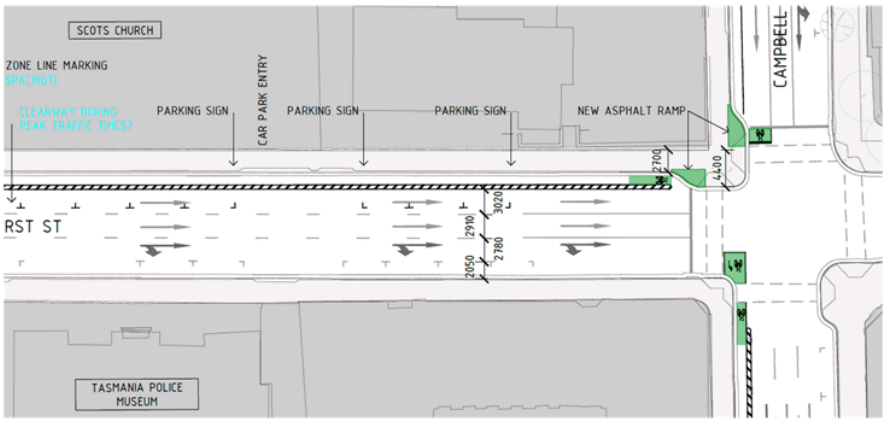

Figure 5.1: Bathurst Street at Campbell Street

6. Liverpool Street

The block between Campbell Street and Argyle Street will have a protected bicycle lane to the left of the carriageway with no floating parking. The hospital accident and emergency entry ramp and hospital entry/exits along this block would be protected with green surface treatments. There do not appear to be any significant safety implications with this design, especially given the relatively modest vehicle movements across the bicycle lane and the absence of a kerb outstand at Argyle Street.

7. Conclusions

- Overall, the project is likely to deliver safety and comfort benefits to bicycle riders relative to the current situation.
- The speed limit reduction in the Hobart CBD to be introduced in February 2021 will strongly complement the proposed treatment by creating a more forgiving road environment.

- By "swapping" bicycle riders and kerbside parking the risk of car dooring will be substantially reduced. While the fairly narrow buffer (0.5 m) is less than ideal it should nonetheless be sufficient to significantly reduce the incidence of dooring events. In any case, in this configuration a rider struck by a door would be pushed towards the footpath rather than the traffic lane, and hence the likelihood of a secondary collision with a moving vehicle would be eliminated.
- All crossovers of the bicycle lane at midblocks (e.g. to off-street parking) should incorporate green surface treatments and there should be no adjacent parking to block sightlines for *at least* 6 m behind the conflict point.
- There is likely to be a crash migration effect as midblock crashes are significantly reduced but crashes at intersections *may* increase. Moving riders in and out of the traffic stream introduces additional merging events and complicates the traffic environment in such a way that may lead to additional crashes. Wherever there is sufficient roadspace it is recommended that the protected bicycle lane transition to a kerbside feeder bicycle lane near the intersection to mitigate these risks. Narrowing or removing existing kerb outstands may be required to achieve this outcome.
- Where adequate roadspace is not available to provide a feeder bicycle lane a pram ramp up to the kerb outstand may be considered, and certainly southbound along Campbell Street at Davey Street where riders would be using the signals to cross in any case. While there are unlikely to be serious safety implications of mixing riders and pedestrians at other locations it isn't likely to be a very satisfactory solution for either group.
- Overall, the proposal along Campbell Street provides a continuous high-quality facility. The provision along Argyle Street is patchier, particularly between Davey Street and Liverpool Street. Our inclination is that the short, protected section in the block from Davey Street to Macquarie Street is only justified if the kerb outstand at Macquarie Street is narrowed to allow the bicycle lane to extend to the hold line.

CAMPBELL ST - ARGYLE ST BICYCLE LANES
STAGE 3
BRISBANE ST TO DAVEY ST

CITY PLANNING DIVISION
CITY MOBILITY UNIT

DRAWING LIST:		
NO.	SHEET TITLE	REVISION
001	COVER SHEET	A
201	EXTENT OF WORKS	A
SK1	CAMPBELL ST - BRISBANE ST TO MELVILLE ST	A
SK2	CAMPBELL ST - MELVILLE ST TO BATHURST ST	A
SK3	CAMPBELL ST - BATHURST ST TO LIVERPOOL ST	A
SK4	CAMPBELL ST - LIVERPOOL ST TO COLLINS ST	A
SK5	CAMPBELL ST - COLLINS ST TO MACQUARIE ST	A
SK6	CAMPBELL ST - MACQUARIE ST TO DAVEY ST	A
SK7	ARGYLE ST - DAVEY ST TO MACQUARIE ST	A
SK8	ARGYLE ST - MACQUARIE ST - COLLINS ST	A
SK9	ARGYLE ST - COLLINS ST TO LIVERPOOL ST	A
SK10	ARGYLE ST - LIVERPOOL ST TO BATHURST ST	A
SK11	ARGYLE ST - BATHURST ST TO MELVILLE ST	A
SK12	ARGYLE ST - MELVILLE ST TO BRISBANE ST	A
SK13	BATHURST ST - ARGYLE ST TO CAMPBELL ST	A
SK14	LIVERPOOL ST - CAMPBELL ST TO ARGYLE ST	A

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DOCUMENT APPROVED

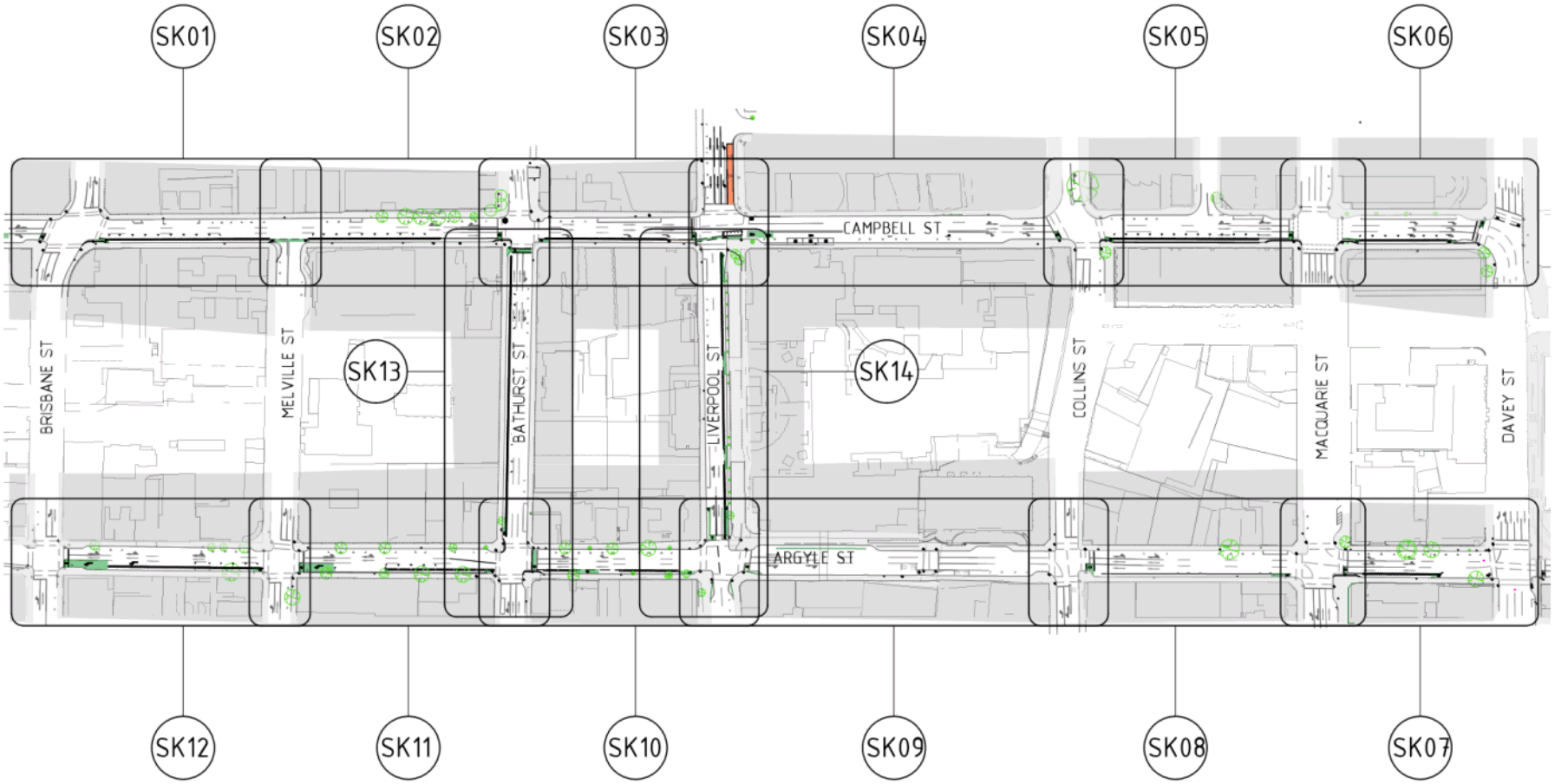
PROJECT NUMBER
15-0130

DATE
18/02/21

SHEET NUMBER
001

Project Services

CONCEPT



CONCEPT NOTES:

1. ALL SW PIT GRATES IN THE CONSTRUCTION ZONE (NEW & EXISTING) TO BE BICYCLE SAFE
2. KERB BULBING REALIGNMENTS AND TRAFFIC LIGHT POLE RELOCATION ARE SUBJECT TO CONFIRMATION BASED ON UNDERGROUND SERVICES LOCATION

REV	DESCRIPTION	DATE
A	CONCEPT	10/02/21

CONCEPT

City of HOBART

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: EXTENT OF WORKS
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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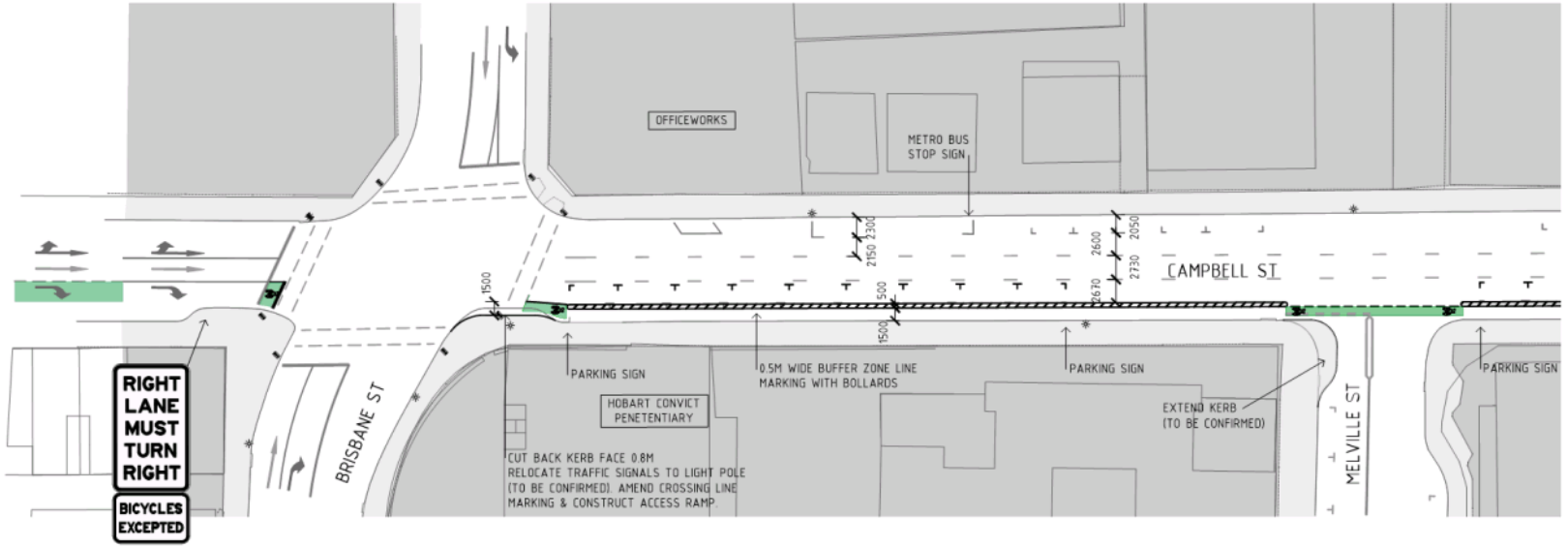

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REV	DESCRIPTION	DATE
A	CONCEPT	10/02/21

CONCEPT

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - BRISBANE ST TO MELVILLE ST - CONCEPT
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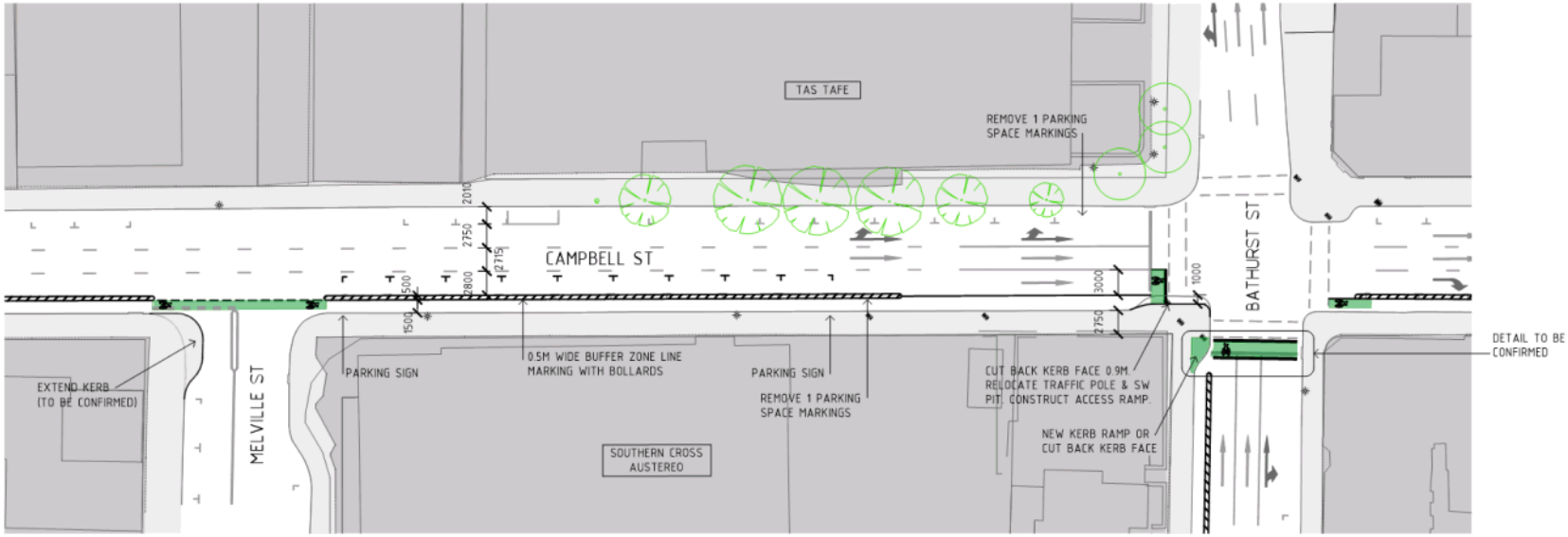

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - MELVILLE ST TO BATHURST ST - CONCEPT
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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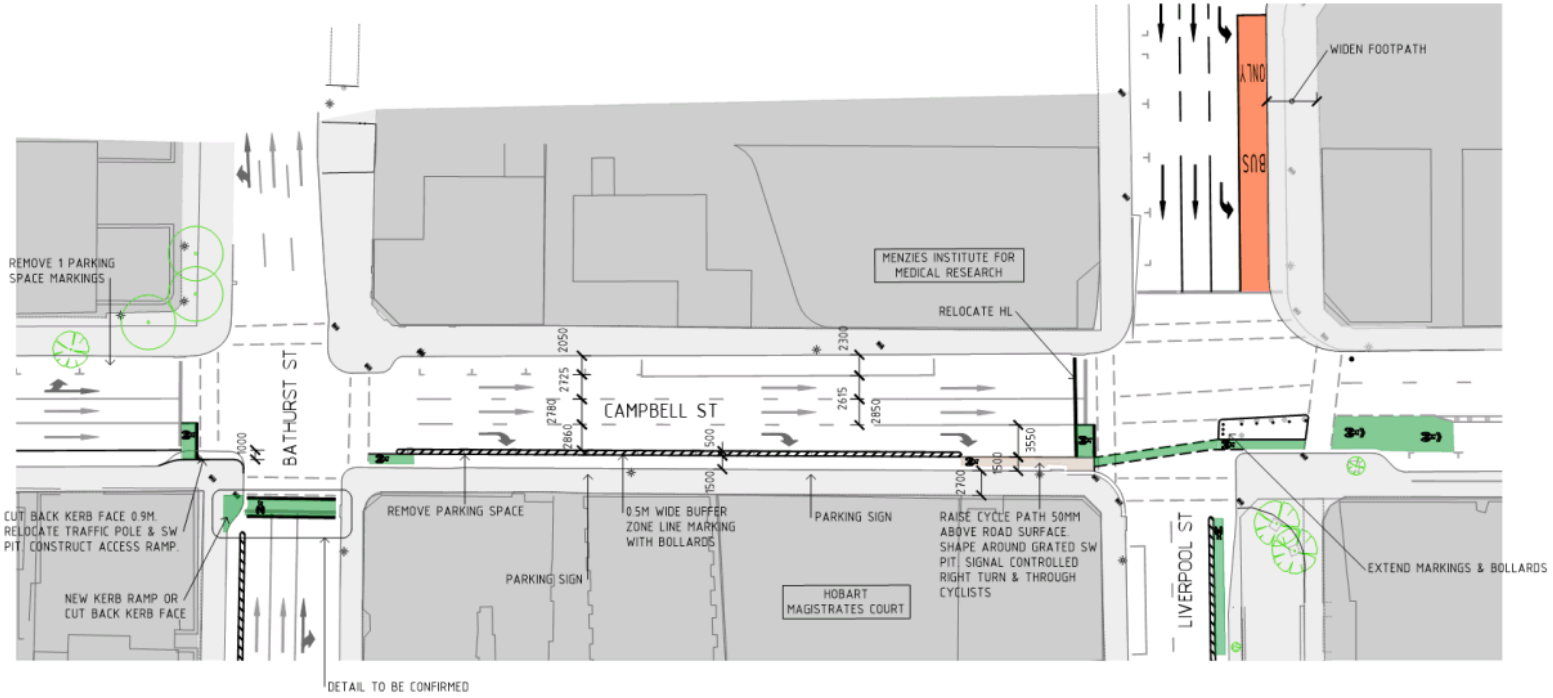

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: CAMPBELL ST - BATHURST ST TO LIVERPOOL ST - CONCEPT

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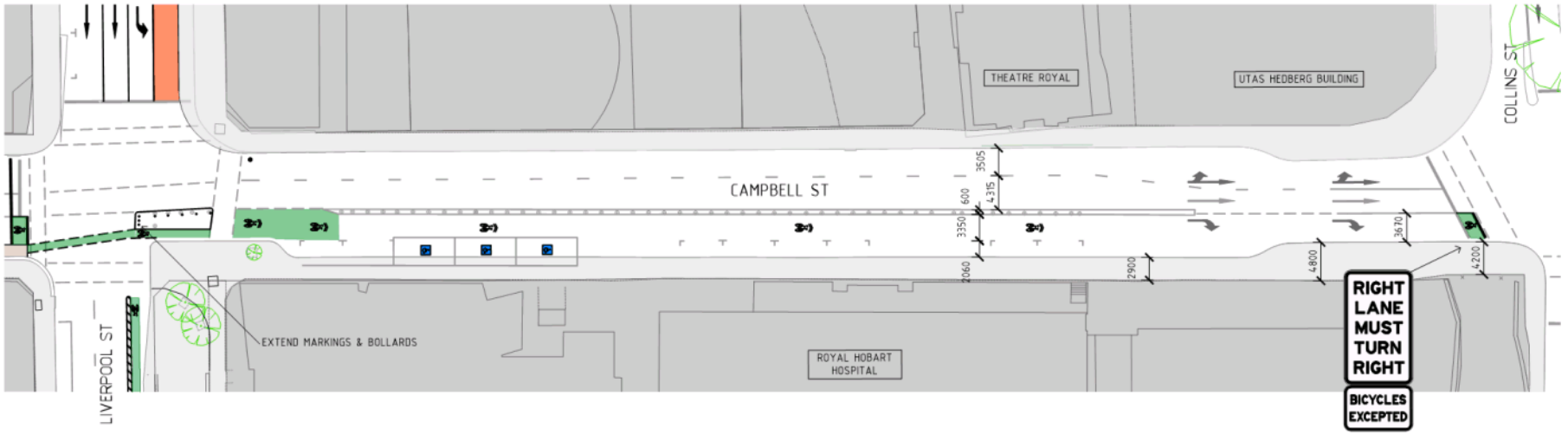

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
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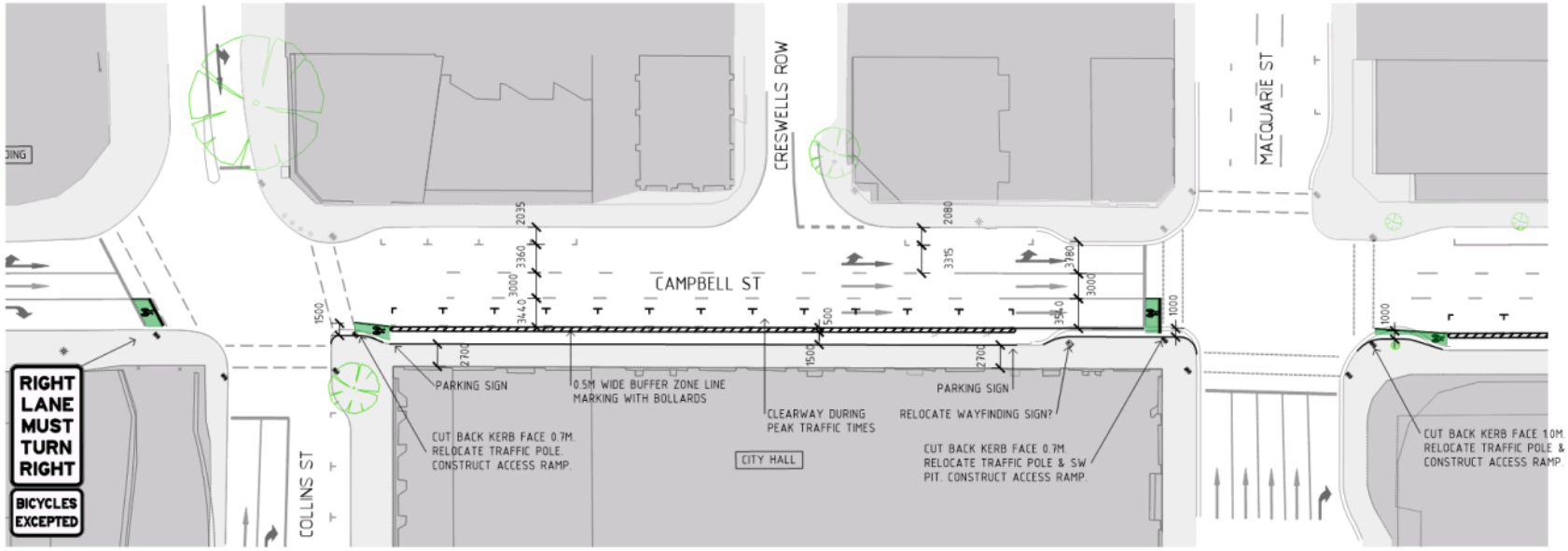

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - COLLINS ST TO MACQUARIE ST - CONCEPT
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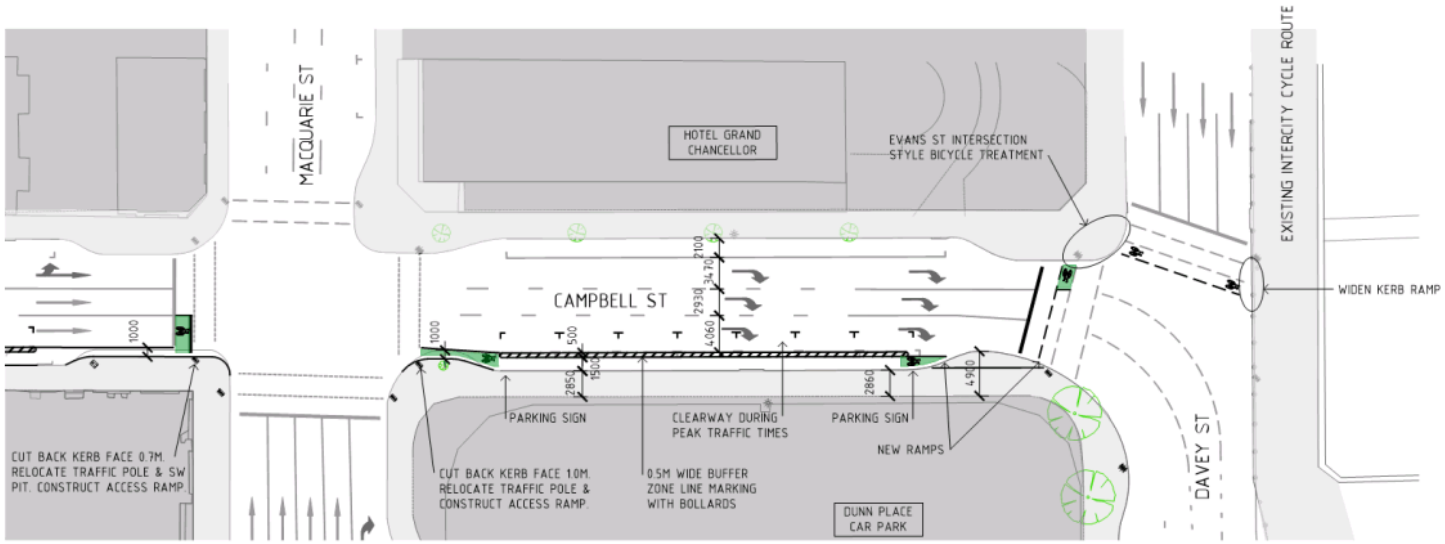

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - MACQUARIE ST TO DAVEY ST - CONCEPT
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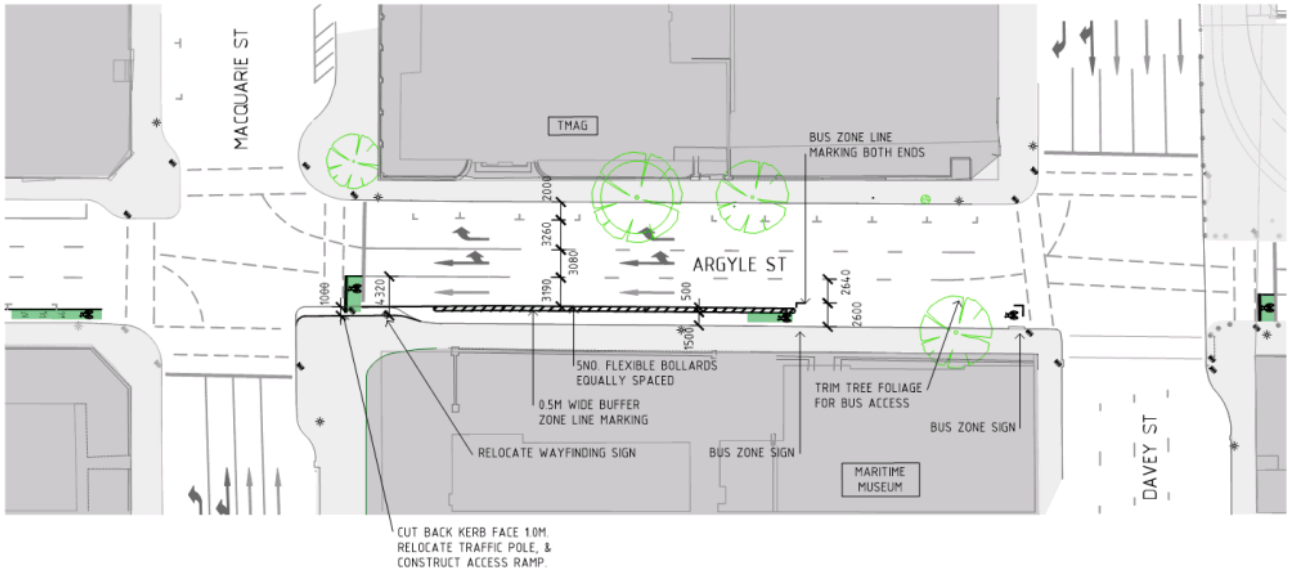

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - MACQUARIE ST TO DAVEY ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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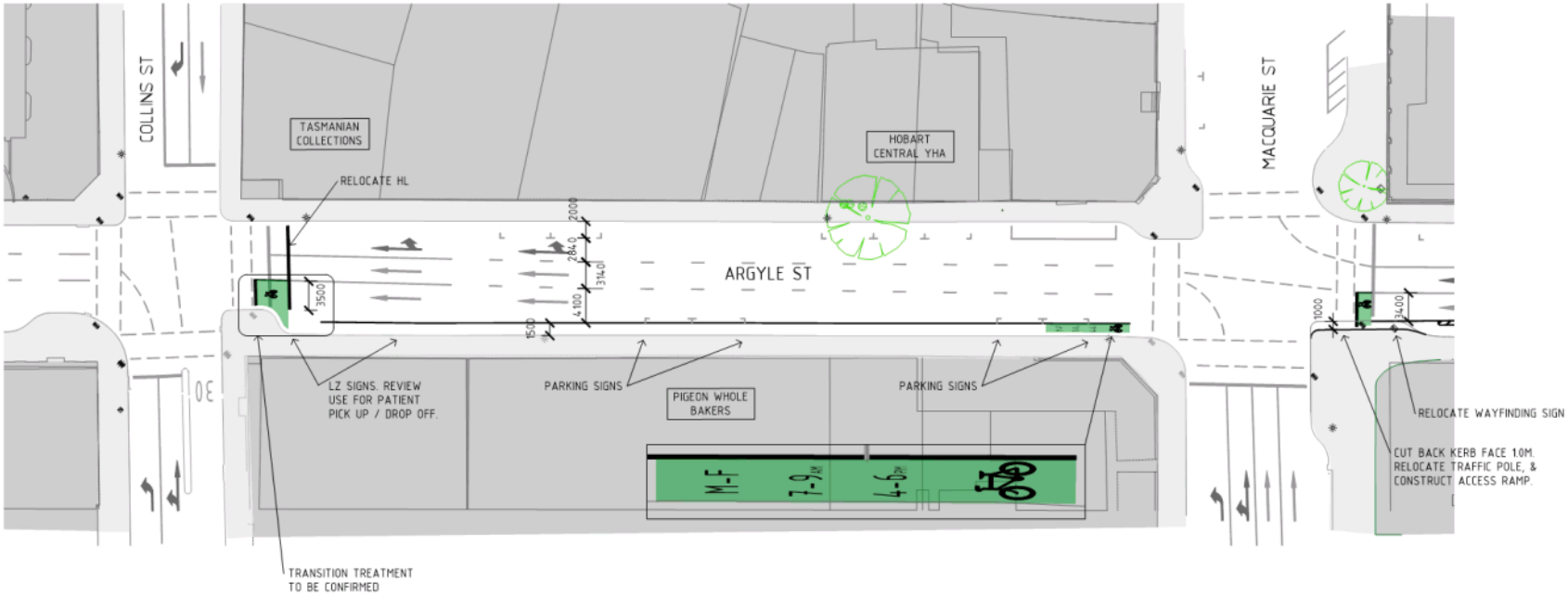

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

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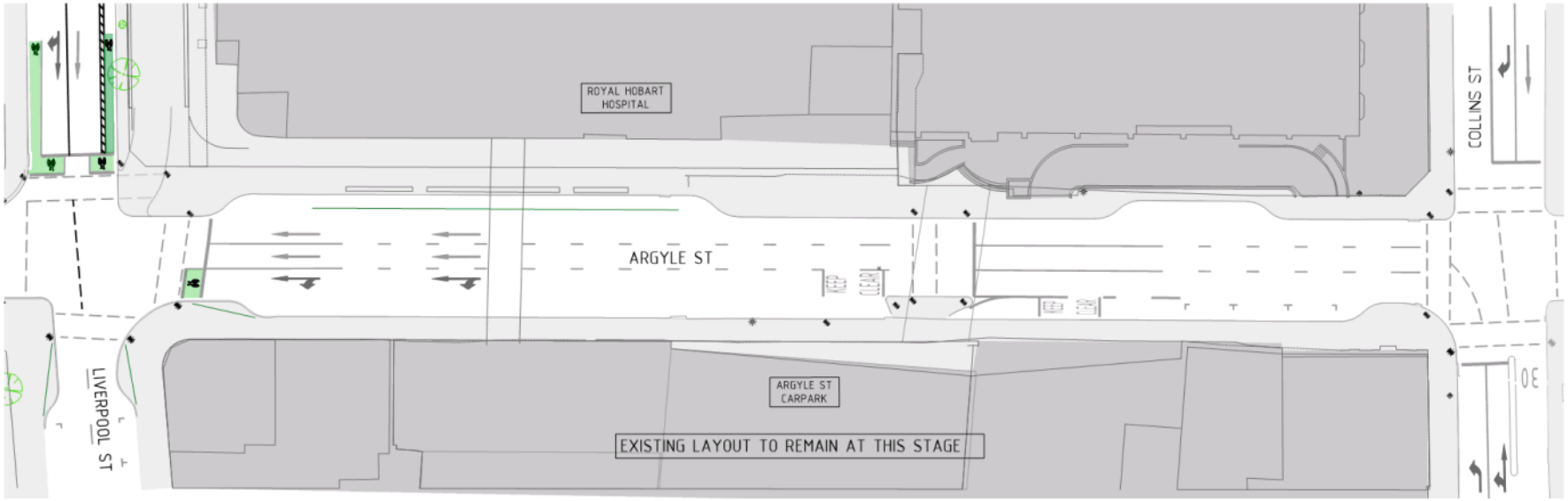

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

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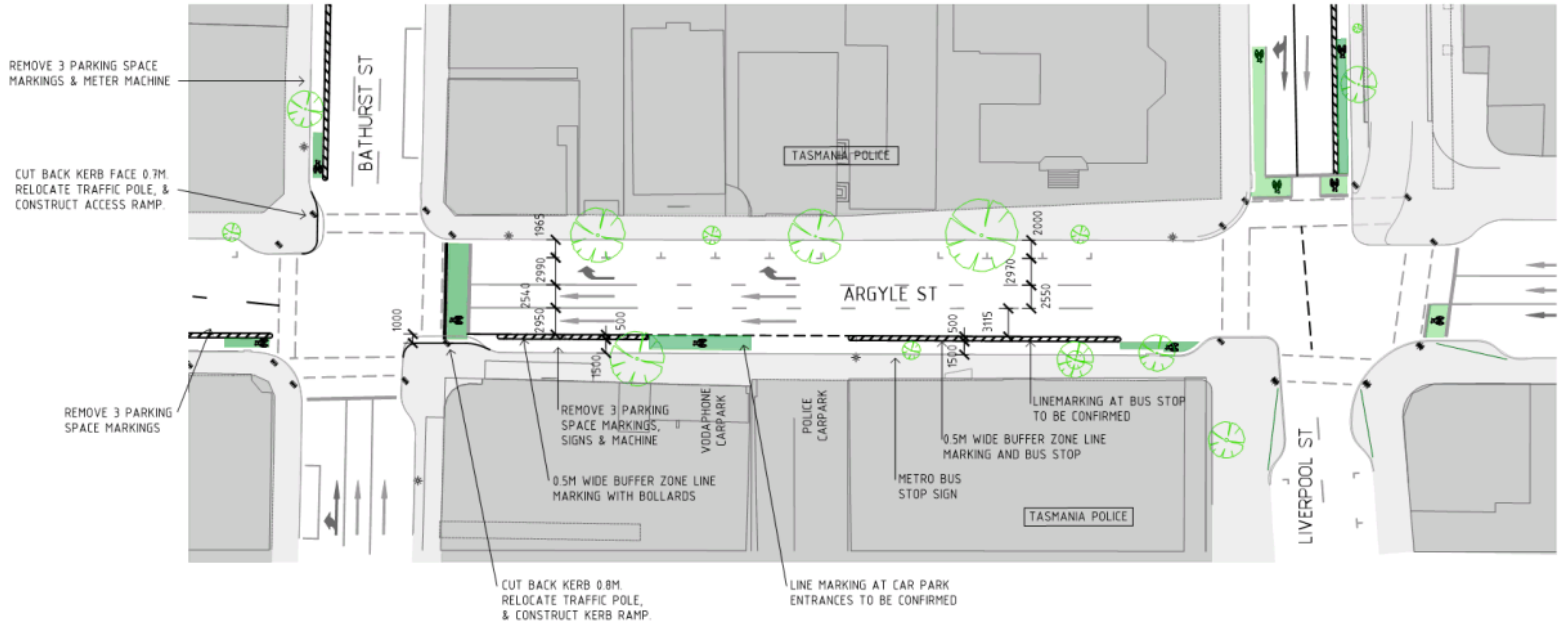

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - BATHURST ST TO LIVERPOOL ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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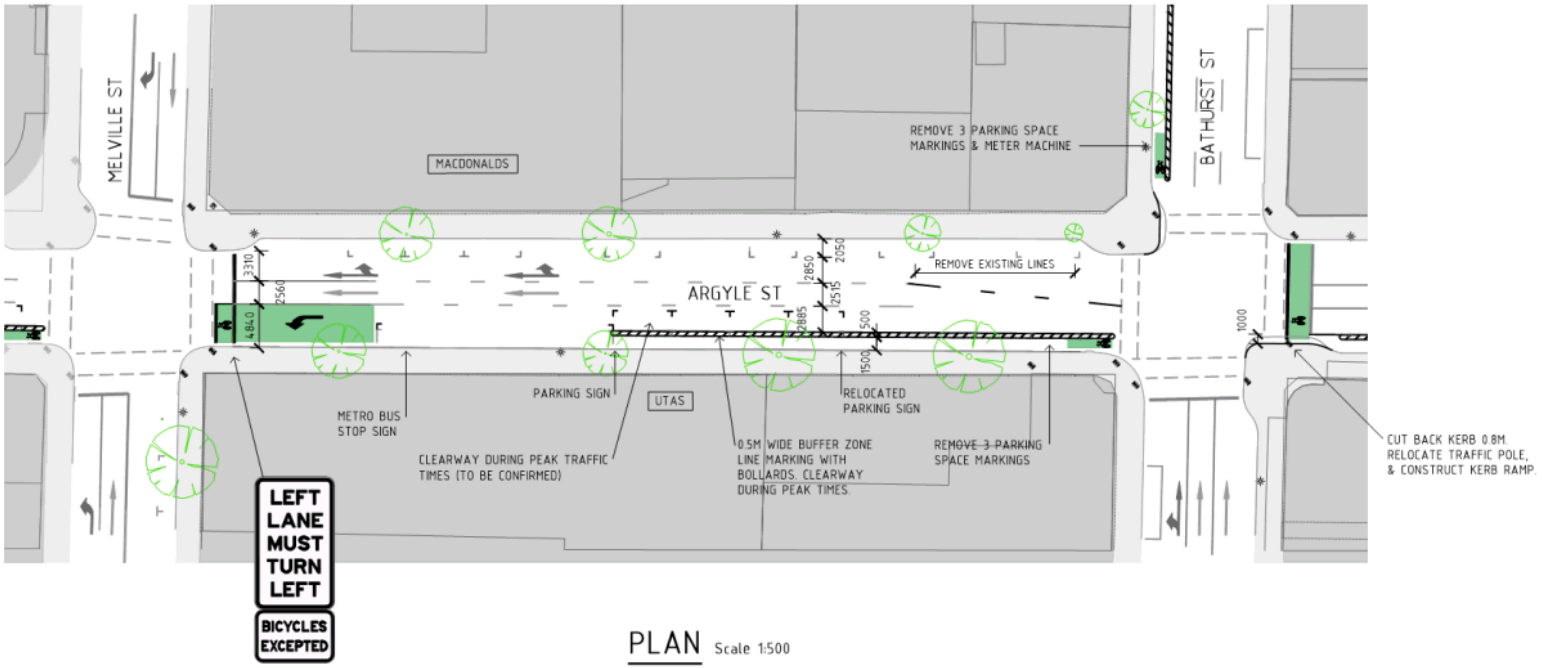

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - MELVILLE ST TO BATHURST ST - CONCEPT

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
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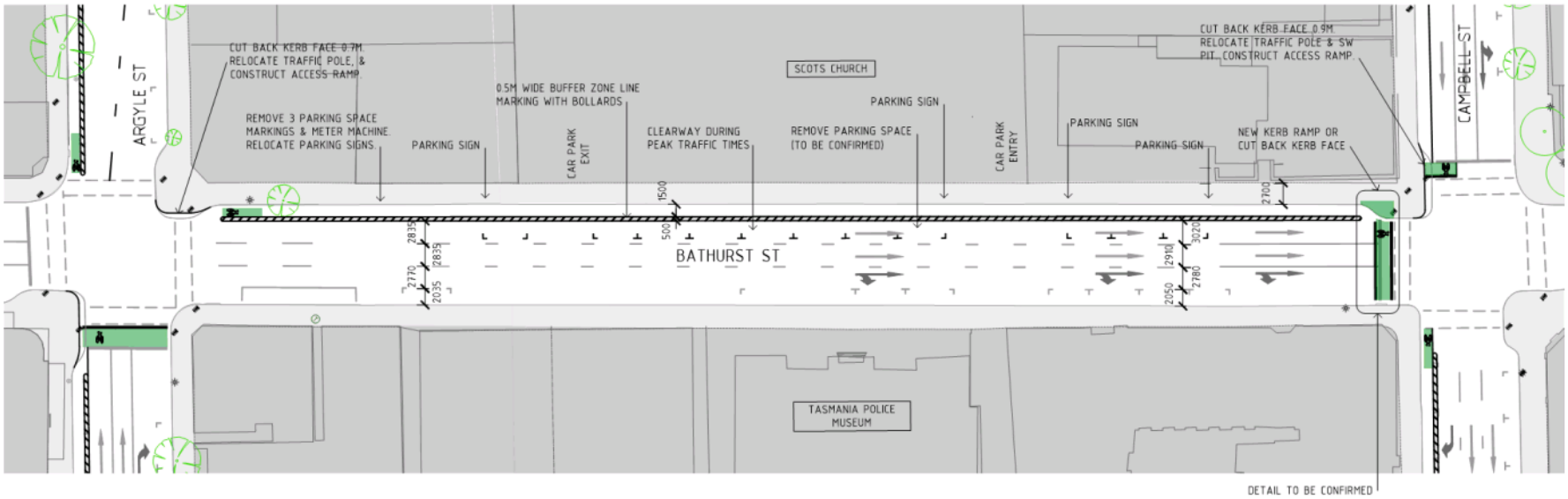

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

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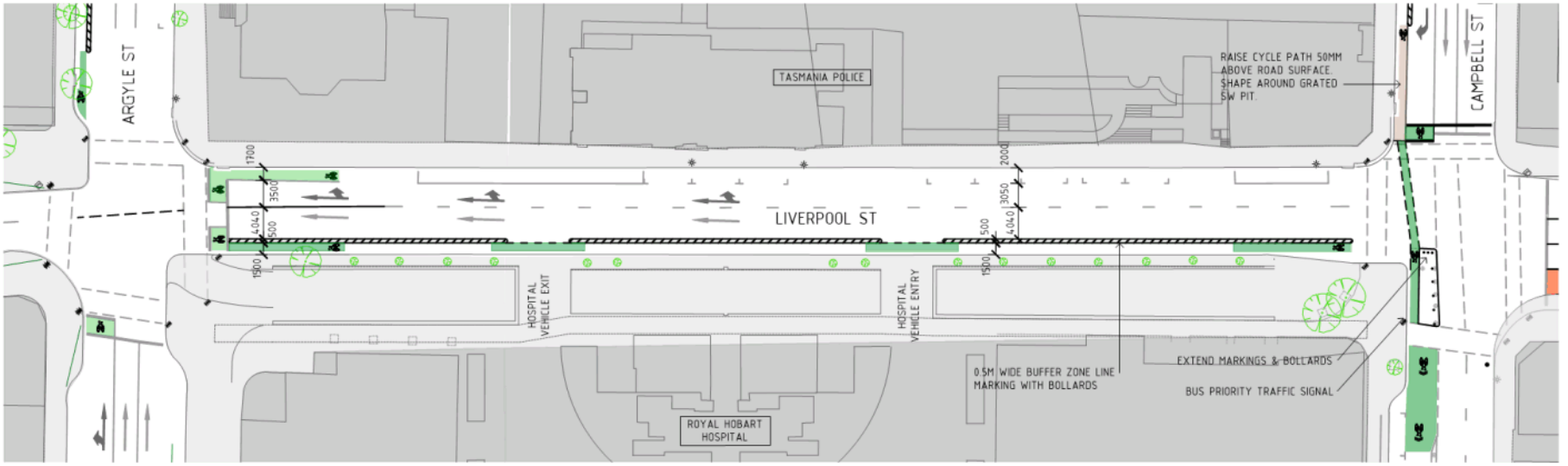

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: LIVERPOOL ST - ARGYLE ST TO CAMPBELL ST - CONCEPT

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REVISION: A

City of Hobart

Trial of protected bicycle facilities and Metro bus 'super stop'

Project Cost Estimate Report

February 2021

Executive summary

The purpose of this report is to provide the background information, decisions and data which influenced the Concept Design Construction Cost Estimate.

Campbell Street and Argyle Street are one-way streets within the Hobart CBD which form a couplet and have historically catered predominantly to light vehicle traffic. Following the changes to Campbell Street during and upon completion of the Royal Hobart Hospital (RHH) K Block construction, the City of Hobart is considering the potential future use of the third lane on Campbell Street and more broadly, Argyle Street as well as Liverpool Street and Bathurst Street, with an aim of utilising this space for a purpose other than providing more capacity for cars.

The City of Hobart has spent considerable effort building and updating the bicycle network within the Hobart CBD. The completion of works at the RHH and underutilised lanes within the network provide an opportunity to further extend the bicycle network through making use of reinstated and underutilised road space. The proposed changes to the use of road space include:

- Provision of bicycle lanes.
- Service lane for hospital drop off and pick up.
- A bus 'super stop' for Liverpool Street.

The initial concept design for bicycle facilities on Argyle Street, Campbell Street, Liverpool Street and Bathurst Street, including sections of separated cycleways was presented in the Open City Infrastructure Committee meeting on 11 December 2019.

The estimate has been developed based on Evans and Peck Best Practice Cost Estimation Standard for Publicly Funded Road and Rail Construction, May 2011 using Palisade @Risk version 8.0 software.

The Concept Design Construction Cost Estimate is summarised below.

Base Estimate	$633,205
P50	$1,379,205
P50 Contingency Percentage	118%
P90	$1,725,205
P90 Contingency Percentage	172%

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.3 and the assumptions and qualifications contained throughout the Report.

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Table index

Figure index

Appendices

1. Introduction

1.1 Project background

During the reconstruction of the Royal Hobart Hospital (2016 – 2019), the traffic carrying capacity of Campbell Street was reduced from three lanes to two lanes between Liverpool Street and Collins Street. The third lane was used as an access lane to support construction activities and was not available to general traffic. At the completion of works the City of Hobart is trialling the use of the third lane as a 'shared use' hospital service lane rather than returning it to use as a general traffic lane. The City of Hobart is also considering the use of road space on surrounding midblocks of Campbell Street, Argyle Street, Liverpool Street and Bathurst Street with the intention to efficiently use road space and adequately provide for transport modes.

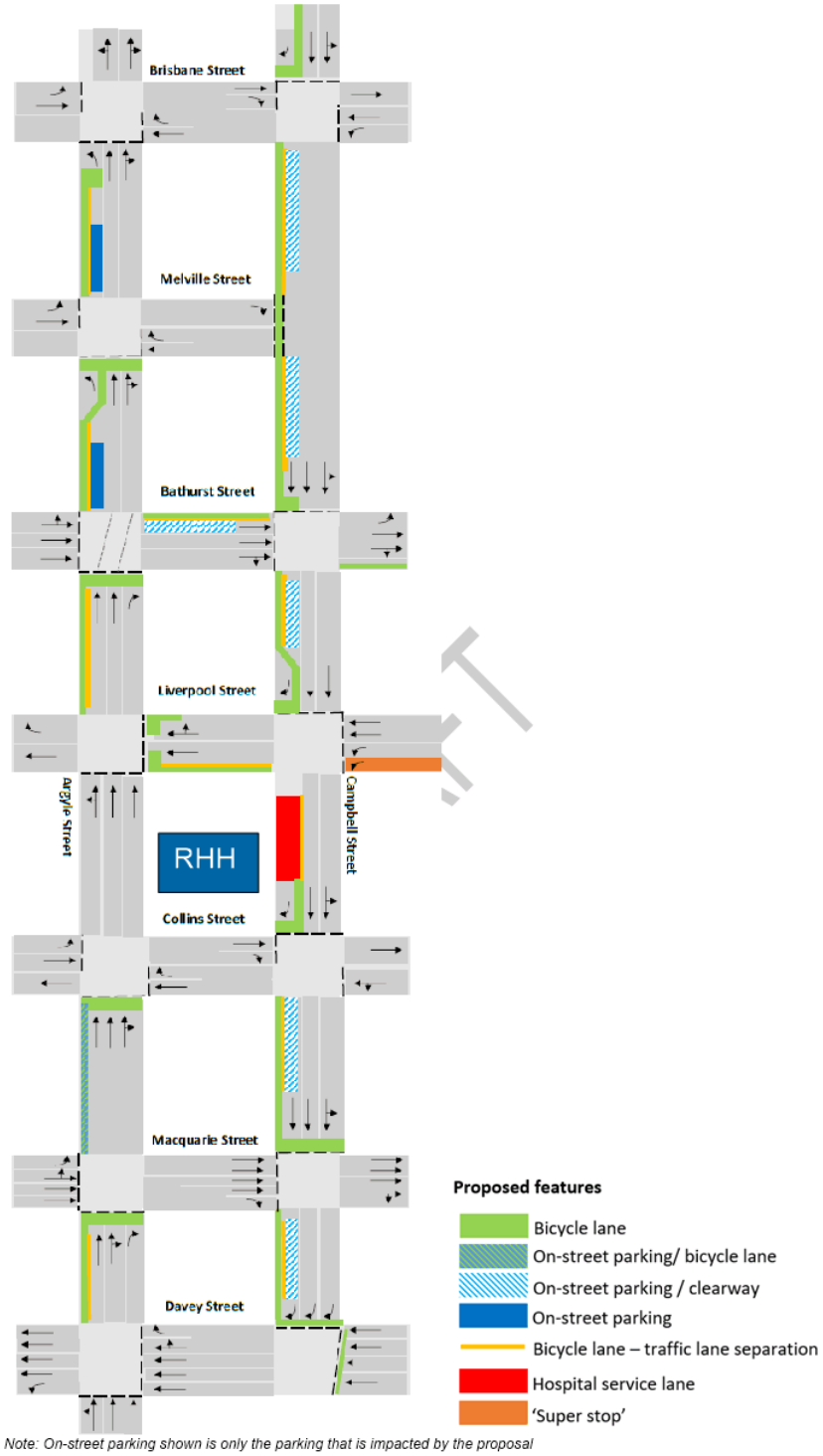
The City of Hobart has spent considerable effort building and updating the bicycle network within the Hobart CBD. The completion of works at the Royal Hobart Hospital and underutilised lanes within the network provide an opportunity to further extend the bicycle network through making use of reinstated and underutilised road space. The proposed changes to the use of road space include:

- Provision of bicycle lanes.
- Service lane for hospital drop off and pick up.
- A bus 'super stop' for Liverpool Street.

The initial concept design for bicycle facilities on Argyle Street, Campbell Street, Liverpool Street and Bathurst Street including sections of separated cycleways was presented in the Open City Infrastructure Committee meeting on 11 December 2019. The concept sketches utilised for the Cost Estimate are included in Appendix B.

An overview diagram is provided in *Note: On-street parking shown is only the parking that is impacted by the proposal*

Figure 1 showing the approved trial arrangements.



Note: On-street parking shown is only the parking that is impacted by the proposal

Figure 1 Trial arrangement

1.2 Purpose of this report

The purpose of this report is to provide the background information, decisions and data which influenced the Concept Design Construction Cost Estimate.

1.3 Scope and limitations

This report has been prepared by GHD for the City of Hobart and may only be used and relied on by the City of Hobart for the purpose agreed between GHD and the City of Hobart as set out in Section 1 of this report.

GHD otherwise disclaims responsibility to any person other than the City of Hobart arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by the City of Hobart and others who provided information to GHD (including Government Authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD has prepared the concept design cost estimate set out in Section 4 of this report ("Cost Estimate") using information reasonably available to the GHD employee(s) who prepared this report; and based on assumptions and judgments made by GHD including but not limited to escalation rate; quantities; rates; risks and construction methodology.

The Cost Estimate has been prepared for the purpose of providing the background information, decisions and data which influenced the Cost Estimate and must not be used for any other purpose.

The Cost Estimate is a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the Cost Estimate and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the project can or will be undertaken at a cost which is the same or less than the Cost Estimate.

Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.

1.4 Assumptions

1.4.1 Timeframe

It is anticipated that the implementation of the trial will occur site by site over a continuous period comprising an overall period of less than 16 weeks.

Due to the nature of the work and the requirement for the roadways to remain operational during construction, most works will be completed at night and the estimate has assumed this for traffic management costs.

1.4.2 Rates

Rates are expected to be representative of the size and type of project being undertaken and that market conditions at the time of tendering will be comparable to those prevailing when historical tendered rates were obtained.

2. Source Information

2.1 Quantities

Quantities have been derived from the concept design drawings. included in Appendix B.

2.2 Source of Rates

Rates are based on experience of historical data and industry experience in Tasmania at this point in time.

Additional rates have been provided by City of Hobart from recent projects And we have relied on City of Hobart's understanding of these projects to confirm that they are representative of the size and type of project being undertaken.

Caution is necessary when using historical data as no project is exactly the same, the full background and scope of historical projects are in most cases not fully known by the Estimator and historical Contractor's rates include perceived risk which may or may not be present in the current project. Rates also tend to be weighted so that activities undertaken first are higher than what it actually costs the Contractor so that a positive cash flow is generated at the start of a project.

No rise/fall is expected.

2.3 Lead Time Escalation

In 2013, BIS Shrapnel was engaged by the Department of Infrastructure and Regional Development to update and extend a suite of state and territory jurisdiction composite road construction indices, with forecasts, for standard road projects from which escalation rates can be derived.

The outcome from the escalation analysis was published in *Forecasts from Road Construction Cost Escalation Forecast to 2023 - Escalation, December 2013 Update* (BIS Shrapnel Pty Limited). An extract is shown in Table 1.

Table 1 Tasmanian Escalation Forecast (BIS Shrapnel)

BISS Updated Actuals and Forecasts for Tasmania																	
	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23
Road Construction Outturn Cost Index (RCOCI) - TAS (BISS)	0.0%	6.9%	9.6%	1.3%	1.3%	6.7%	1.5%	1.3%	-2.1%	-3.8%	1.1%	5.0%	2.2%	3.3%	3.0%	2.6%	3.0%

Source: BIS Shrapnel, ABS Data, Aquenta,AIP, CRU, LME

Based on the BIS Shrapnel report, escalation has been forecast up to 2037. The calculation is included in Figure 2 and Table 2. Escalated project total outturn costs for any given year are included in the cost estimate.

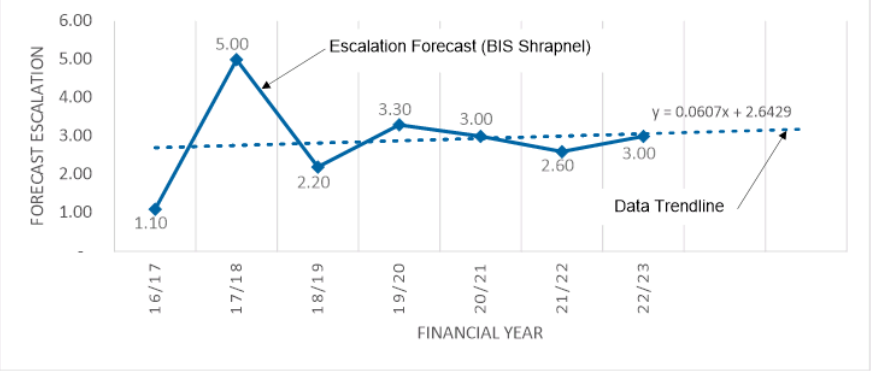


Figure 2 BIS Shrapnel Forecasting Trendline

Table 2 Tasmanian Escalation Forecast (GHD)

Year	Forecast Escalation	Year	Forecast Escalation
20/21	3.00%	29/30	3.49%
21/22	2.60%	30/31	3.55%
22/23	3.00%	31/32	3.61%
23/24	3.13%	32/33	3.68%
24/25	3.19%	33/34	3.74%
25/26	3.25%	34/35	3.80%
26/27	3.31%	35/36	3.86%
27/28	3.37%	36/37	3.92%
28/29	3.43%		

If all or part of the project is not constructed within the 2021 calendar year, components not yet undertaken may be subject to escalation and should be taken into account when determining forward project budgeting.

2.4 Client Costs

Client costs such as costs incurred to date, staff time, application and permit fees, advertising etc. are not included.

2.5 Risk

Risks have been identified by means of:

- Review of Appendix 10 of Evans and Peck Best Practice Cost Estimation Standard for Publicly Funded Road and Rail Construction - May 2011. This register has been updated regularly during the various design phases.
- Exclusions noted in the previous Schedule of Rates tenders

Only risks that have been deemed to have a significant impact on the project cost has been included in the estimate. Smaller risks have been accommodated in the contingent risk item "Unidentified Risks".

3. Methodology

The estimate has been developed based on Evans and Peck Best Practice Cost Estimation Standard for Publicly Funded Road and Rail Construction, May 2011.

For a detailed explanation on methodology of stochastic estimates developed by GHD and how the information is presented, refer to Appendix A.

4. Estimate

The details of the current Total Cost Estimate is provided in Appendix C.

The Total Cost Estimates are summarised in Table 3.

Table 3 Cost Estimates

	All Projects Combined	Campbell St	Argyle St	Liverpool & Bathurst St
Base Estimate	633,205	301,780	186,730	144,695
P50	1,379,205	619,780	452,730	292,695
P50 Contingency Percentage	118%	105%	142%	102%
P90	1,725,205	811,780	618,730	378,695
P90 Contingency Percentage	172%	169%	231%	162%

Appendix C provides the calculations and presentation of the cost estimate in the following order:

- Schedule of Rates
- Summary
- Contingent Risk Costs
- @Risk Reports
  - Construction
  - Risk

4.1 Comments on Estimate

The contingency exceeds those specified in the Guidelines for a project at concept stage. This is due to contingent risks relating to unknown COVID-19 impacts, underground services and the possibility that political support is withdrawn during construction and the financial impacts such a decision would involve.

To reduce the contingency, greater clarity needs to be obtained around these and other noted risks.

In Table 3, only the sum of the base estimate for the individual sites equals the base estimate for all projects combined. This is due to the nature of the Monte-Carlo simulation – separate scenarios will differ to one combined scenario.

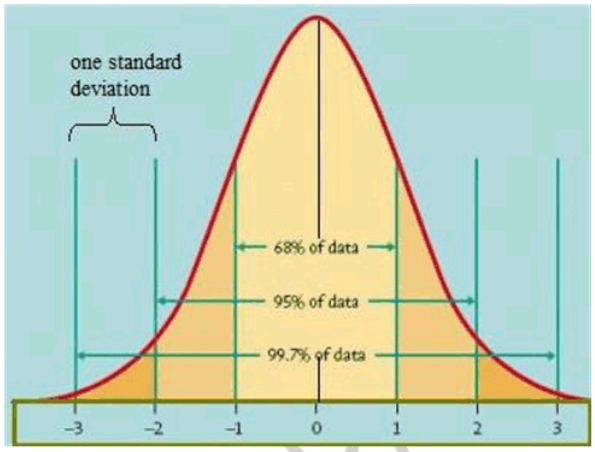
Appendices

Appendix A – Stochastic Estimating Methodology

Statistical Definitions

Normal Distribution

A normal distribution, sometimes called the bell curve, is a distribution that occurs naturally in many situations. A bell curve has a small percentage of the points on both tails and the bigger percentage on the inner part of the curve. In the standard normal model, about 5 percent of your data would fall into the "tails" (coloured darker orange in the image below) and 90 percent will be in between. For example, for test scores of students, the normal distribution would show 2.5 percent of students getting very low scores and 2.5 percent getting very high scores. The rest will be in the middle; not too high or too low. The shape of the standard normal distribution looks like this:

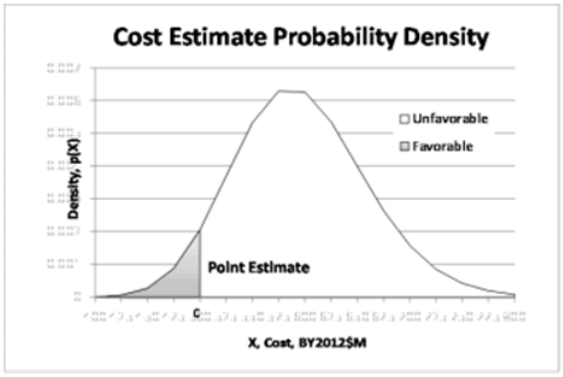


Standard Normal Distribution Model

Image credit: University of Virginia.

PERT Distribution

The PERT distribution produces a bell-shaped curve that is nearly normal. It has been extended to the maximum ("Upper" in the Cost Estimate) and minimum ("Min" in Cost Estimate) and given strict definitions for the mean and variance.



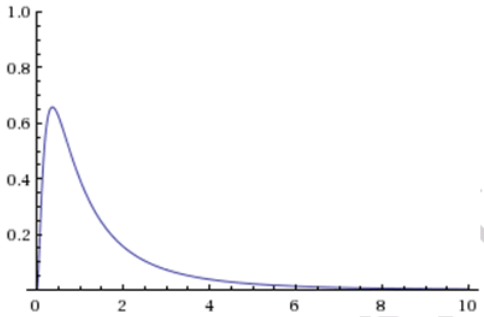
PERT Distribution Model

Image credit: NASA.

PERT distributions are used for "known" or bounded risks (inherent risk) such as quantities and rates where there is minor uncertainty on the final values. We know roughly what these should be and are confident that they will not exceed assumed bounds.

LogNormal Distribution

The lognormal distribution differs from the normal distribution in several ways. A major difference is in its shape. Where the normal distribution is symmetrical, a lognormal one is not. Because the values in a lognormal distribution are positive, they create a right skewed curve.



LogNormal Distribution Model

LogNormal distributions are used for unknown or unquantifiable risks (contingent risk). These are risks that if they occur, it is difficult to ascertain their true value at the time of estimating and could exceed perceived upper limits. For example, when aboriginal heritage artefacts were discovered at the Jordan River bridge on the Brighton Bypass project, the outcome cost an additional $20M. This does not guarantee that contingent risks will identify and capture all risk costs (there is always the chance of a black swan - an event or occurrence that deviates beyond what is normally expected of a situation and is extremely difficult to predict).

"Alt" Distributions

The difference between each distribution and their respective "Alt" distributions is the attribution of "tails" to the probability distributions (usually the minimum and maximum are assumed to be a P10 and P90 respectively) tor the "Alt" distribution. For example, this means that with a PertAlt distribution, the model samples 10% above the "worst" case (which is actually a P90) and 10% below the "best" case (the P10) during the simulation, producing a wider range than when Pert distributions are used.

How Monte Carlo Simulation Works

Monte Carlo simulation performs risk analysis by building models of possible results by substituting a range of values—a probability distribution—for any factor that has inherent uncertainty. It then calculates results over and over, each time using a different set of random values from the probability functions. Depending upon the number of uncertainties and the ranges specified for them, a Monte Carlo simulation could involve thousands or tens of thousands of recalculations before it is complete. Monte Carlo simulation produces distributions of possible outcome values.

By using probability distributions, variables can have different probabilities of different outcomes occurring. Probability distributions are a much more realistic way of describing uncertainty in variables of a risk analysis.

Reading the Outputs

Histogram

The histogram is a plot of outcome for every iteration or calculation undertaken in a Monte Carlo simulation. This is used by the software to show the value of the P50 and P90 which is also shown on the graph.

Regression Tornado Graph

Tornado graphs provide a simple summary of the degree of influence each input variable has on the amount of uncertainty of an output. In a Tornado graph, input variables are ordered from top down according to the degree of influence they have. Put simply, big bars need more attention; small bars don't.

The main idea is that the longer the bar or the larger the coefficient, the greater the impact that particular input has on the output that you are analysing.

A graph with "regression coefficients" does not express them in terms of actual dollars or other units. Rather, they are scaled or "normalised" by the standard deviation of the output and the standard deviation of that input.

@Risk

Stochastic modelling was undertaken using Palisade @Risk version 8.0 software. The sections below describe the particular analysis undertaken.

Distributions

Two distributions were applied to items within the estimate.

- PertAlt was applied to inherent risks where uncertainty was within known bounds (i.e. quantities, rates, item costs)
- LogNormalAlt was applied to contingent risk severity (cost) values.

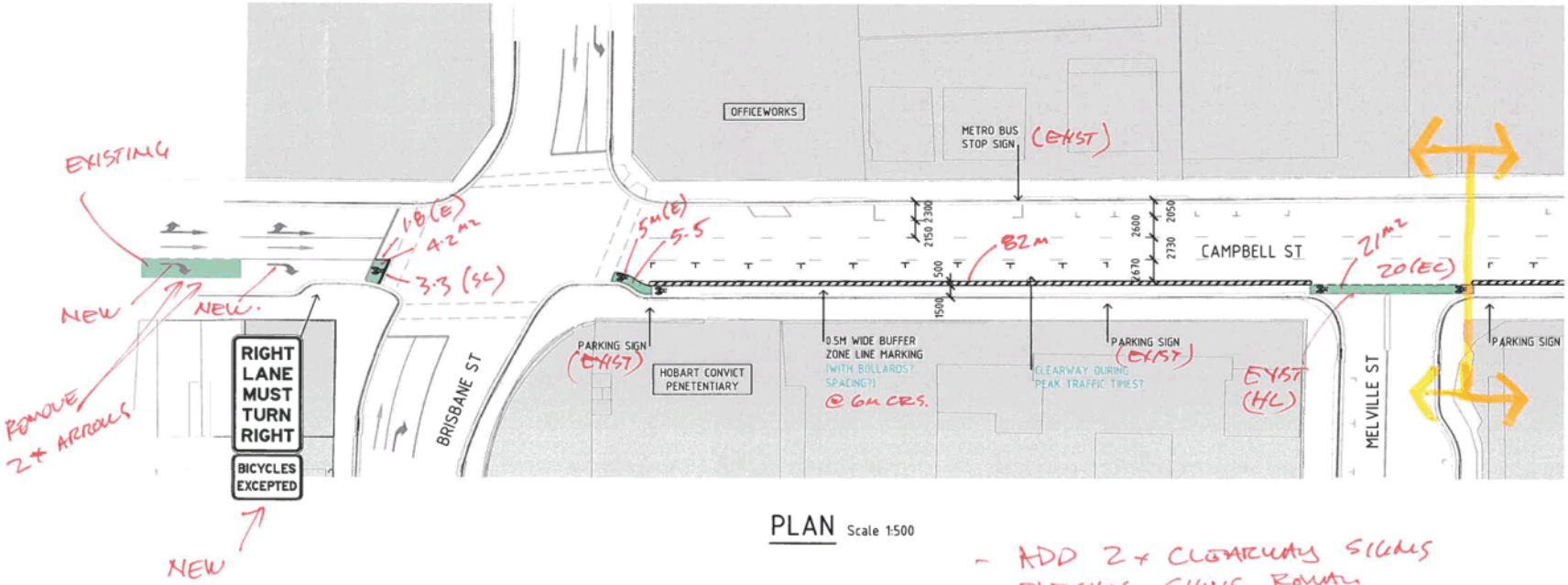
The value of each contingent risk item was calculated by a combination of the frequency of expected occurrence and the severity for each occurrence sampled.

Simulation Settings

The following simulation settings were set for calculation of the estimate:

Number of Iterations	10,000
Number of Simulations	1
Sampling Type	Latin Hypercube
Generator	Mersenne Twister
Initial Seed	Fixed @ 1

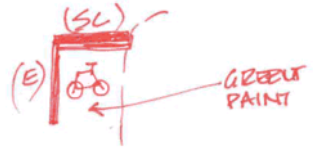
Appendix B – Relevant Drawings



PLAN Scale 1:500

- ADD 2 x CLEARWAY SIGNS
- PARKING SIGNS ROUND

ASSUMPTIONS



REV	DESCRIPTION	DATE
-	-	-
	CONCEPT 09/11/20	

City of HOBART
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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - BRISBANE ST TO MELVILLE ST - CONCEPT
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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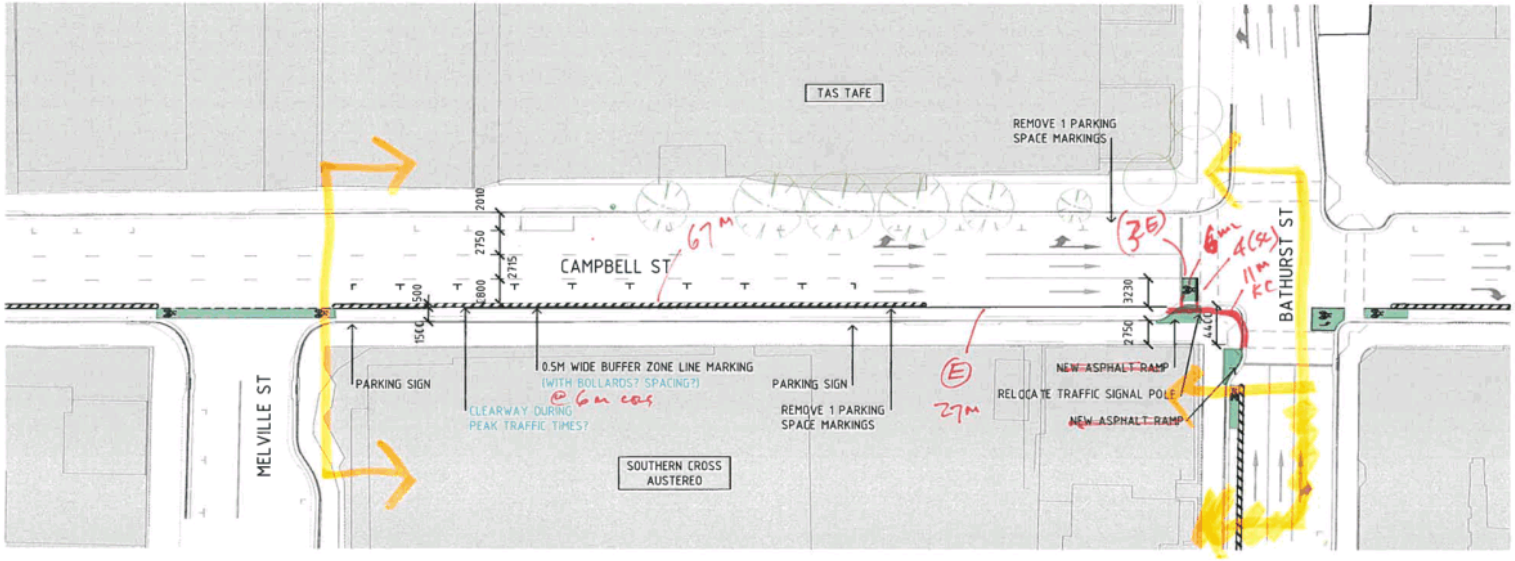

PLAN Scale 1:500

- NEW GRATED PIT
- RELOCATE 1 x TRAFFIC SIGNAL
- ALL DIRECTION ARROWS EXISTING
- NEW KERB OUTSTAND i.e. NO RAMP.
- PARKING SIGNS REMAIN.
- ADD 2 x CLEARWAY SIGNS
- KERB CUT – NEW KERB

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - MELVILLE ST TO BATHURST ST - CONCEPT
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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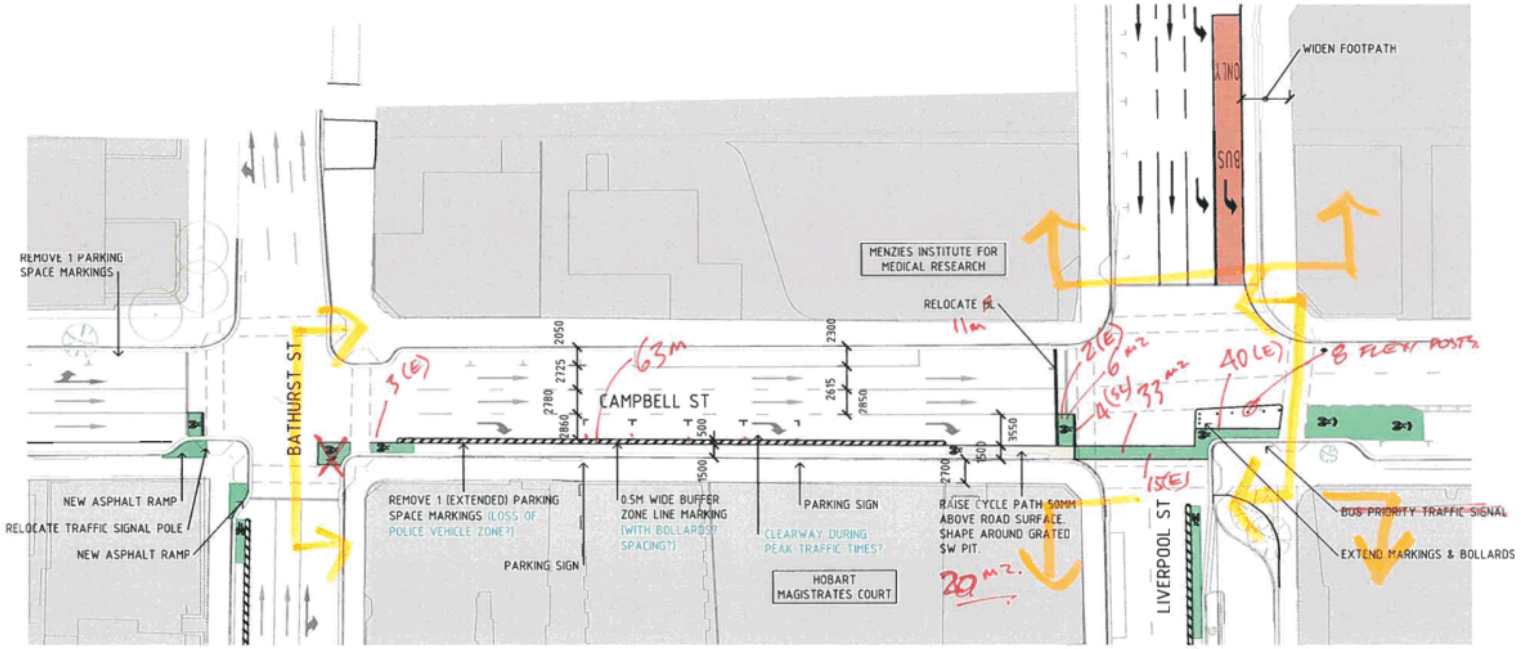

PLAN Scale 1:500

- ASSUME 6m CRS FLEXI-POSTS FOR ~~EXISTING~~ LENGTH BUFFER ZONE. PARKING BAYS
- ADD 2x CLEARWAY SIGNS

REV	DESCRIPTION	DATE
-	-	-
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PROJECT DESCRIPTION	ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE	CAMPBELL ST - BATHURST ST TO LIVERPOOL ST - CONCEPT
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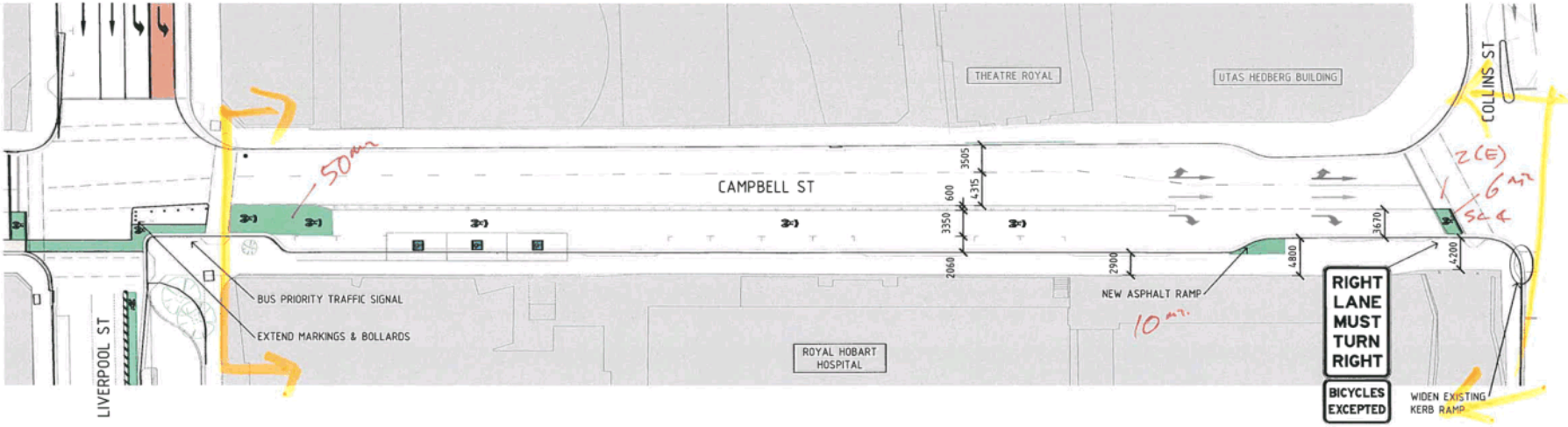

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: CAMPBELL ST - LIVERPOOL ST TO COLLINS ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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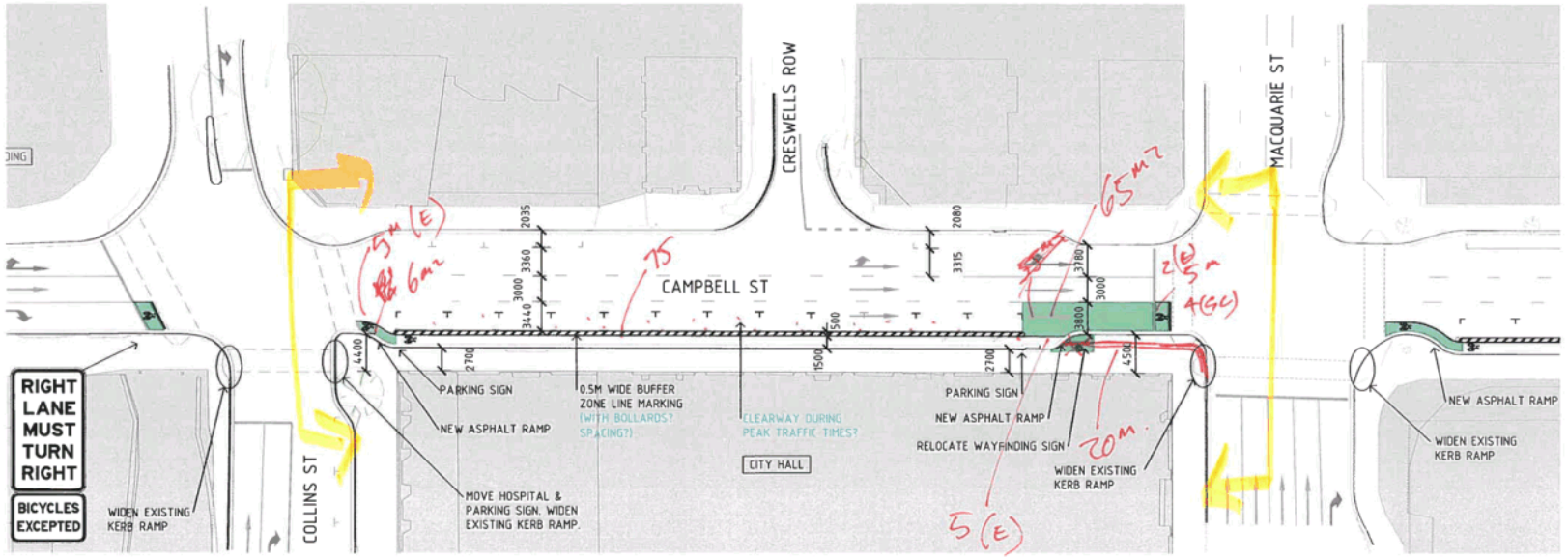

PLAN Scale 1:500

- ADD 2x CLEARWAY SIGNS
- KERB CUT BACK
- 1x SIGNALS.
- 2x CLEARWAY SIGNS

REV	DESCRIPTION	DATE
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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: CAMPBELL ST - COLLINS ST TO MACQUARIE ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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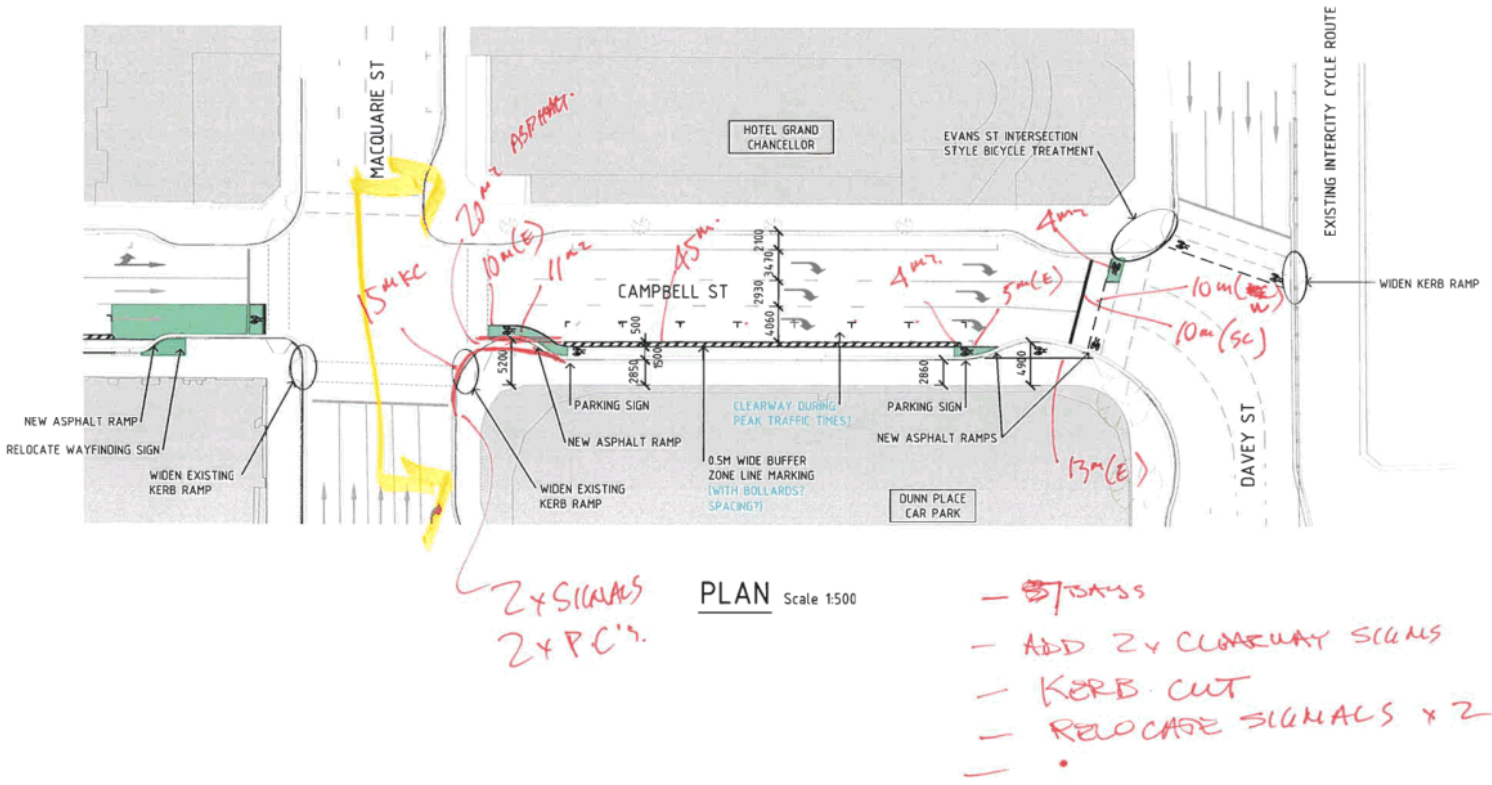

PLAN Scale 1:500

- ~~5~~ 7 SIGNS
- ADD 2 x CLOSEWAY SIGNS
- KERB CUT
- RELOCATE SIGNALS x 2
-

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: CAMPBELL ST - MACQUARIE ST TO DAVEY ST - CONCEPT
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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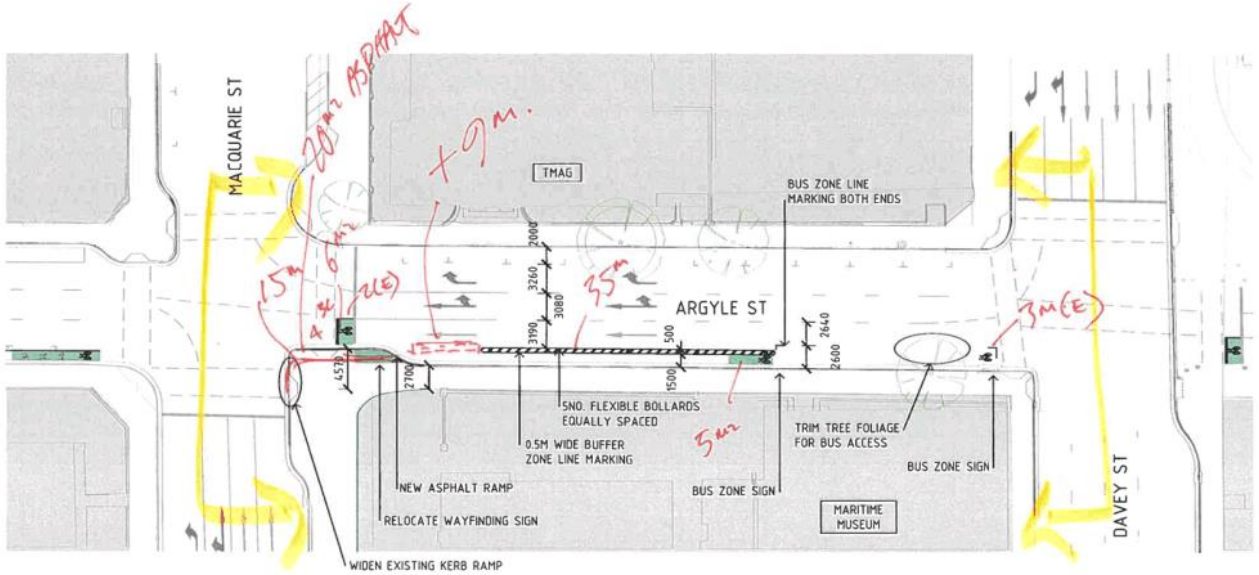

PLAN Scale 1:500

- KERB CUT
- MOVE 1x SIGNALS

REV	DESCRIPTION	DATE
-	-	-

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - MACQUARIE ST TO DAVEY ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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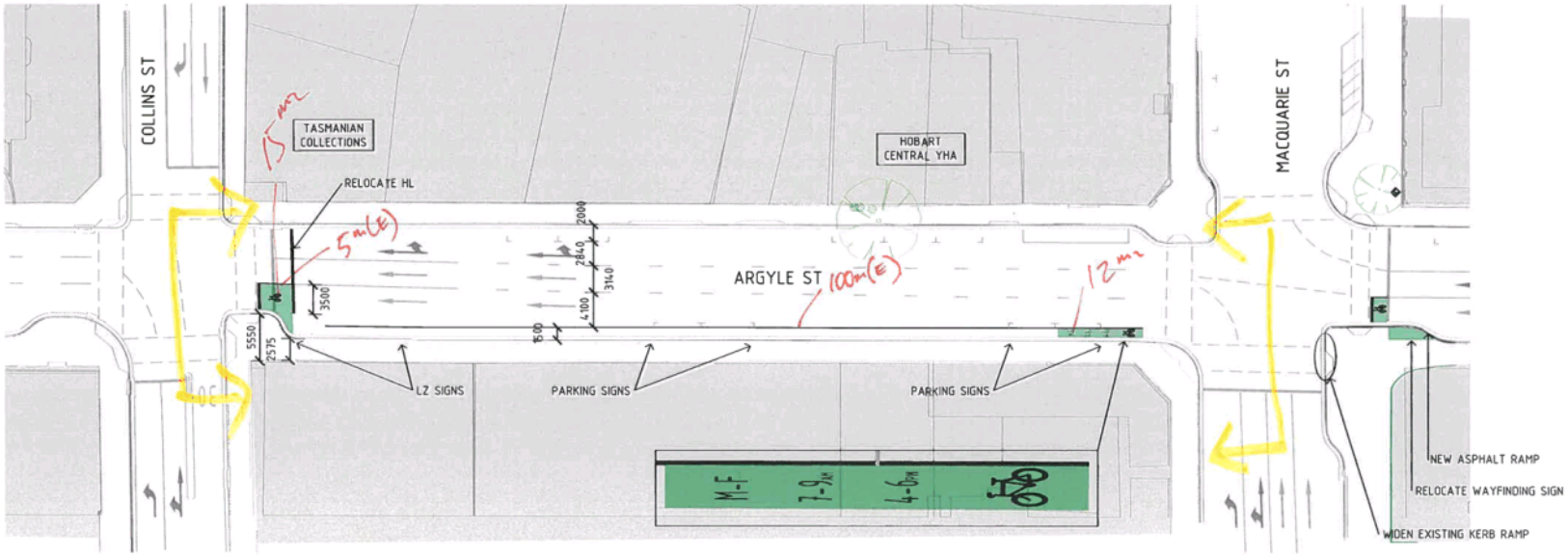

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REV	DESCRIPTION	DATE
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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - COLLINS ST TO MACQUARIE ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

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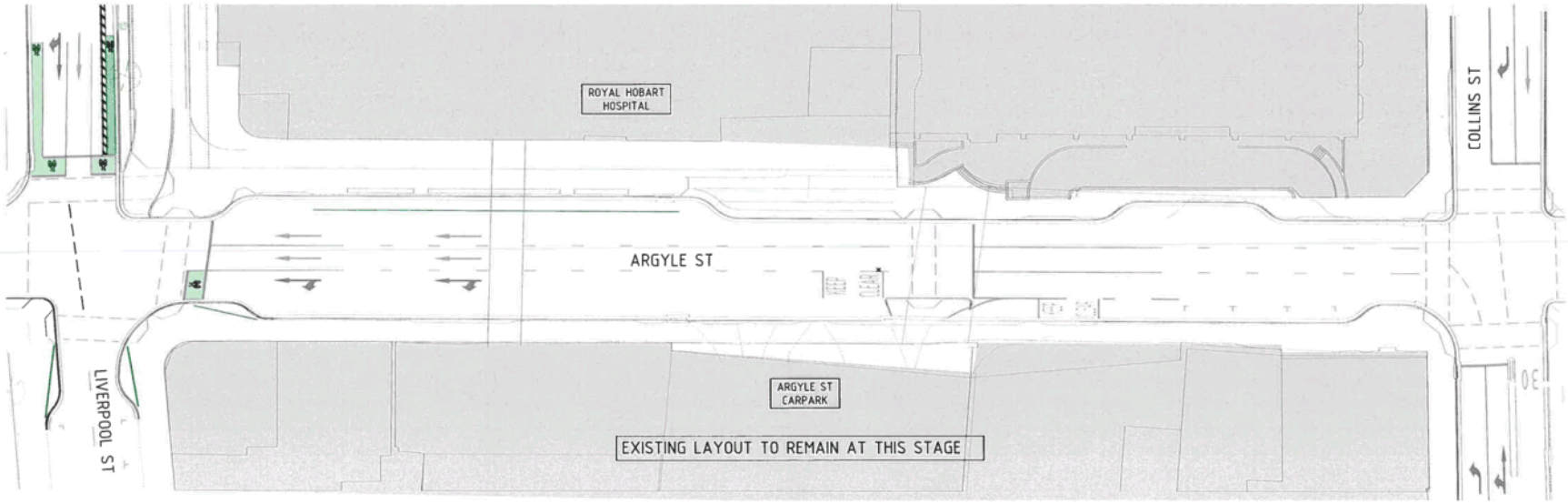

PLAN Scale 1:500

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	CONCEPT 09/11/20	

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PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - LIVERPOOL ST TO COLLINS ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

DRAWN	JPW
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DATE	09/11/20
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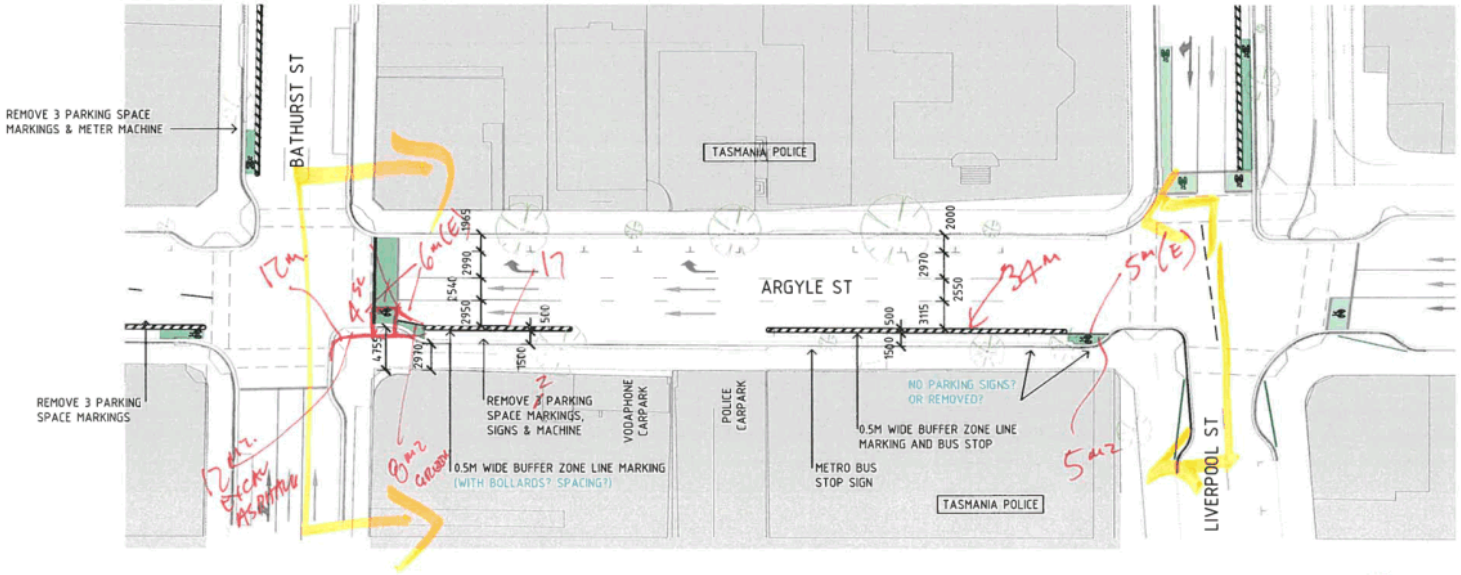

PLAN Scale 1:500

- KERB CUT - MEW FC.
- RELOCATE 1 x SIGNALS

REV	DESCRIPTION	DATE
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	CONCEPT 09/11/20	

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PROJECT DESCRIPTION	ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE	ARGYLE ST - BATHURST ST TO LIVERPOOL ST - CONCEPT
CLIENT	CITY PLANNING - TRAFFIC ENGINEERING
DRAWN	JPW
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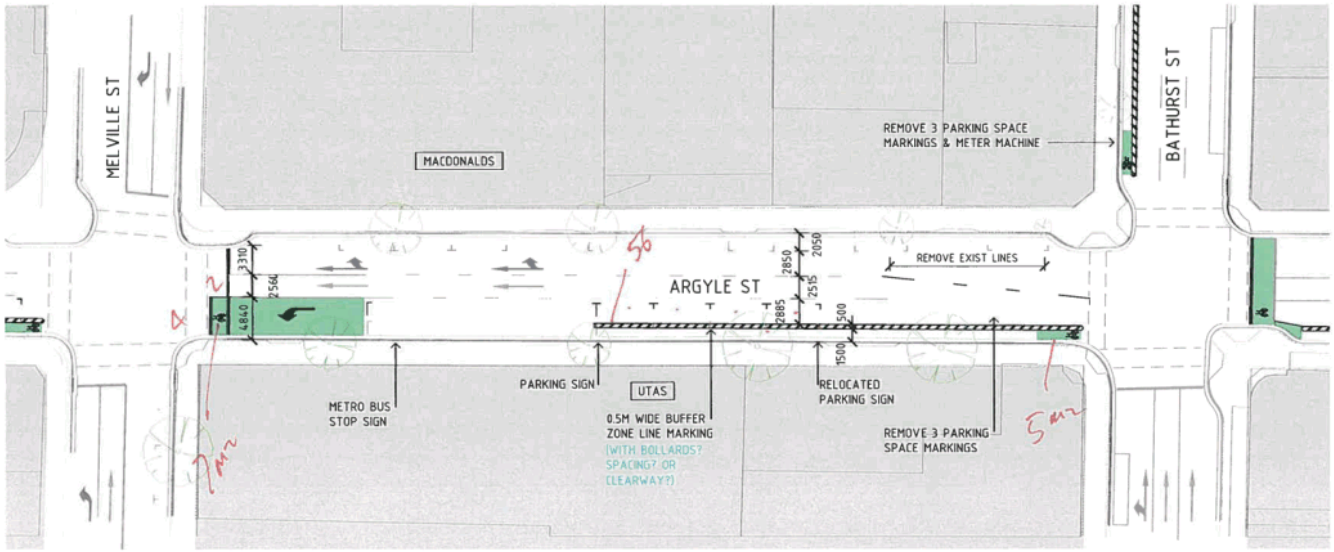

PLAN Scale 1:500

REV	DESCRIPTION	DATE
-	-	-

CONCEPT 09/11/20

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PROJECT DESCRIPTION
ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE
ARGYLE ST - MELVILLE ST TO BATHURST ST - CONCEPT

CLIENT
CITY PLANNING - TRAFFIC ENGINEERING

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DATE 09/11/20	SHEET NUMBER SK11	REVISION -
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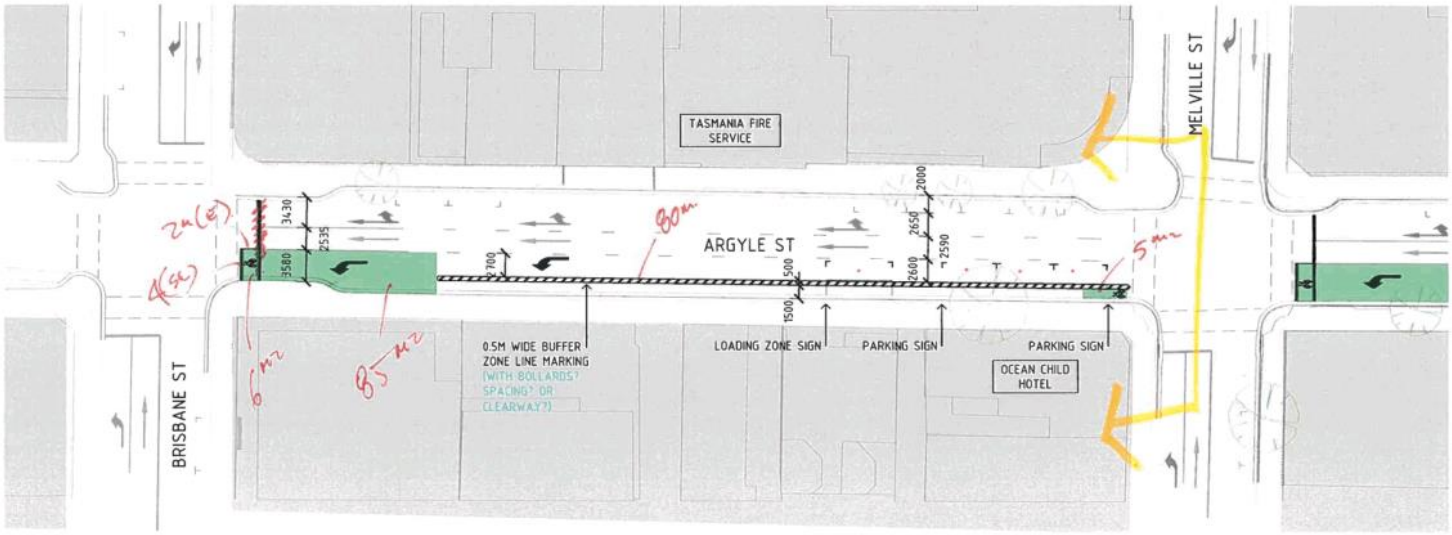


PLAN Scale 1:500

REV	DESCRIPTION	DATE
-	-	-
	CONCEPT 09/11/20	

City of HOBART

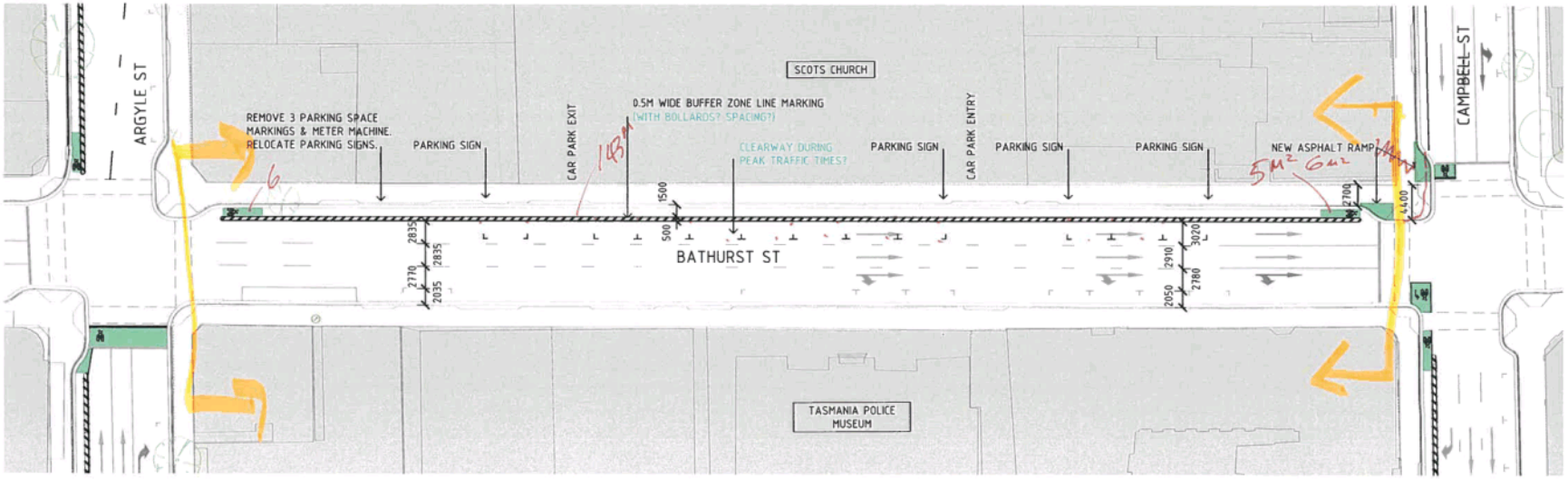
HOBART COUNCIL CENTRE
16 ELIZABETH STREET
GPO BOX 503
T (03) 6238 2711
F (03) 6234 9757
E hcc@hobartcity.com.au
www.hobartcity.com.au

PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST

DRAWING TITLE: ARGYLE ST - BRISBANE ST TO MELVILLE ST - CONCEPT

CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

DRAWN	JPW
CHECKED	
DATE	09/11/20
SCALE	1:-
RFS NUMBER	RFS15-0130
SHEET SIZE	A3
FILE LOCATION	RFS15-0130 Campbell Argyle bike lanes GA1.dwg
SHEET NUMBER	SK12
REVISION	-



PLAN Scale 1:500

REV	DESCRIPTION	DATE
-	-	-

CONCEPT 09/11/20

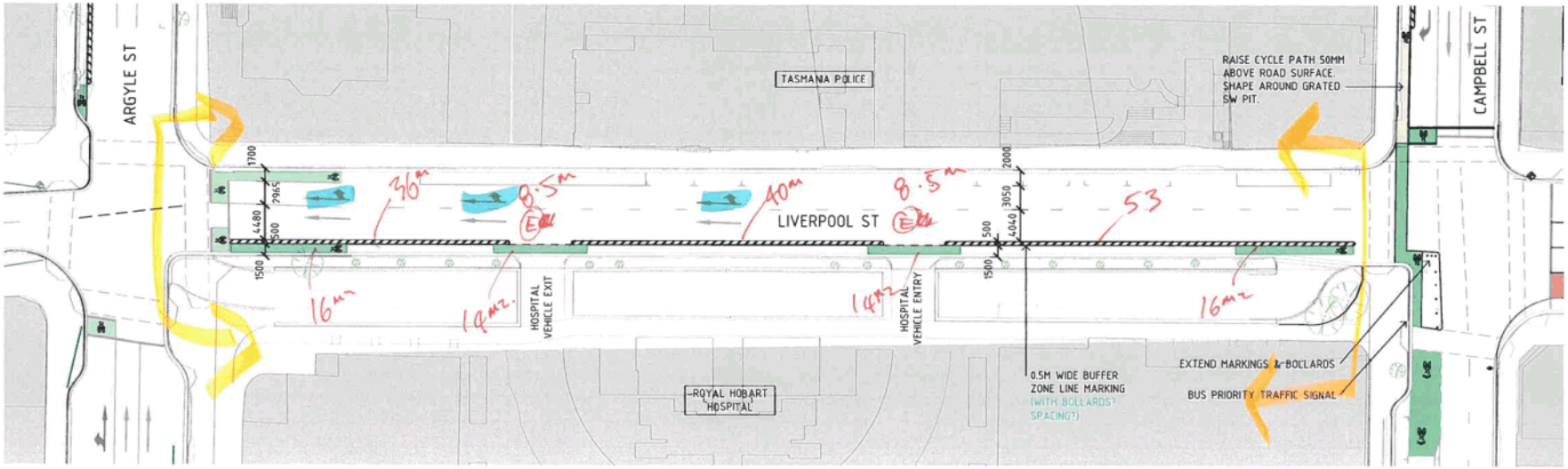
City of HOBART

HOBART COUNCIL CENTRE
16 ELIZABETH STREET
GPO BOX 503
T (03) 6238 2711
F (03) 6234 9757
E hcc@hobartcity.com.au
www.hobartcity.com.au

PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: BATHURST ST - ARGYLE ST TO CAMPBELL ST - CONCEPT
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

DRAWN: JPW
CHECKED:
DATE: 09/11/20
SCALE: 1:-

RFS NUMBER: RFS15-0130
SHEET SIZE: A3
FILE LOCATION: RFS15-0130 Campbell Argyle bike lanes Gridsys
SHEET NUMBER: SK13
REVISION:



PLAN Scale 1:500

REV	DESCRIPTION	DATE
-	CONCEPT 09/11/20	-

City of HOBART
HOBART COUNCIL CENTRE
16 ELIZABETH STREET
GPO BOX 503
T (03) 6238 2711
F (03) 6234 9757
E hcc@hobartcity.com.au
www.hobartcity.com.au

PROJECT DESCRIPTION: ARGYLE ST & CAMPBELL ST BICYCLE LANES - BRISBANE ST TO DAVEY ST
DRAWING TITLE: LIVERPOOL ST - ARGYLE ST TO CAMPBELL ST - CONCEPT
CLIENT: CITY PLANNING - TRAFFIC ENGINEERING

DRAWN	JPW
CHECKED	
DATE	09/11/20
SCALE	1:-
RFS NUMBER	RFS15-0130
SHEET SIZE	A3
FILE LOCATION	RFS15-0130 Campbell Argyle bike lanes GA1.dwg
SHEET NUMBER	SK14
REVISION	-

Appendix C – Cost Estimate

All Projects

Ref: All Sites

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $	Quantity Lower	Quantity Upper	Rate Lower	Rate Upper	Distribution
	PART 1 - PROJECT SPECIFIC ITEMS									
1.01	Site establishment	14	No.	5000.00	70,000.00	100	100	60	200	PertAlt
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**70,000.00**					
	PART 2 - EARTHWORKS									
2.01	Excavation in roadway	95	m²	20.00	1,900.00	90	130	90	120	PertAlt
2.02	Excavation and disposal of existing footpaths	20	m²	10.00	200.00	90	130	90	120	PertAlt
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**2,100.00**					
	PART 3 - DRAINAGE									
3.01	Construction of side entry pits in all materials	3	No.	2500.00	7,500.00	100	100	90	150	PertAlt
3.02	Removal of existing pits and access pits	3	No.	500.00	1,500.00	100	100	70	140	PertAlt
3.03	Connection of new pits into existing pipe	3	No.	1000.00	3,000.00	100	100	80	300	PertAlt
3.04	Construction of kerb ramps	14	No.	1000.00	14,000.00	100	100	80	150	PertAlt
3.05	Construction of barrier kerb and gutter, Type KC, within existing pavement	128	m	100.00	12,800.00	70	130	70	150	PertAlt

3.06	Construction of heavy duty concrete driveways & crossover	32	m²	200.00	6,400.00	90	120	80	150	PertAlt
3.07	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	128	m	20.00	2,560.00	90	120	80	150	PertAlt
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**47,760.00**					
	PART 4 - PAVEMENT									
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	92	m²	20.00	1,840.00	90	120	80	150	PertAlt
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	92	m²	10.00	920.00	90	120	80	150	PertAlt
4.03	Supply, spread and compact base material Class 1 175 mm depth	92	m²	30.00	2,760.00	90	120	70	170	PertAlt
4.04	Sawcut existing asphalt & match in new works	128	m	25.00	3,200.00	90	120	80	150	PertAlt
4.05	Mill existing pavement for new asphalt surface	90	m²	5.00	450.00	90	120	90	200	PertAlt
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**9,170.00**					

PART 5 - BITUMINOUS SURFACING

5.01	Supply and delivery to site of Dense Graded Asphalt									
5.01(a)	14 mm size (40m thick)	182	m²	50.00	9,100.00	90	120	50	200	PertAlt
5.01(b)	coloured asphalt to disabled parking bays	45	m²	75.00	3,375.00	90	120	70	160	PertAlt

PART 5 - BITUMINOUS SURFACING
CARRIED TO SUMMARY **TOTAL $ 12,475.00**

PART 6 - TRAFFIC FACILITIES

6.01	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.01(a)	Type S1 Separation (Urban Lane)	25	m	10.00	250.00	90	120	70	150	PertAlt
6.01(b)	Type W Pedestrian Traffic Signals	10	m	10.00	100.00	90	120	70	150	PertAlt
6.01(c)	Type SL Stop Line	98	m	30.00	2,940.00	90	120	70	150	PertAlt
6.01(d)	Type E Edge Line	311	m	10.00	3,110.00	90	120	70	150	PertAlt
6.01(e)	Type EC Edge Continuity	77	m	10.00	770.00	90	120	70	150	PertAlt
6.02	Supply and install white paint pavement arrows including glass beads or angular quartz									
6.02(a)	Left or right only	7	No.	400.00	2,800.00	100	100	70	150	PertAlt
6.02(b)	Straight ahead only	4	No.	400.00	1,600.00	100	100	70	150	PertAlt
6.02(c)	Straight ahead and left or right combined	3	No.	500.00	1,500.00	100	100	70	150	PertAlt
6.02(d)	Cyclist Sign	16	No.	500.00	8,000.00	100	100	70	150	PertAlt
6.03	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.03(a)	0.50m wide buffer zone	841	m	80.00	67,280.00	90	120	80	150	PertAlt
6.03(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	82	No.	200.00	16,400.00	90	130	80	150	PertAlt
6.04	Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	555	m²	150.00	83,250.00	90	120	80	150	PertAlt

6.05	Remove existing linemarking									
6.05(a)	Lane Marking Linework	100	m	50.00	5,000.00	80	150	80	150	PertAlt
6.05(b)	Pavement Arrows	17	No.	200.00	3,400.00	100	100	80	150	PertAlt
6.05(c)	Parking Bays	71	No.	100.00	7,100.00	100	100	80	150	PertAlt
6.06	Supply and install white paint pavement parking bays including glass beads or angular quartz	65	No.	100.00	6,500.00	100	100	90	130	PertAlt
6.07	Remove existing parking bay sensors	71	No.	50.00	3,550.00	100	100	90	300	PertAlt
6.08	Reinstall existing parking bays sensors	60	No.	100.00	6,000.00	100	100	90	300	PertAlt
6.09	Removal & reinstate existing signs	15	No.	250.00	3,750.00	100	100	90	120	PertAlt
6.10(a)	Install clearway sign (sign supplied by CoH)	25	No.	500.00	12,500.00	100	100	90	120	PertAlt
6.10(b)	Relocate Wayfinding sign	4	No.	150.00	600.00	100	100	90	150	PertAlt
	PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**236,400.00**					
	PART 7 - TRAFFIC SIGNALS									
7.01	Removal of existing signals	7	No.	2000.00	14,000.00	100	100	80	150	PertAlt
7.02	Potholing for new foundation	7	No.	7000.00	49,000.00	100	100	80	150	PertAlt
7.03	Supply & install new footings (as per DSG standard drawing)	7	No.	10000.00	70,000.00	100	100	80	150	PertAlt
7.04	Install new pole & signals including rewiring etc.	7	No.	3400.00	23,800.00	100	100	80	150	PertAlt
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**156,800.00**					

PART 8 - MISCELLANEOUS

8.01	Traffic Management (night works)	14	No.	4857	68,000.00	100	100	90	200	PertAlt
8.02	Environmental Management	14	No.	2143	30,000.00	100	100	50	200	PertAlt
8.03	Trim tree for bus access	1	Item	500.00	500.00			90	500	PertAlt
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**98,500.00**					

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $	
1.00	PROJECT SPECIFIC	70,000	
2.00	EARTHWORKS	2,100	
3.00	DRAINAGE	47,760	
4.00	PAVEMENT	9,170	
5.00	BITUMINOUS SURFACING	12,475	
6.00	TRAFFIC FACILITIES	236,400	
7.00	TRAFFIC SIGNALS	156,800	
8.00	MISCELLANEOUS	98,500	
	Sub Total $	633,205	
		P50	*P90*
9.00	CONTINGENCY	746,000	1,092,000
		118%	172%
	TOTAL $	**1,379,205**	**1,725,205**

Campbell Street

Ref: All Sites

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $	Quantity Lower	Quantity Upper	Rate Lower	Rate Upper	Distribution
	PART 1 - PROJECT SPECIFIC ITEMS									
1.01	Site establishment	6	No.	5000.00	30,000.00	100	100	60	200	PertAlt
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**30,000.00**					
	PART 2 - EARTHWORKS									
2.01	Excavation in roadway	60	m²	20.00	1,200.00	90	130	90	120	PertAlt
2.02	Excavation and disposal of existing footpaths	10	m²	10.00	100.00	90	130	90	120	PertAlt
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**1,300.00**					
	PART 3 - DRAINAGE									
3.01	Construction of side entry pits in all materials	3	No.	2500.00	7,500.00	100	100	90	150	PertAlt
3.02	Removal of existing pits and access pits	3	No.	500.00	1,500.00	100	100	70	140	PertAlt
3.03	Connection of new pits into existing pipe	3	No.	1000.00	3,000.00	100	100	80	300	PertAlt
3.04	Construction of kerb ramps	9	No.	1000.00	9,000.00	100	100	80	150	PertAlt
3.05	Construction of barrier kerb and gutter, Type KC, within existing pavement	46	m	100.00	4,600.00	70	130	70	150	PertAlt

3.06	Construction of heavy duty concrete driveways & crossover		m²	200.00		90	120	80	150	PertAlt
3.07	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	46	m	20.00	920.00	90	120	80	150	PertAlt
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**26,520.00**					
	PART 4 - PAVEMENT									
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	60	m²	20.00	1,200.00	90	120	80	150	PertAlt
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	60	m²	10.00	600.00	90	120	80	150	PertAlt
4.03	Supply, spread and compact base material Class 1 175 mm depth	60	m²	30.00	1,800.00	90	120	70	170	PertAlt
4.04	Sawcut existing asphalt & match in new works	46	m	25.00	1,150.00	90	120	80	150	PertAlt
4.05	Mill existing pavement for new asphalt surface		m²	5.00		90	120	90	200	PertAlt
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**4,750.00**					

PART 5 - BITUMINOUS SURFACING

5.01	Supply and delivery to site of Dense Graded Asphalt									
5.01(a)	14 mm size (40m thick)	60	m²	50.00	3,000.00	90	120	50	200	PertAlt
5.01(b)	coloured asphalt to disabled parking bays	40	m²	75.00	3,000.00	90	120	70	160	PertAlt

PART 5 - BITUMINOUS SURFACING
CARRIED TO SUMMARY **TOTAL $ 6,000.00**

PART 6 - TRAFFIC FACILITIES

6.01	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.01(a)	Type S1 Separation (Urban Lane)		m	10.00		90	120	70	150	PertAlt
6.01(b)	Type W Pedestrian Traffic Signals	10	m	10.00	100.00	90	120	70	150	PertAlt
6.01(c)	Type SL Stop Line	41	m	30.00	1,230.00	90	120	70	150	PertAlt
6.01(d)	Type E Edge Line	116	m	10.00	1,160.00	90	120	70	150	PertAlt
6.01(e)	Type EC Edge Continuity	20	m	10.00	200.00	90	120	70	150	PertAlt
6.02	Supply and install white paint pavement arrows including glass beads or angular quartz									
6.02(a)	Left or right only	2	No.	400.00	800.00	100	100	70	150	PertAlt
6.02(b)	Straight ahead only		No.	400.00		100	100	70	150	PertAlt
6.02(c)	Straight ahead and left or right combined		No.	500.00		100	100	70	150	PertAlt
6.02(d)	Cyclist Sign	9	No.	500.00	4,500.00	100	100	70	150	PertAlt
6.03	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.03(a)	0.50m wide buffer zone	334	m	80.00	26,720.00	90	120	80	150	PertAlt
6.03(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	46	No.	200.00	9,200.00	90	130	80	150	PertAlt
6.04	Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	228	m²	150.00	34,200.00	90	120	80	150	PertAlt

6.05	Remove existing linemarking									
6.05(a)	Lane Marking Linework	20	m	50.00	1,000.00	80	150	80	150	PertAlt
6.05(b)	Pavement Arrows	2	No.	200.00	400.00	100	100	80	150	PertAlt
6.05(c)	Parking Bays	39	No.	100.00	3,900.00	100	100	80	150	PertAlt
6.06	Supply and install white paint pavement parking bays including glass beads or angular quartz	41	No.	100.00	4,100.00	100	100	90	130	PertAlt
6.07	Remove existing parking bay sensors	44	No.	50.00	2,200.00	100	100	90	300	PertAlt
6.08	Reinstall existing parking bays sensors	41	No.	100.00	4,100.00	100	100	90	300	PertAlt
6.09	Removal & reinstate existing signs		No.	250.00		100	100	90	120	PertAlt
6.10(a)	Install clearway sign (sign supplied by CoH)	13	No.	500.00	6,500.00	100	100	90	120	PertAlt
6.10(b)	Relocate Wayfinding sign	2	No.	150.00	300.00	100	100	90	150	PertAlt
	PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**100,610.00**					
	PART 7 - TRAFFIC SIGNALS									
7.01	Removal of existing signals	4	No.	2000.00	8,000.00	100	100	80	150	PertAlt
7.02	Potholing for new foundation	4	No.	7000.00	28,000.00	100	100	80	150	PertAlt
7.03	Supply & install new footings (as per DSG standard drawing)	4	No.	10000.00	40,000.00	100	100	80	150	PertAlt
7.04	Install new pole & signals including rewiring etc.	4	No.	3400.00	13,600.00	100	100	80	150	PertAlt
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**89,600.00**					

PART 8 - MISCELLANEOUS

8.01	Traffic Management (night works)	6	No.	5000	30,000.00	100	100	90	200	PertAlt
8.02	Environmental Management	6	No.	2167	13,000.00	100	100	50	200	PertAlt
8.03	Trim tree for bus access		Item	500.00				90	500	PertAlt
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**43,000.00**					

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	30,000
2.00	EARTHWORKS	1,300
3.00	DRAINAGE	26,520
4.00	PAVEMENT	4,750
5.00	BITUMINOUS SURFACING	6,000
6.00	TRAFFIC FACILITIES	100,610
7.00	TRAFFIC SIGNALS	89,600
8.00	MISCELLANEOUS	43,000
	Sub Total $	301,780

		P50	*P90*
9.00	CONTINGENCY	318,000	510,000
		105%	169%
	TOTAL $	**619,780**	**811,780**

Argyle Street

Ref: All Sites

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $	Quantity Lower	Quantity Upper	Rate Lower	Rate Upper	Distribution
	PART 1 - PROJECT SPECIFIC ITEMS									
1.01	Site establishment	5	No.	5000.00	25,000.00	100	100	60	200	PertAlt
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**25,000.00**					
	PART 2 - EARTHWORKS									
2.01	Excavation in roadway	35	m²	20.00	700.00	90	130	90	120	PertAlt
2.02	Excavation and disposal of existing footpaths	10	m²	10.00	100.00	90	130	90	120	PertAlt
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**800.00**					
	PART 3 - DRAINAGE									
3.01	Construction of side entry pits in all materials		No.	2500.00		100	100	90	150	PertAlt
3.02	Removal of existing pits and access pits		No.	500.00		100	100	70	140	PertAlt
3.03	Connection of new pits into existing pipe		No.	1000.00		100	100	80	300	PertAlt
3.04	Construction of kerb ramps	3	No.	1000.00	3,000.00	100	100	80	150	PertAlt
3.05	Construction of barrier kerb and gutter, Type KC, within existing pavement	27	m	100.00	2,700.00	70	130	70	150	PertAlt

3.06	Construction of heavy duty concrete driveways & crossover		m²	200.00		90	120	80	150	PertAlt
3.07	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	27	m	20.00	540.00	90	120	80	150	PertAlt
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**6,240.00**					
	PART 4 - PAVEMENT									
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	32	m²	20.00	640.00	90	120	80	150	PertAlt
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	32	m²	10.00	320.00	90	120	80	150	PertAlt
4.03	Supply, spread and compact base material Class 1 175 mm depth	32	m²	30.00	960.00	90	120	70	170	PertAlt
4.04	Sawcut existing asphalt & match in new works	27	m	25.00	675.00	90	120	80	150	PertAlt
4.05	Mill existing pavement for new asphalt surface		m²	5.00		90	120	90	200	PertAlt
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**2,595.00**					

PART 5 - BITUMINOUS SURFACING

5.01	Supply and delivery to site of Dense Graded Asphalt									
5.01(a)	14 mm size (40m thick)	32	m²	50.00	1,600.00	90	120	50	200	PertAlt
5.01(b)	coloured asphalt to disabled parking bays	5	m²	75.00	375.00	90	120	70	160	PertAlt

PART 5 - BITUMINOUS SURFACING
CARRIED TO SUMMARY **TOTAL $ 1,975.00**

PART 6 - TRAFFIC FACILITIES

6.01	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.01(a)	Type S1 Separation (Urban Lane)	25	m	10.00	250.00	90	120	70	150	PertAlt
6.01(b)	Type W Pedestrian Traffic Signals		m	10.00		90	120	70	150	PertAlt
6.01(c)	Type SL Stop Line	42	m	30.00	1,260.00	90	120	70	150	PertAlt
6.01(d)	Type E Edge Line	130	m	10.00	1,300.00	90	120	70	150	PertAlt
6.01(e)	Type EC Edge Continuity		m	10.00		90	120	70	150	PertAlt
6.02	Supply and install white paint pavement arrows including glass beads or angular quartz									
6.02(a)	Left or right only	3	No.	400.00	1,200.00	100	100	70	150	PertAlt
6.02(b)	Straight ahead only		No.	400.00		100	100	70	150	PertAlt
6.02(c)	Straight ahead and left or right combined		No.	500.00		100	100	70	150	PertAlt
6.02(d)	Cyclist Sign	4	No.	500.00	2,000.00	100	100	70	150	PertAlt
6.03	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.03(a)	0.50m wide buffer zone	232	m	80.00	18,560.00	90	120	80	150	PertAlt
6.03(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	23	No.	200.00	4,600.00	90	130	80	150	PertAlt
6.04	Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	156	m²	150.00	23,400.00	90	120	80	150	PertAlt

6.05	Remove existing linemarking									
6.05(a)	Lane Marking Linework	40	m	50.00	2,000.00	80	150	80	150	PertAlt
6.05(b)	Pavement Arrows	3	No.	200.00	600.00	100	100	80	150	PertAlt
6.05(c)	Parking Bays	14	No.	100.00	1,400.00	100	100	80	150	PertAlt
6.06	Supply and install white paint pavement parking bays including glass beads or angular quartz	9	No.	100.00	900.00	100	100	90	130	PertAlt
6.07	Remove existing parking bay sensors	13	No.	50.00	650.00	100	100	90	300	PertAlt
6.08	Reinstall existing parking bays sensors	8	No.	100.00	800.00	100	100	90	300	PertAlt
6.09	Removal & reinstate existing signs	11	No.	250.00	2,750.00	100	100	90	120	PertAlt
6.10(a)	Install clearway sign (sign supplied by CoH)	8	No.	500.00	4,000.00	100	100	90	120	PertAlt
6.10(b)	Relocate Wayfinding sign	1	No.	150.00	150.00	100	100	90	150	PertAlt
	PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**65,820.00**					
	PART 7 - TRAFFIC SIGNALS									
7.01	Removal of existing signals	2	No.	2000.00	4,000.00	100	100	80	150	PertAlt
7.02	Potholing for new foundation	2	No.	7000.00	14,000.00	100	100	80	150	PertAlt
7.03	Supply & install new footings (as per DSG standard drawing)	2	No.	10000.00	20,000.00	100	100	80	150	PertAlt
7.04	Install new pole & signals including rewiring etc.	2	No.	3400.00	6,800.00	100	100	80	150	PertAlt
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**44,800.00**					

PART 8 - MISCELLANEOUS

8.01	Traffic Management (night works)	5	No.	5400	27,000.00	100	100	90	200	PertAlt
8.02	Environmental Management	5	No.	2400	12,000.00	100	100	50	200	PertAlt
8.03	Trim tree for bus access	1	Item	500.00	500.00			90	500	PertAlt
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**39,500.00**					

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	25,000
2.00	EARTHWORKS	800
3.00	DRAINAGE	6,240
4.00	PAVEMENT	2,595
5.00	BITUMINOUS SURFACING	1,975
6.00	TRAFFIC FACILITIES	65,820
7.00	TRAFFIC SIGNALS	44,800
8.00	MISCELLANEOUS	39,500
	Sub Total $	186,730

		P50	*P90*
9.00	CONTINGENCY	266,000	432,000
		142%	231%
	TOTAL $	**452,730**	**618,730**

Liverpool & Bathurst Streets

Ref: All Sites

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $	Quantity Lower	Quantity Upper	Rate Lower	Rate Upper	Distribution
	PART 1 - PROJECT SPECIFIC ITEMS									
1.01	Site establishment	3	No.	5000.00	15,000.00	100	100	60	200	PertAlt
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**15,000.00**					
	PART 2 - EARTHWORKS									
2.01	Excavation in roadway		m²	20.00		90	130	90	120	PertAlt
2.02	Excavation and disposal of existing footpaths		m²	10.00		90	130	90	120	PertAlt
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**						
	PART 3 - DRAINAGE									
3.01	Construction of side entry pits in all materials		No.	2500.00		100	100	90	150	PertAlt
3.02	Removal of existing pits and access pits		No.	500.00		100	100	70	140	PertAlt
3.03	Connection of new pits into existing pipe		No.	1000.00		100	100	80	300	PertAlt
3.04	Construction of kerb ramps	2	No.	1000.00	2,000.00	100	100	80	150	PertAlt
3.05	Construction of barrier kerb and gutter, Type KC, within existing pavement	55	m	100.00	5,500.00	70	130	70	150	PertAlt

3.06	Construction of heavy duty concrete driveways & crossover	32	m²	200.00	6,400.00	90	120	80	150	PertAlt
3.07	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	55	m	20.00	1,100.00	90	120	80	150	PertAlt
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**15,000.00**					
	PART 4 - PAVEMENT									
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00		90	120	80	150	PertAlt
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00		90	120	80	150	PertAlt
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00		90	120	70	170	PertAlt
4.04	Sawcut existing asphalt & match in new works	55	m	25.00	1,375.00	90	120	80	150	PertAlt
4.05	Mill existing pavement for new asphalt surface	90	m²	5.00	450.00	90	120	90	200	PertAlt
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**1,825.00**					

PART 5 - BITUMINOUS SURFACING

5.01	Supply and delivery to site of Dense Graded Asphalt									
5.01(a)	14 mm size (40m thick)	90	m²	50.00	4,500.00	90	120	50	200	PertAlt
5.01(b)	coloured asphalt to disabled parking bays		m²	75.00		90	120	70	160	PertAlt

PART 5 - BITUMINOUS SURFACING
CARRIED TO SUMMARY **TOTAL $** **4,500.00**

PART 6 - TRAFFIC FACILITIES

6.01	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.01(a)	Type S1 Separation (Urban Lane)		m	10.00		90	120	70	150	PertAlt
6.01(b)	Type W Pedestrian Traffic Signals		m	10.00		90	120	70	150	PertAlt
6.01(c)	Type SL Stop Line	15	m	30.00	450.00	90	120	70	150	PertAlt
6.01(d)	Type E Edge Line	65	m	10.00	650.00	90	120	70	150	PertAlt
6.01(e)	Type EC Edge Continuity	57	m	10.00	570.00	90	120	70	150	PertAlt
6.02	Supply and install white paint pavement arrows including glass beads or angular quartz									
6.02(a)	Left or right only	2	No.	400.00	800.00	100	100	70	150	PertAlt
6.02(b)	Straight ahead only	4	No.	400.00	1,600.00	100	100	70	150	PertAlt
6.02(c)	Straight ahead and left or right combined	3	No.	500.00	1,500.00	100	100	70	150	PertAlt
6.02(d)	Cyclist Sign	3	No.	500.00	1,500.00	100	100	70	150	PertAlt
6.03	Supply and application of thermoplastic pavement marking including glass beads or angular quartz									
6.03(a)	0.50m wide buffer zone	275	m	80.00	22,000.00	90	120	80	150	PertAlt
6.03(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	13	No.	200.00	2,600.00	90	130	80	150	PertAlt
6.04	Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	171	m²	150.00	25,650.00	90	120	80	150	PertAlt

6.05	Remove existing linemarking									
6.05(a)	Lane Marking Linework	40	m	50.00	2,000.00	80	150	80	150	PertAlt
6.05(b)	Pavement Arrows	12	No.	200.00	2,400.00	100	100	80	150	PertAlt
6.05(c)	Parking Bays	18	No.	100.00	1,800.00	100	100	80	150	PertAlt
6.06	Supply and install white paint pavement parking bays including glass beads or angular quartz	15	No.	100.00	1,500.00	100	100	90	130	PertAlt
6.07	Remove existing parking bay sensors	14	No.	50.00	700.00	100	100	90	300	PertAlt
6.08	Reinstall existing parking bays sensors	11	No.	100.00	1,100.00	100	100	90	300	PertAlt
6.09	Removal & reinstate existing signs	4	No.	250.00	1,000.00	100	100	90	120	PertAlt
6.10(a)	Install clearway sign (sign supplied by CoH)	4	No.	500.00	2,000.00	100	100	90	120	PertAlt
6.10(b)	Relocate Wayfinding sign	1	No.	150.00	150.00	100	100	90	150	PertAlt
	PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**69,970.00**					
	PART 7 - TRAFFIC SIGNALS									
7.01	Removal of existing signals	1	No.	2000.00	2,000.00	100	100	80	150	PertAlt
7.02	Potholing for new foundation	1	No.	7000.00	7,000.00	100	100	80	150	PertAlt
7.03	Supply & install new footings (as per DSG standard drawing)	1	No.	10000.00	10,000.00	100	100	80	150	PertAlt
7.04	Install new pole & signals including rewiring etc.	1	No.	3400.00	3,400.00	100	100	80	150	PertAlt
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**22,400.00**					

PART 8 - MISCELLANEOUS

8.01	Traffic Management (night works)	3	No.	3667	11,000.00	100	100	90	200	PertAlt
8.02	Environmental Management	3	No.	1667	5,000.00	100	100	50	200	PertAlt
8.03	Trim tree for bus access		Item	500.00				90	500	PertAlt
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**16,000.00**					

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	15,000
2.00	EARTHWORKS	
3.00	DRAINAGE	15,000
4.00	PAVEMENT	1,825
5.00	BITUMINOUS SURFACING	4,500
6.00	TRAFFIC FACILITIES	69,970
7.00	TRAFFIC SIGNALS	22,400
8.00	MISCELLANEOUS	16,000
	Sub Total $	144,695

		P50	*P90*
9.00	CONTINGENCY	148,000	234,000
		102%	162%
	TOTAL $	**292,695**	**378,695**

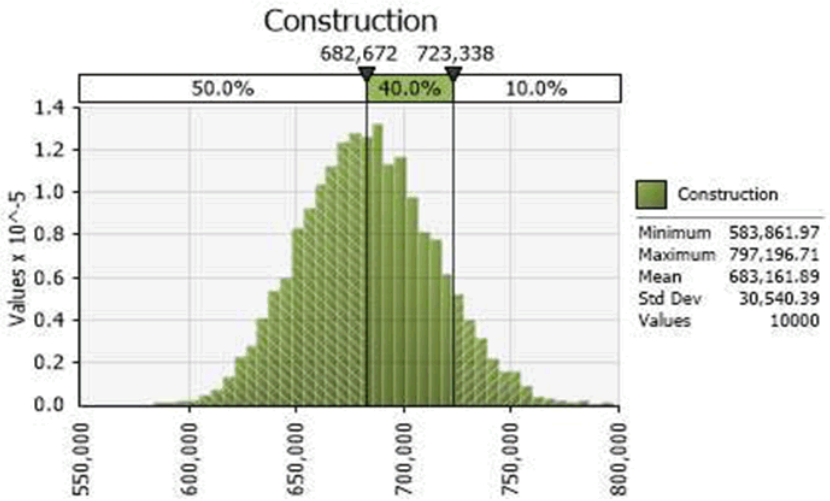
Contingent Risk

Description	Average Frequency o	Estimated No. Occurrences	Comment	Severity o Occurrence						Distribution
				Optimistic		Most Likely		Pessimistic		
				$	Description	$	Description	$	Description	
Delay costs incurred by Contractor for service authority relocations	40%	9	Parking meter sub-contractor Stormwater (internal CoH) Assumed minimal consultation prior to construction	2,000	Small delay. Contractor can continue work elsewhere minimising impact.	20,000	Medium delay	80,000	Significant delay	LogNormalAlt
Delay costs incurred by Contractor due to adjacent landholder or community objection	50%	1	Assuming appropriate preventative measures have been taken during stakeholder consultation.	2,000	Small delay. Contractor can continue work elsewhere minimising impact.	20,000	Medium delay. Site mobilised for extended period.	150,000	Significant delay. Works to be resumed after conflict resolved.	LogNormalAlt
Project costs increased due to high demand for construction work.	30%	1	Anecdotally it is known that there is currently a surplus of construction work due to stimulus packages being released and large infrastrucuture projects occuring. There has not been evidence of price inflation to date.	7,000	Small inflation of contractor rates (1%).	19,000	Medium inflation of contractor rates (3%).	64,000	Significant inflation of contractor rates (10%).	LogNormalAlt
Delay costs incurred by Contrator due to COVID-19 outbreak.	10%	1	No community trasmitted cases in Tasmania currently with only low risk visitors arriving.	20,000	Small delay 1-2 days.	100,000	Medium delay - up to 1 week	300,000	Significant delay - demob required	LogNormalAlt
Nuisance results in complaints additional controls need to be employed	20%	14	Noting sites near hospital may be prone to complaints	5,000	Small cost of controls	15,000	Medium delay cost of controls	40,000	Significant delay cost of controls	LogNormalAlt
Design changes are required resulting from field conditions	35%	14	CBD environemnt for project highly susceptible to field conditions.	5,000	Minor design changes resulting in small delay	20,000	Moderate design changes resulting in delay and some increase in cost	80,000	Significant design changes resulting in delay and changes to program schedule	LogNormalAlt
Repairs to traffic management following incident	30%	14	CBD environment causes higher liklihood of low impact incident	5,000	Small delay. Contractor can continue work elsewhere minimising impact.	50,000	Medium delay - contractor required to stop work or damage to equipment	100,000	Significant delay damage	LogNormalAlt
Underground services not correctly located	20%	14	Assuming no potholing prior.	3,000	Minimal disruption caused by location of utilities	30,000	Additional work required to relocate utilities	150,000	Utilities requiring relocation are uncooperative or limited site flexibility to relocate utilities	LogNormalAlt
Vulnerability of political support	35%	1	Considering during construction only.	5,000	Medium delay	30,000	Significant delay	320,000	Project is cancelled mid construction	LogNormalAlt
Unidentified Risks			Accommodation of smaller risks not specifically identified in the risk register	7,000	1% of construction cost	13,000	2% of construction cost	32,000	5% of construction cost	PertAlt

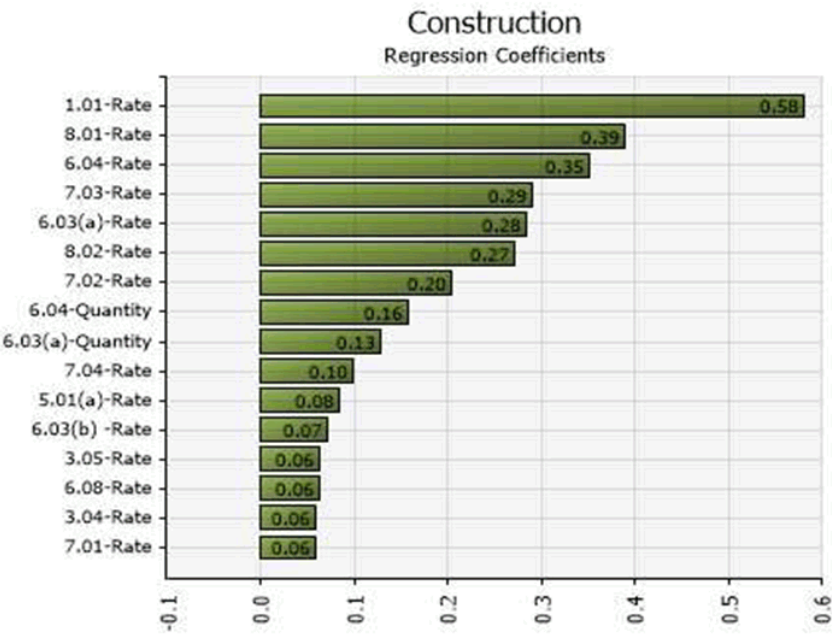
@Risk Outputs

Total Construction Costs

Histogram

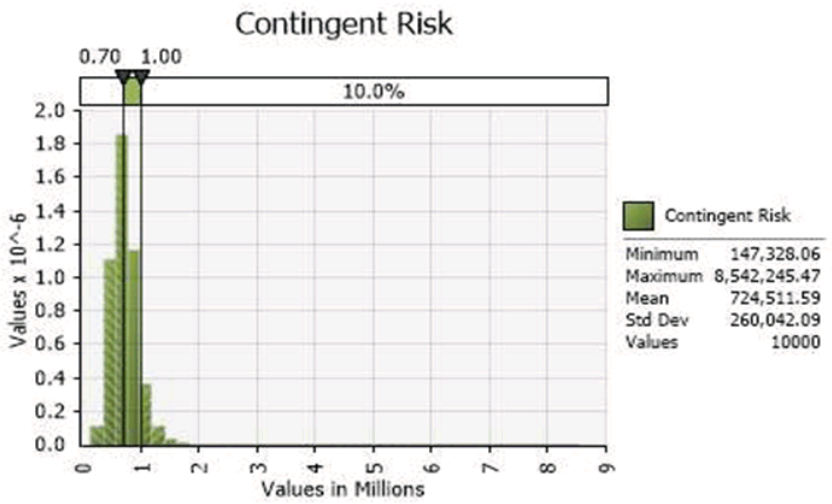


Regression Tornado

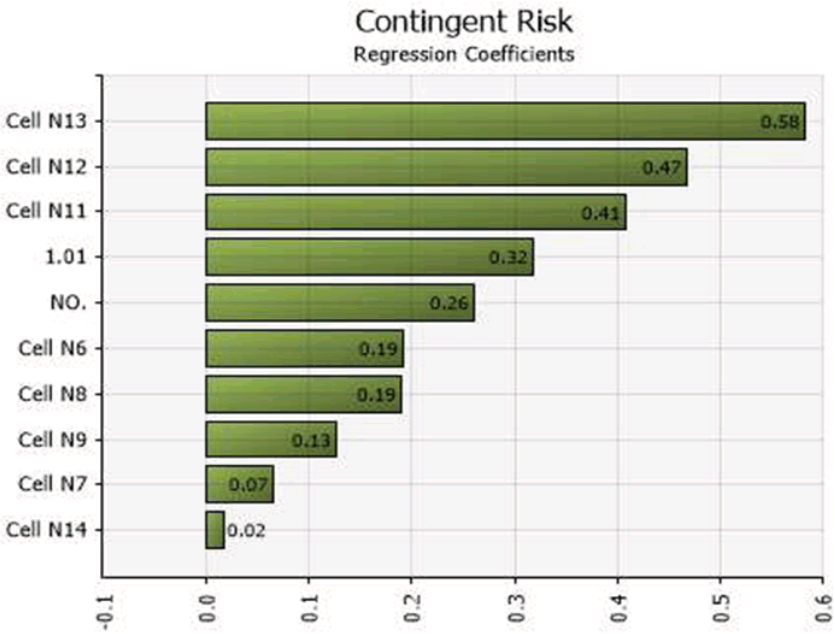


Total Contingent Risk

Histogram

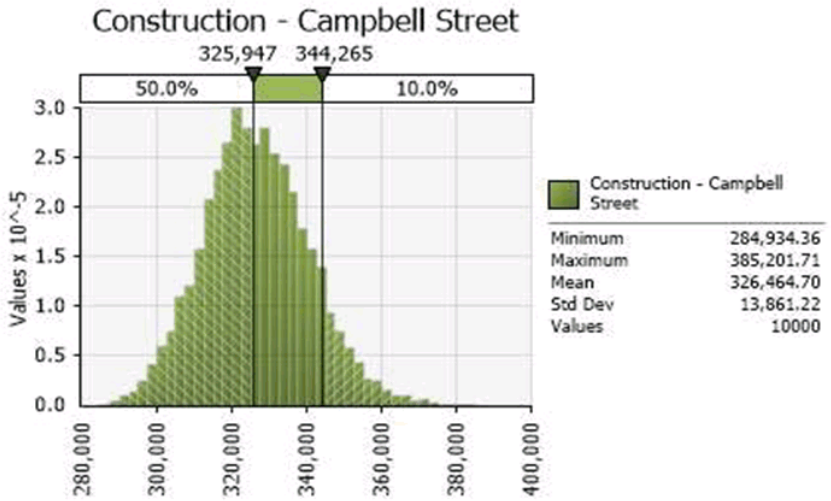


Regression Tornado

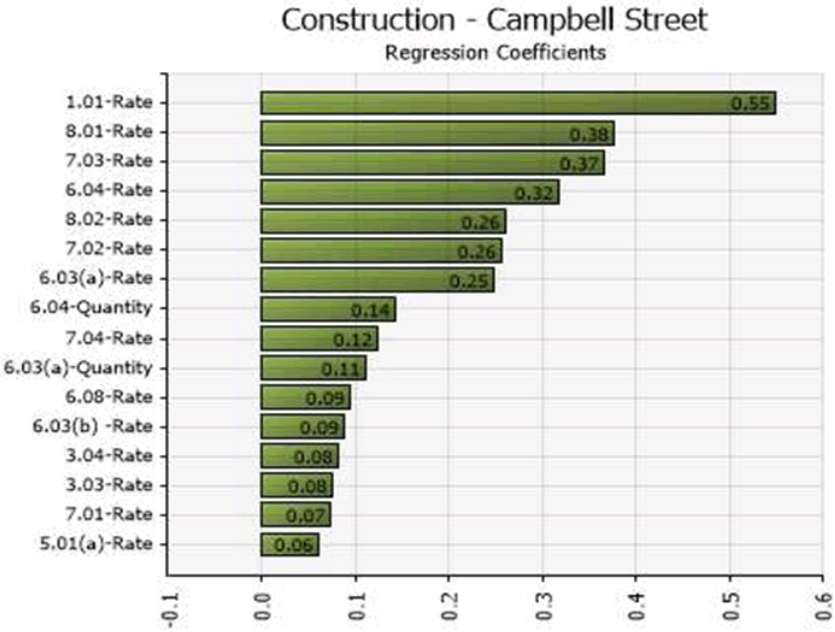


Construction Costs - Campbell Street

Histogram

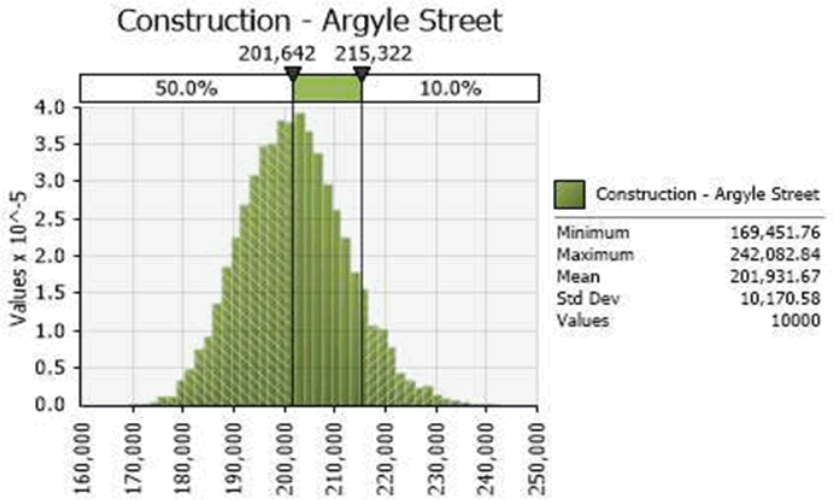


Regression
Tornado



Construction Costs - Argyle Street

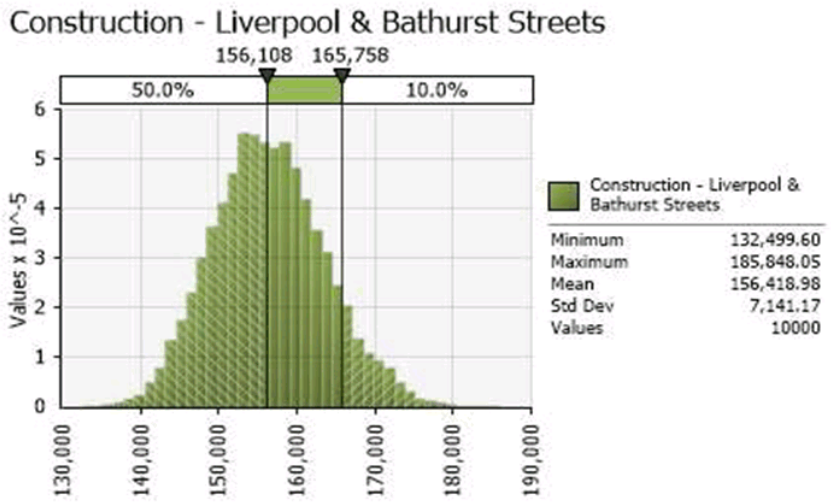
Histogram



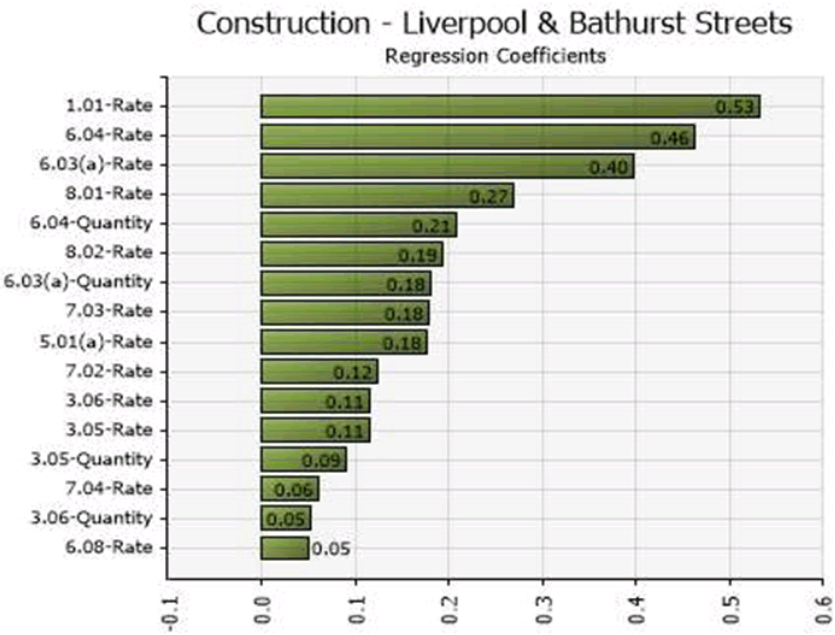
Regression
Tornado

Construction Costs - Liverpool & Bathurst Streets

Histogram



Regression Tornado



Appendix D – By Site Qunatities

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	1000.00	
3.06	Construction of kerb ramps		No.	1000.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) coloured asphalt to disabled parking bays		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	4	m	30.00	120.00
	(e)	Type E Edge Line	2	m	10.00	20.00
	(f)	Type EC Edge Continuity	20	m	10.00	200.00
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only	2	No.	400.00	800.00
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign	1	No.	500.00	500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	82	m	80.00	6,560.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	10	No.	165.00	1,650.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	31	m²	150.00	4,650.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows	2	No.	200.00	400.00
	(c)	Parking Bays	9	No.	100.00	900.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	9	No.	100.00	900.00
6.07		Remove existing parking bay sensors	9	No.	50.00	450.00
6.08		Reinstall existing parking bays sensors	9	No.	100.00	900.00
6.09		Removal & reinstate existing signs		No.	250.00	
6.10		Install sign (single post) (sign supplied by CoH)	3	No.	500.00	1,500.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**19,550.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK01 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	19,550.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	27,550.00
	TOTAL $	**27,550.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway	10	m²	20.00	200.00
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**200.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials	1	No.	2500.00	2,500.00
3.02	Removal of existing pits and access pits	1	No.	500.00	500.00
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe	1	No.	1000.00	1,000.00
3.06	Construction of kerb ramps	1	No.	1000.00	1,000.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement	11	m	100.00	1,100.00
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m^2	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	11	m	20.00	220.00
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**6,320.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	10	m²	20.00	200.00
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	10	m²	10.00	100.00
4.03	Supply, spread and compact base material Class 1 175 mm depth	10	m²	30.00	300.00
4.04	Sawcut existing asphalt & match in new works	11	m	25.00	275.00
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**875.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
(a)	14 mm size (40m thick)	10	m²	50.00	500.00
(b)	coloured asphalt to disabled parking bays		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	4	m	30.00	120.00
	(e)	Type E Edge Line	30	m	10.00	300.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	67	m	80.00	5,360.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	10	No.	200.00	2,000.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	6	m²	150.00	900.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays	11	No.	100.00	1,100.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	9	No.	100.00	900.00
6.07		Remove existing parking bay sensors	11	No.	50.00	550.00
6.08		Reinstall existing parking bays sensors	9	No.	100.00	900.00
6.09		Removal & reinstate existing signs		No.	250.00	
6.10		Install clearway sign (sign supplied by CoH)	3	No.	500.00	1,500.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**13,630.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals	1	Item	2000.00	2,000.00
7.02	Potholing for new foundation	1	Item	7000.00	7,000.00
7.03	Supply & install new footings (as per DSG standard drawing)	1	Item	10000.00	10,000.00
7.04	Install new pole & signals including rewiring etc.	1	Item	3400.00	3,400.00
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**22,400.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	7000.00	7,000.00
8.02	Environmental Management	1	Item	3000.00	3,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**10,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK02 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	200.00
3.00	DRAINAGE	6,320.00
4.00	PAVEMENT	875.00
5.00	BITUMINOUS SURFACING	500.00
6.00	TRAFFIC FACILITIES	13,630.00
7.00	TRAFFIC SIGNALS	22,400.00
8.00	MISCELLANEOUS	10,000.00
	Sub Total	58,925.00
	TOTAL $	**58,925.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	1000.00	
3.06	Construction of kerb ramps		No.	1000.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area	20	m²	75.00	1,500.00
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**1,500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	15	m	30.00	450.00
	(e)	Type E Edge Line	60	m	10.00	600.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign	1	No.	500.00	500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	65	m	80.00	5,200.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	5	No.	200.00	1,000.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	45	m²	150.00	6,750.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework	20	m	50.00	1,000.00
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays		No.	100.00	
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	4	No.	100.00	400.00
6.07		Remove existing parking bay sensors	5	No.	50.00	250.00
6.08		Reinstall existing parking bays sensors	4	No.	100.00	400.00
6.09		Removal & reinstate existing signs		No.	250.00	
6.10		Install clearway sign (sign supplied by CoH)	2	No.	500.00	1,000.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**17,550.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	1,500.00
6.00	TRAFFIC FACILITIES	17,550.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	27,050.00
	TOTAL $	**27,050.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	1000.00	
3.06	Construction of kerb ramps	2	No.	1000.00	2,000.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement	55	m	100.00	5,500.00
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of concrete driveways & crossover	32	m²	200.00	6,400.00
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	55	m	20.00	1,100.00
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**15,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works	55	m	25.00	1,375.00
4.05	Mill existing pavement for new asphalt surface	90	m²	5.00	450.00
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**1,825.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
(a)	14 mm size (40m thick)	90	m²	50.00	4,500.00
(b)	50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**4,500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line		m	30.00	
	(e)	Type E Edge Line	65	m	10.00	650.00
	(f)	Type EC Edge Continuity	40	m	10.00	400.00
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only	2	No.	400.00	800.00
	(b)	Straight ahead only	4	No.	400.00	1,600.00
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone		m	80.00	
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs		No.	165.00	
6.04		Supply and install coloured pavement paint for bus lane,including BUS ONLY sign	100	m²	150.00	15,000.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework	40	m	50.00	2,000.00
	(b)	Pavement Arrows	6	No.	200.00	1,200.00
	(c)	Parking Bays	4	No.	100.00	400.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	4	No.	100.00	400.00
6.07		Remove existing parking bay sensors		No.	50.00	
6.08		Reinstall existing parking bays sensors		No.	100.00	
6.09		Removal & reinstate existing signs	2	No.	250.00	500.00
6.10		Install clearway sign (sign supplied by CoH)		No.	500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**22,950.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals	1	Item	2000.00	2,000.00
7.02	Potholing for new foundation	1	Item	7000.00	7,000.00
7.03	Supply & install new footings (as per DSG standard drawing)	1	Item	10000.00	10,000.00
7.04	Install new pole & signals including rewiring etc.	1	Item	3400.00	3,400.00
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**22,400.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	7000.00	7,000.00
8.02	Environmental Management	1	Item	3000.00	3,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**10,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK03 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	15,000.00
4.00	PAVEMENT	1,825.00
5.00	BITUMINOUS SURFACING	4,500.00
6.00	TRAFFIC FACILITIES	22,950.00
7.00	TRAFFIC SIGNALS	22,400.00
8.00	MISCELLANEOUS	10,000.00
	Sub Total	81,675.00
	TOTAL $	**81,675.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	1000.00	
3.06	Construction of widening to kerb ramp	1	No.	1000.00	1,000.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**1,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area	10	m²	75.00	750.00
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**750.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 6 - TRAFFIC FACILITIES				
6.01	Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a) Type S1 Separation (Urban Lane)		m	10.00	
	(b) Type NS Yellow (No Stopping)		m	10.00	
	(c) Type W Pedestrian Traffic Signals		m	10.00	
	(d) Type SL Stop Line	4	m	30.00	120.00
	(e) Type E Edge Line	2	m	10.00	20.00
	(f) Type EC Edge Continuity		m	10.00	
6.02	Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a) Left or right only		No.	400.00	
	(b) Straight ahead only		No.	400.00	
	(c) Straight ahead and left or right combined		No.	500.00	
	(d) Disabled Signs		No.	500.00	
	(e) Cyclist Sign	3	No.	500.00	1,500.00
6.03	Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a) 0.50m wide buffer zone		m	80.00	
	(b) Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs		No.	165.00	
6.04	Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	56	m²	150.00	8,400.00
6.05	Remove existing linemarking				
	(a) Lane Marking Linework		m	50.00	
	(b) Pavement Arrows		No.	200.00	
	(c) Parking Bays		No.	100.00	
6.06	Supply and install white paint pavement parking bays including glass beads or angular quartz		No.	100.00	
6.07	Remove existing parking bay sensors		No.	50.00	
6.08	Reinstall existing parking bays sensors		No.	100.00	
6.09	Removal & reinstate existing signs		No.	250.00	
6.10	Install sign (single post) (sign supplied by CoH)	1	No.	500.00	500.00
	PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**10,540.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	5000.00	5,000.00
8.02	Environmental Management	1	Item	2000.00	2,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**7,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK04 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	1,000.00
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	750.00
6.00	TRAFFIC FACILITIES	10,540.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	7,000.00
	Sub Total	24,290.00
	TOTAL $	**24,290.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway	30	m²	20.00	600.00
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**600.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials	1	No.	2500.00	2,500.00
3.02	Removal of existing pits and access pits	1	No.	500.00	500.00
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe	1	No.	1000.00	1,000.00
3.06	Construction of widening to kerb ramp	1	No.	1000.00	1,000.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement	20	m	100.00	2,000.00
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	20	m	20.00	400.00
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**7,400.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	30	m²	20.00	600.00
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	30	m²	10.00	300.00
4.03	Supply, spread and compact base material Class 1 175 mm depth	30	m²	30.00	900.00
4.04	Sawcut existing asphalt & match in new works	20	m	25.00	500.00
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**2,300.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
(a)	14 mm size (40m thick)	30	m²	50.00	1,500.00
(b)	50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**1,500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	4	m	30.00	120.00
	(e)	Type E Edge Line	7	m	10.00	70.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign	1	No.	500.00	500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	75	m	80.00	6,000.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	13	No.	165.00	2,145.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	70	m²	150.00	10,500.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays	12	No.	100.00	1,200.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	12	No.	100.00	1,200.00
6.07		Remove existing parking bay sensors	12	No.	50.00	600.00
6.08		Reinstall existing parking bays sensors	12	No.	100.00	1,200.00
6.09		Removal & reinstate existing signs		No.	250.00	
6.10	(a)	Install clearway sign (sign supplied by CoH)	2	No.	500.00	1,000.00
	(b)	Relocate Wayfinding sign	1	No.	2500.00	2,500.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**27,035.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals	1	Item	2000.00	2,000.00
7.02	Potholing for new foundation	1	Item	7000.00	7,000.00
7.03	Supply & install new footings (as per DSG standard drawing)	1	Item	10000.00	10,000.00
7.04	Install new pole & signals including rewiring etc.	1	Item	3400.00	3,400.00
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**22,400.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	7000.00	7,000.00
8.02	Environmental Management	1	Item	3000.00	3,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**10,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK05 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	600.00
3.00	DRAINAGE	7,400.00
4.00	PAVEMENT	2,300.00
5.00	BITUMINOUS SURFACING	1,500.00
6.00	TRAFFIC FACILITIES	27,035.00
7.00	TRAFFIC SIGNALS	22,400.00
8.00	MISCELLANEOUS	10,000.00
	Sub Total	76,235.00
	TOTAL $	**76,235.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway	20	m²	20.00	400.00
2.02	Excavation and disposal of existing footpaths	10	m²	10.00	100.00
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials	1	No.	2500.00	2,500.00
3.02	Removal of existing pits and access pits	1	No.	500.00	500.00
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe	1	No.	1000.00	1,000.00
3.06	Construction of new/widening kerb ramps	6	No.	1500.00	9,000.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement	15	m	100.00	1,500.00
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m^2	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	15	m	20.00	300.00
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**14,800.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	20	m²	20.00	400.00
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	20	m²	10.00	200.00
4.03	Supply, spread and compact base material Class 1 175 mm depth	20	m²	30.00	600.00
4.04	Sawcut existing asphalt & match in new works	15	m	25.00	375.00
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**1,575.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
(a)	14 mm size (40m thick)	20	m²	50.00	1,000.00
(b)	50mm th coloured asphalt to raised area	10	m²	75.00	750.00
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**1,750.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals	10	m	10.00	100.00
	(d)	Type SL Stop Line	10	m	30.00	300.00
	(e)	Type E Edge Line (incl Bus Zone line)	15	m	10.00	150.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign	3	No.	500.00	1,500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	45	m	80.00	3,600.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	8	No.	165.00	1,320.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	20	m²	150.00	3,000.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays	7	No.	100.00	700.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	7	No.	100.00	700.00
6.07		Remove existing parking bay sensors	7	No.	50.00	350.00
6.08		Reinstall existing parking bays sensors	7	No.	100.00	700.00
6.09		Removal & reinstate existing signs		No.	250.00	
6.10	(a)	Install clearway sign (sign supplied by CoH)	2	No.	500.00	1,000.00
	(b)	Relocate Wayfinding sign	1	No.	2500.00	2,500.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**15,920.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals	2	Item	2000.00	4,000.00
7.02	Potholing for new foundation	2	Item	7000.00	14,000.00
7.03	Supply & install new footings (as per DSG standard drawing)	2	Item	10000.00	20,000.00
7.04	Install new pole & signals including rewiring etc.	2	Item	3400.00	6,800.00
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**44,800.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	7000.00	7,000.00
8.02	Environmental Management	1	Item	3000.00	3,000.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**10,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK06 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	500.00
3.00	DRAINAGE	14,800.00
4.00	PAVEMENT	1,575.00
5.00	BITUMINOUS SURFACING	1,750.00
6.00	TRAFFIC FACILITIES	15,920.00
7.00	TRAFFIC SIGNALS	44,800.00
8.00	MISCELLANEOUS	10,000.00
	Sub Total	94,345.00
	TOTAL $	**94,345.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway	20	m²	20.00	400.00
2.02	Excavation and disposal of existing footpaths	10	m²	10.00	100.00
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps	1	No.	1500.00	1,500.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement	15	m	100.00	1,500.00
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	15	m	20.00	300.00
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**3,300.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	20	m²	20.00	400.00
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	20	m²	10.00	200.00
4.03	Supply, spread and compact base material Class 1 175 mm depth	20	m²	30.00	600.00
4.04	Sawcut existing asphalt & match in new works	15	m	25.00	375.00
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**1,575.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
(a)	14 mm size (40m thick)	20	m²	50.00	1,000.00
(b)	Asphalt ramp to raised area	5	m²	75.00	375.00
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**1,375.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	4	m	30.00	120.00
	(e)	Type E Edge Line (incl Bus Zone line)	10	m	10.00	100.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign	1	No.	500.00	500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	45	m	80.00	3,600.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	8	No.	165.00	1,320.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	1	m²	150.00	150.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays		No.	100.00	
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz		No.	100.00	
6.07		Remove existing parking bay sensors		No.	50.00	
6.08		Reinstall existing parking bays sensors		No.	100.00	
6.09		Removal & reinstate existing signs	1	No.	250.00	250.00
6.10	(a)	Install sign (single post) (sign supplied by CoH)	2	No.	500.00	1,000.00
	(b)	Relocate Wayfinding sign	1	No.	2500.00	2,500.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**9,540.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals	1	Item	2000.00	2,000.00
7.02	Potholing for new foundation	1	Item	7000.00	7,000.00
7.03	Supply & install new footings (as per DSG standard drawing)	1	Item	10000.00	10,000.00
7.04	Install new pole & signals including rewiring etc.	1	Item	3400.00	3,400.00
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**22,400.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	7000.00	7,000.00
8.02	Environmental Management	1	Item	3000.00	3,000.00
8.03	Trim tree for bus access	1	Item	500.00	500.00
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**10,500.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK07 Macquarie St - Davey St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	500.00
3.00	DRAINAGE	3,300.00
4.00	PAVEMENT	1,575.00
5.00	BITUMINOUS SURFACING	1,375.00
6.00	TRAFFIC FACILITIES	9,540.00
7.00	TRAFFIC SIGNALS	22,400.00
8.00	MISCELLANEOUS	10,500.00
	Sub Total	54,190.00
	TOTAL $	**54,190.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps		No.	1500.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	15	m	30.00	450.00
	(e)	Type E Edge Line (incl Bus Zone line)	105	m	10.00	1,050.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Time zone marking	3	No.	500.00	1,500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone		m	80.00	
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs		No.	165.00	
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	30	m²	150.00	4,500.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework	15	m	50.00	750.00
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays		No.	100.00	
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz		No.	100.00	
6.07		Remove existing parking bay sensors		No.	50.00	
6.08		Reinstall existing parking bays sensors		No.	100.00	
6.09		New signage to existing signs	4	No.	250.00	1,000.00
6.10	(a)	Install sign (single post) (sign supplied by CoH)	2	No.	500.00	1,000.00
	(b)	Relocate Wayfinding sign		No.	2500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**10,250.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK08 Collins St - Macquarie St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	10,250.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	18,250.00
	TOTAL $	**18,250.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment		Item	5000.00	
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps		No.	1500.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line		m	30.00	
	(e)	Type E Edge Line (incl Bus Zone line)		m	10.00	
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone		m	80.00	
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs		No.	165.00	
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown		m^2	150.00	
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays		No.	100.00	
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz		No.	100.00	
6.07		Remove existing parking bay sensors		No.	50.00	
6.08		Reinstall existing parking bays sensors		No.	100.00	
6.09		Removal & reinstate existing signs		No.	250.00	
6.10	(a)	Install sign (single post) (sign supplied by CoH)		No.	500.00	
	(b)	Relocate Wayfinding sign		No.	2500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)		Item	7000.00	
8.02	Environmental Management		Item	3000.00	
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK09 Liverpool St - Collins St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	

Sub Total

TOTAL $

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway	15	m²	20.00	300.00
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	**300.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps	2	No.	1500.00	3,000.00
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement	12	m	100.00	1,200.00
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps	12	m	20.00	240.00
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	**4,440.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth	12	m²	20.00	240.00
4.02	Supply, spread and compact sub-base 3 material 150 mm depth	12	m²	10.00	120.00
4.03	Supply, spread and compact base material Class 1 175 mm depth	12	m²	30.00	360.00
4.04	Sawcut existing asphalt & match in new works	12	m	25.00	300.00
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	**1,020.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
(a)	14 mm size (40m thick)	12	m²	50.00	600.00
(b)	50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	**600.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	4	m	30.00	120.00
	(e)	Type E Edge Line (incl Bus Zone line)	11	m	10.00	110.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	51	m	80.00	4,080.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	4	No.	165.00	660.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	13	m²	150.00	1,950.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows		No.	200.00	
	(c)	Parking Bays	2	No.	100.00	200.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz		No.	100.00	
6.07		Remove existing parking bay sensors	2	No.	50.00	100.00
6.08		Reinstall existing parking bays sensors		No.	100.00	
6.09		Removal existing signs	2	No.	250.00	500.00
6.10	(a)	Install sign (single post) (sign supplied by CoH)	1	No.	500.00	500.00
	(b)	Relocate Wayfinding sign		No.	2500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**8,220.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals	1	Item	2000.00	2,000.00
7.02	Potholing for new foundation	1	Item	7000.00	7,000.00
7.03	Supply & install new footings (as per DSG standard drawing)	1	Item	10000.00	10,000.00
7.04	Install new pole & signals including rewiring etc.	1	Item	3400.00	3,400.00
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	**22,400.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	7000.00	7,000.00
8.02	Environmental Management	1	Item	3000.00	3,000.00
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**10,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK10 Bathurst St - Liverpool St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	300.00
3.00	DRAINAGE	4,440.00
4.00	PAVEMENT	1,020.00
5.00	BITUMINOUS SURFACING	600.00
6.00	TRAFFIC FACILITIES	8,220.00
7.00	TRAFFIC SIGNALS	22,400.00
8.00	MISCELLANEOUS	10,000.00
	Sub Total	51,980.00
	TOTAL $	**51,980.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps		No.	1500.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)	25	m	10.00	250.00
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	15	m	30.00	450.00
	(e)	Type E Edge Line (incl Bus Zone line)	2	m	10.00	20.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only	1	No.	400.00	400.00
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	56	m	80.00	4,480.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	5	No.	165.00	825.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	12	m²	150.00	1,800.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework	25	m	50.00	1,250.00
	(b)	Pavement Arrows	1	No.	200.00	200.00
	(c)	Parking Bays	8	No.	100.00	800.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	5	No.	100.00	500.00
6.07		Remove existing parking bay sensors	7	No.	50.00	350.00
6.08		Reinstall existing parking bays sensors	4	No.	100.00	400.00
6.09		Removal & reinstate existing signs	2	No.	250.00	500.00
6.10	(a)	Install sign (single post) (sign supplied by CoH)	2	No.	500.00	1,000.00
	(b)	Relocate Wayfinding sign		No.	2500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**13,225.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK11 Melville St - Bathurst St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	13,225.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	21,225.00
	TOTAL $	**21,225.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps		No.	1500.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line	4	m	30.00	120.00
	(e)	Type E Edge Line (incl Bus Zone line)	2	m	10.00	20.00
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only	2	No.	400.00	800.00
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	80	m	80.00	6,400.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs (clear of driveways)	6	No.	165.00	990.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	100	m²	150.00	15,000.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows	2	No.	200.00	400.00
	(c)	Parking Bays	4	No.	100.00	400.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	4	No.	100.00	400.00
6.07		Remove existing parking bay sensors	4	No.	50.00	200.00
6.08		Reinstall existing parking bays sensors	4	No.	100.00	400.00
6.09		Removal & reinstate existing signs	2	No.	250.00	500.00
6.10	(a)	Install sign (single post) (sign supplied by CoH)	1	No.	500.00	500.00
	(b)	Relocate Wayfinding sign		No.	2500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**26,130.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK12 Brisbane St - Melville St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	26,130.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	34,130.00
	TOTAL $	**34,130.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps		No.	1500.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) Asphalt ramp to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type SL Stop Line		m	30.00	
	(e)	Type E Edge Line		m	10.00	
	(f)	Type EC Edge Continuity		m	10.00	
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined		No.	500.00	
	(d)	Disabled Signs		No.	500.00	
	(e)	Cyclist Sign		No.	500.00	
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	145	m	80.00	11,600.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs	13	No.	165.00	2,145.00
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	11	m²	150.00	1,650.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows	4	No.	200.00	800.00
	(c)	Parking Bays	14	No.	100.00	1,400.00
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz	11	No.	100.00	1,100.00
6.07		Remove existing parking bay sensors	14	No.	50.00	700.00
6.08		Reinstall existing parking bays sensors	11	No.	100.00	1,100.00
6.09		Removal & reinstate existing signs	2	No.	250.00	500.00
6.10	(a)	Install clearway sign (sign supplied by CoH)	4	No.	500.00	2,000.00
	(b)	Remove parking meter nachine	1	No.	1000.00	1,000.00
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**23,995.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK13 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	23,995.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	31,995.00
	TOTAL $	**31,995.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 1 - PROJECT SPECIFIC ITEMS				
1.01	Site establishment	1	Item	5000.00	5,000.00
	PART 1 - PROJECT SPECIFIC ITEMS CARRIED TO SUMMARY			**TOTAL $**	**5,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 2 - EARTHWORKS				
2.01	Excavation in roadway		m²	20.00	
2.02	Excavation and disposal of existing footpaths		m²	10.00	
	PART 2 - EARTHWORKS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 3 - DRAINAGE				
3.01	Construction of side entry pits in all materials		No.	2500.00	
3.02	Removal of existing pits and access pits		No.	500.00	
3.03	Adjustment to surrounds of existing manhole covers		No.	1500.00	
3.04	Adjustment to surrounds of existing side entry pits		No.	1500.00	
3.05	Connection of new pits into existing pipe		No.	500.00	
3.06	Construction of new kerb ramps		No.	1500.00	
3.07	Construction of barrier kerb and gutter, Type KC, within existing pavement		m	100.00	
3.08	Construction of flush kerb, Type FK within existing pavement		No.	80.00	
3.09	Construction of heavy duty concrete driveways & crossover		m²	200.00	
3.10	Excavation and disposal of existing kerbs, combination kerb and gutters, v-gutters, edge strips, gutter crossings and kerb ramps		m	20.00	
	PART 3 - DRAINAGE CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 4 - PAVEMENT				
4.01	Supply, spread and compact sub-base Class 2 175 mm depth		m²	20.00	
4.02	Supply, spread and compact sub-base 3 material 150 mm depth		m²	10.00	
4.03	Supply, spread and compact base material Class 1 175 mm depth		m²	30.00	
4.04	Sawcut existing asphalt & match in new works		m	25.00	
4.05	Mill existing pavement for new asphalt surface		m²	5.00	
	PART 4 - PAVEMENT CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 5 - BITUMINOUS SURFACING				
5.01	Supply and delivery to site of Dense Graded Asphalt				
	(a) 14 mm size (40m thick)		m²	50.00	
	(b) 50mm th coloured asphalt to raised area		m²	75.00	
	PART 5 - BITUMINOUS SURFACING CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.		DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
		PART 6 - TRAFFIC FACILITIES				
6.01		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	Type S1 Separation (Urban Lane)		m	10.00	
	(b)	Type NS Yellow (No Stopping)		m	10.00	
	(c)	Type W Pedestrian Traffic Signals		m	10.00	
	(d)	Type HL Holding Line	15	m	30.00	450.00
	(e)	Type E Edge Line		m	10.00	
	(f)	Type EC Edge Continuity	17	m	10.00	170.00
6.02		Supply and install white paint pavement arrows including glass beads or angular quartz				
	(a)	Left or right only		No.	400.00	
	(b)	Straight ahead only		No.	400.00	
	(c)	Straight ahead and left or right combined	3	No.	500.00	1,500.00
	(d)	Disabled Signs		No.	500.00	
	(e)	Time zone markings	3	No.	500.00	1,500.00
6.03		Supply and application of thermoplastic pavement marking including glass beads or angular quartz				
	(a)	0.50m wide buffer zone	130	m	80.00	10,400.00
	(b)	Supply & install Dura-Post flexible bollards (FBL 4450 or equal) @ 6m crs		No.	165.00	
6.04		Supply and install green pavement paint for bike lanes, bike boxes including cyclist decals as shown	60	m²	150.00	9,000.00
6.05		Remove existing linemarking				
	(a)	Lane Marking Linework		m	50.00	
	(b)	Pavement Arrows	2	No.	200.00	400.00
	(c)	Parking Bays		No.	100.00	
6.06		Supply and install white paint pavement parking bays including glass beads or angular quartz		No.	100.00	
6.07		Remove existing parking bay sensors		No.	50.00	
6.08		Reinstall existing parking bays sensors		No.	100.00	
6.09		Removal & reinstate existing signs		No.	250.00	
6.10	(a)	Install clearway sign (sign supplied by CoH)		No.	500.00	
	(b)	Relocate Wayfinding sign		No.	2500.00	
		PART 6 - TRAFFIC FACILITIES CARRIED TO SUMMARY			**TOTAL $**	**23,420.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 7 - TRAFFIC SIGNALS				
7.01	Removal of existing signals		Item	2000.00	
7.02	Potholing for new foundation		Item	7000.00	
7.03	Supply & install new footings (as per DSG standard drawing)		Item	10000.00	
7.04	Install new pole & signals including rewiring etc.		Item	3400.00	
	PART 7 - TRAFFIC SIGNALS CARRIED TO SUMMARY			**TOTAL $**	

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $
	PART 8 - MISCELLANEOUS				
8.01	Traffic Management (night works)	1	Item	2000.00	2,000.00
8.02	Environmental Management	1	Item	1000.00	1,000.00
8.03			Item		
	PART 8 - MISCELLANEOUS CARRIED TO SUMMARY			**TOTAL $**	**3,000.00**

City of Hobart
Campbell Argyle Street Bicycle Lanes

Indicative Cost Estimate

Ref: SK14 Argyle St - Campbell St

ITEM NO.	DESCRIPTION	QTY.	UNIT	RATE $	AMOUNT $

SUMMARY

PART NO.	DESCRIPTION	SUB-TOTAL $
1.00	PROJECT SPECIFIC	5,000.00
2.00	EARTHWORKS	
3.00	DRAINAGE	
4.00	PAVEMENT	
5.00	BITUMINOUS SURFACING	
6.00	TRAFFIC FACILITIES	23,420.00
7.00	TRAFFIC SIGNALS	
8.00	MISCELLANEOUS	3,000.00
	Sub Total	31,420.00
	TOTAL $	**31,420.00**

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https://projectsportal.ghd.com/sites/pp16_02/22202106variation/ProjectDocs/WP/12517089_TRAF_REPT_Cost Estimate Report.docx

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	S.Chapman	L.Black		A.Moore		
B	S.Chapman	L.Black		A.Moore		

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7. COMMITTEE ACTION STATUS REPORT

7.1 Committee Actions - Status Report

A report indicating the status of current decisions is attached for the information of Elected Members.

RECOMMENDATION

That the information be received and noted.

Delegation: Committee

Attachment A: Committee Action Status Report

CITY INFRASTRUCTURE COMMITTEE – STATUS REPORT OPEN PORTION OF THE MEETING November 2014 to April 2021				
Ref	**Title**	**Report / Action**	**Action Officer**	**Comments**
1	**221A LENAH VALLEY ROAD, 2-16 CREEK ROAD, LENAH VALLEY – SUBDIVISION (86 RESIDENTIAL LOTS, 8 ROAD LOTS, 7 PUBLIC OPEN SPACE LOTS) – PLN-14-00584-01** Council 22/9/2014, item 9.2	That the Council undertake an urgent review of the Lenah Valley Traffic Management Plan with particular reference to the management of traffic in Augusta, Creek, Alwyn and Chaucer Roads and Monash Ave.	Director City Planning	Hobart Transport Strategy Implementation Framework (HTSIF) included on City Infrastructure Committee Agenda 28 April 2021. HTSIF Key relevant project: • Local Area Mobility Plan (Lenah Valley/ New Town) proposed to commence in 2021.
2	**IMPROVEMENTS TO PEDESTRIAN CROSSINGS** Council 13/4/2015, item 10	A report be prepared looking at other opportunities for improvements to pedestrian crossings on key pedestrian routes in the City, including consideration of zebra crossings.	Director City Planning	Hobart Active Travel Committee Hobart Primary Walking Plan (Draft) has been developed (April 2021). HTSIF Key relevant projects: • Hobart Primary Walking Plan Implementation • Central Hobart Precincts Plan • Local Area Mobility Plan (Lenah Valley/ New Town) proposed to commence in 2021.

Ref	Title	Report / Action	Action Officer	Comments
3	**SANDY BAY RETAIL PRECINCT – STREETSCAPE REVITALISATION** Council 7/9/2015, item 10 Open CIC 26/2/2020, Item 6.5 Open Council 6/7/2020, item 10	The speed limit on Sandy Bay Road between Osborne Street and Ashfield Street, Sandy Bay, be reviewed following completion of the works and the Lord Mayor be requested to write to the Minister for State Growth regarding any planned speed limit changes for the main retail precinct on Sandy Bay Road. **Extract of 6 July 2020 Council resolution**: The Council endorse engagement with key stakeholders and the preparation of supporting documentation to allow a submission to the Transport Commissioner for the following speed limit changes in the Suburban Retail Precincts between the hours of 7:00am until 7:00pm Monday to Thursday and 7:00am until 10:00pm Friday to Sunday….	Director City Planning	Further to Council's resolution (6 July 2021) City Mobility Unit is preparing the Speed limit reduction applications to the Commissioner for Transport. Successful applications to date: • Hobart CBD • Lenah Valley Retail Precinct This action will be closed out progressively in 2021 and is covered in item 27. It is therefore proposed to close this item..
4	**PEDESTRIAN ACCESS AND SAFETY ON HOBART STREETS** Council 12/10/2015, item 14	1. Following the development and implementation of a suitable engagement strategy, the current Highways By-law (3 of 2008) be enforced with particular emphasis on the Elizabeth Mall, Wellington Court and Salamanca Square (including Woobys Lane and Kennedy Lane). 2. The General Manager be authorised to modify the management of commercial furniture and infrastructure on public footpaths towards a best	Director City Planning	Work to implement the Council's resolution with regard to the reconstructed sections of Liverpool Street, Morrison Street, Salamanca Place and Sandy Bay shopping centre is complete. Planning is underway for implementing the other elements. A further report addressing clause 3 will be presented to an upcoming Committee meeting.

Ref	Title	Report / Action	Action Officer	Comments
		practice model approach, where such furniture and signage is only permitted if it does not interfere with the safe and equitable movement of pedestrians along that public footpath. 3. A further report be prepared that identifies how the Council may achieve a clear building line with minimum footpath widths in the future, in order to best satisfy the provision of an accessible path as required by the Disability Discrimination Act 1992. 4. During the review and renewal of the current Highways By-law, appropriate amendments be made to ensure that signboards are prohibited from being placed immediately adjacent to buildings. 5. As part of the review of signage, alternative options to sandwich boards, such as sign posts be investigated. 6. Officer hold discussions with relevant stakeholders in relation to the hazards potentially created through application of the Disability Discrimination Act 1992 with regard to the setbacks required from building frontages.		Hobart Active Travel Committee *Primary Walking Plan (Draft)* has been developed (April 2021). HTSIF Key relevant projects: • Hobart Primary Walking Plan Implementation • Central Hobart Precincts Plan • Local Area Mobility Plan (Lenah Valley/ New Town) proposed to commence in 2021. Initial discussions with City of Hobart Accessibility Advisory Committee Coordinator for new consultancy/ audit: *DDA Access Review: Hobart Centres and surrounds*

Ref	Title	Report / Action	Action Officer	Comments
5	**ESTABLISHMENT OF AN ADVISORY COMMITTEE FOR THE IMPLEMENTATION OF A SULLIVANS COVE WATERFRONT PRECINCT PLAN** Council 6/6/2016, item 13	1. A Waterfront Precinct Plan be developed as part of the Hobart Transport Strategy and an Advisory Committee be established to assist in the development of the plan. 2. The Sullivans Cove Tripartite Steering Committee and the Waterfront Business Community to consider increasing their membership in order to increase communication.	Director City Planning	Preliminary discussions with TasPorts, Senior Commercial Manager. Scoping pending.
6	**CITY OF HOBART TRANSPORT STRATEGY – ENGAGEMENT REPORT** Council 8/8/2016, item 14 Council 8/10/2018, item 14	1. The report of the Manager Traffic Engineering and the Director City Infrastructure titled *Draft Transport Strategy - Engagement Report* marked as item 6.1 of the Open City Infrastructure Committee agenda of 19 September 2018 be received and noted. 2. The Council adopt the 9 themes and position statements in the draft strategy. 3. The actions contained in the draft strategy be reviewed in light of the feedback received and a further report be provided.	Director City Planning	At this meeting the Council adopted the 9 themes and position statements in the draft strategy. *Hobart Transport Strategy Implementation Framework (HTSIF)* included on City Infrastructure Committee Agenda 28 April 2021.
7	**AP14 SALAMANCA PEDESTRIAN WORKS – UPDATED CONCEPT DESIGN**	1. Subject to detailed design and planning approval, the next stage of the Salamanca Pedestrian Works, generally as shown on the figure	Director City Planning	Stage 2A of the works are complete. Stage 2B of the works are complete.

Ref	Title	Report / Action	Action Officer	Comments
	Council 10/10/2016, item 11 Council 9/4/2018, item 11 Council 9/7/2018, item 15	'Concept Plan – Final (7/6/2018)' in Attachment C and the figure 'Concept Plan – Materials (7/6/2018)' be constructed at an estimated cost of $3.5M, with $1M to be allocated in the 2018 / 2019 Capital Works Program and the remaining $2.5M funded over the 2019 / 2020 and 2020 / 2021 financial years. 2. The General Manager ensure that Aldermen are updated on any significant changes to the concept design that may occur through the detailed design and construction process.		Detailed planning is being finalised for commencement of the next stage of works, between Montpelier Retreat and Kennedy Lane.
8	**ICAP AP14 - SALAMANCA PLACE BETWEEN KENNEDY LANE AND WOOBYS LANE - FOOTPATH REVIEW** Council 3/4/2017, item 26	1. Consideration of the future management of the section of the Salamanca Place southern footpath between Kennedy Lane and Woobys Lane, occur once the 'Stage 1' footpath widening works have been completed and in operation for a minimum of six months. 2. The General Manager develop and implement a suitable guide for the style and placement of outdoor dining barriers and umbrellas to be utilised on Salamanca Place and Hunter Street. 3. A concept design addressing the pedestrian issue occurring on the	Director City Planning	1. The consultation necessary to report to the Committee has been held back so as not to complicate the consultation occurring for the wider Salamanca Pedestrian works t. A Style Guide for outdoor dining barriers and umbrellas will be developed. 2. The provision of a footpath using temporary materials has been undertaken successfully during the Taste and Dark Mofo events. A detailed design will now be prepared.

Ref	Title	Report / Action	Action Officer	Comments
		northern side of Salamanca Place during periods when the footpaths on Castray Esplanade are inaccessible due to special events be developed and included for consideration in future budget preparations.		
9	**PARKLET POLICY** Council 24/10/2016, item 10 Council 5/6/2017, item 13 Committee 21/6/2017, item 6.4	That the matter be deferred to a subsequent City Infrastructure Committee meeting to enable further public consultation.	Director City Planning	A report addressing this matter is being finalised and will be presented to an upcoming Committee meeting. This will be informed by the current work of the City of Hobart to support business operators as they move along the Roadmap for a COVID-safe Tasmania, including complying with the physical distancing requirements and occupation limits. This has included allowing operators can apply to amend their existing permits or apply for a new permit to occupy a public space within the Hobart municipal area, where possible, to give them more space to trade. The City of Hobart is delivering the Midtown Expanded Outdoor Dining Trial, supported by the Tasmanian Government through the Ready for Business Program. The program provides temporary expanded outdoor dining and street seating space, greening and bicycle racks in Elizabeth Street between Melville Street

Ref	Title	Report / Action	Action Officer	Comments
				and Brisbane Street, for a 12-month trial period.
10	**SANDY BAY ROAD WALKING AND CYCLING PROJECT - REQUEST TO MODIFY DESIGN TO REMOVE PEDESTRIAN CROSSING** Council 3/4/2017, item 29 Committee 21/11/2018, item 6.4	That the matter be deferred to a subsequent City Infrastructure Committee meeting for the purpose of attaining costings for the survey to be undertaken of the local community in relation to the installation of a pedestrian facility.	Director City Planning	Officers are progressing the matter.
11	**COLLINS COURT REDEVELOPMENT - STAGE TWO** Council 3/7/2017, item 17 Council 7/12/2020, item 14	That: 1. The Council endorse the design shown in Attachment A to item 6.3 of the Open City Infrastructure Committee meeting of 25 November 2020 for the purpose of stakeholder and wider public engagement, noting that the Council is not in a position to make a capital investment in the project at this time. 2. The outcomes of the stakeholder and wider public engagement process, be the subject of a further report to the Council in 2021.	Director City Planning	The Council decision is being actioned.
12	**CITY TO COVE CONNECTIONS** Council 3/7/2017, item 18	1. That widening the footpaths in Elizabeth Street, from Collins Street, to Franklin Wharf be considered as an	Director City Planning	Hobart Active Travel Committee *Primary Walking Plan (Draft)* has been developed (April 2021). HTSIF Key relevant projects:

Ref	Title	Report / Action	Action Officer	Comments
		integral component of the Elizabeth Street Bus Mall Improvement project. 2. That community engagement be conducted on the proposed Brooke Street to Franklin Square link. 3. The outcomes of the community consultation in 2 above be the subject of a further report to the Council.		• *Hobart Primary Walking Plan* Implementation • *Central Hobart Precincts Plan* • *Local Area Mobility Plan* (Lenah Valley/ New Town) proposed to commence in 2021. Initial discussions with City of Hobart Accessibility Advisory Committee Coordinator for new consultancy/ audit: *DDA Access Review: Hobart Centres and surrounds*
13	**PETITION - SANDY BAY SHOPPING PRECINCT FOOTPATHS - OPPOSING CHANGE TO OUTDOOR DINING AREAS AND BUS STOP LOCATIONS** Council 7/8/2017, item 10 Council 4/9/2017, item 14	1. The General Manager proceed with the implementation of the Council resolution of 12 October 2015, by progressing the relocation of occupation licence areas and signboards away from the building line in the Sandy Bay Shopping Precinct. 2. The Council develop a new formal policy, building on the Council resolution of 12 October 2015, which provides guidance on the placement of outdoor dining in Hobart streets, taking into consideration the width of footpaths and traffic speed suitable for outdoor dining. (i) Further options such as parklets, be explored for outdoor dining in narrow footpath areas.	Director City Planning	1. Complete – change occurred from 1 November 2017. 2. This matter will be considered in item 4 and therefore this item can be closed

Ref	Title	Report / Action	Action Officer	Comments
14	**PETITION - UPGRADE OF THE SCHOOL CROSSING IN FORSTER STREET, NEW TOWN** Council 21/8/2017, item 6 Council 18/12/2017, item 6.2	1. The following recommendations to further improve the safety of the children's crossing in Forster Street at New Town Primary School be endorsed: (a) The Department of State Growth be requested to ensure that the renewal of the line marking in Forster Street, New Town be prioritised to be completed prior to the commencement of the 2018 school year; (b) Work with the Department of State Growth to review and revise the operating times of the variable 40 km/h school zone signage to ensure that it is consistent with the start and finish times of the school; and (c) Continue to work with the Department of State Growth's Road Safety Branch to improve the conspicuousness of the children's crossing through either improved signage or the trialling the use of flashing lights as an alternative to the flags. 2. An offer be made to New Town Primary School giving them the option of participating in an Active Routes to School workshop.	Director City Planning	1(a) Complete 1(b)(c) Officers are progressing the other matters in liaison with the Department of State Growth. 2. Offer extended to New Town Primary School by Bicycle Network to participate in an Active Routes to School workshop. 3. Complete.

Ref	Title	Report / Action	Action Officer	Comments
		3. The organiser of the petition be advised of the Council's decision.		
15	**NEW TOWN RETAIL PRECINCT - PROPOSED STREETSCAPE CONCEPT** Council 18/12/2017, item 6.1 Council 4/6/2018, item 11	1. The streetscape upgrade be implemented, based on the concept design proposal, with detailed design to be undertaken in 2018 and construction to commence in early 2019. 2. In the event the consultation process results in an increase in costs, the details be advised to the Council.	Director City Planning	Construction on Stage 1 of the New Town Retail Precinct is complete. Given the financial impact of COVID-19, the next stages of this project can now only proceed in full if external funding can be secured. External funding has been sought. Given the current financial position of the Council as a result of the COVID-19 pandemic it is proposed that this item continue to be listed within future years capital works programs as and when funding becomes available and that this item be closed.
16	**99 STEPS, WEST HOBART** Council 8/10/2018, item 12 Council 6/5/2019, item 14	1. Works be undertaken to improve the amenity and safety of the small set of steps at the top of 99 Steps, West Hobart including the installation of a seat and fence, along with a ramp and new steps on the opposite side of Liverpool Street at an estimated cost of $25,000 in 2019-2020 to be funded from the City Laneways Access and Lighting Upgrades budget allocation. 2. Stormwater works including extension of a stormwater main along Liverpool Street and installation of drainage pits	Director City Amenity	Works are scheduled to commence shortly

Ref	Title	Report / Action	Action Officer	Comments
		be constructed in 2020-2021 as part of a road and stormwater upgrade project to address flooding issues, subject to funding approval in the 2020-2021 budget. 3. Works to fully upgrade the 99 Steps walkway to full compliance with engineering standards and installation of bicycle channel be considered in the development of a City Laneways Strategy and Action Plan.		
17	**71 LETITIA STREET, NORTH HOBART - PARTIAL DEMOLITION, SUBDIVISION (ONE ADDITIONAL LOT) AND ALTERATIONS TO CAR PARKING** Open Council 17/6/2019, item	The City Infrastructure Committee be requested to address on-street parking in the area of the development.	Director City Planning	The Council decision is being actioned.
18	**ELIZABETH STREET MIDTOWN RETAIL PRECINCT UPGRADE** Open Council 8/7/2019, item 12 Open Council 12/10/2020 item 15 Open Council 7/12/2020, item 13	That: 1. The draft concept design for Elizabeth Street Midtown Retail Precinct project (marked as Attachment A to item 6.2 of the Open City Infrastructure Committee agenda of 25 November 2020), be generally endorsed as a framework for future streetscape development in the project area, noting that the Council is not in a	Director City Planning	The Council decision is being actioned.

Ref	Title	Report / Action	Action Officer	Comments
		position to fund the implementation at this time. 2. That any decision on the final uphill bike lane treatment be determined following the trial of uphill bike lane as part of the 12 month 'Ready for Business' pilot project. 3. A further report be provided to the Council in the first quarter of 2021, outlining an implementation plan including cost estimates, financial impacts, funding source/s and proposed timing. 4. A detailed report addressing the potential loss of car parking within the Elizabeth Street Precinct be referred to the Finance and Governance Committee at the appropriate time.		
19	**CAMPBELL STREET (BETWEEN LIVERPOOL STREET AND COLLINS STREET) - TRIAL TRAFFIC MANAGEMENT ARRANGEMENTS FOR ROYAL HOBART HOSPITAL K-BLOCK** Council 9/9/19, item 15	That a trial of the traffic and parking arrangements for Campbell Street between Liverpool Street and Collins Street be approved for an initial period of at least 12 months from the opening of the Royal Hobart Hospital K Block. A report on the operation of the traffic management and parking arrangement be provided following the 12 month trial to enable Council to consider a more permanent arrangement in Campbell Street.	Director City Planning	The installation of traffic and parking arrangements for Campbell Street between Liverpool Street and Collins Street has been completed. Trial assessment scheduled to commence May 2021.

Ref	Title	Report / Action	Action Officer	Comments
		The Council authorise the General Manager to negotiate with the Royal Hobart Hospital administration for a contribution towards upgrading the reinstated footpath (in Campbell Street adjacent to the Royal Hobart Hospital) from asphalt to unit paver materials.		
20	**INSTALLATION OF TRAFFIC SIGNALS - INTERSECTION OF COLLINS STREET AND MOLLE STREET** Council 9/9/2019, item 17	That the installation of traffic signals at the intersection of Molle Street and Collins Street to improve the safety and amenity of pedestrians and cyclists be supported. (i) Subject to the proposed bulbing in Molle Street being reduced in length to accommodate a further two car parking spaces. The General Manager be authorised to negotiate with the landowner of 40-50 Molle Street for the incorporation of the existing driveway and associated 'right of way' utilised by pedestrians and cyclists into the proposed traffic signals, including the transfer of any land necessary to facilitate that installation. A further report be provided on the possible use of different surface treatments to highlight the pedestrian crossings.	Director City Planning	Land transfer agreed and legal process underway with private property owner for the area required to signalise the junction. Funding has been secured through Australian Government programs for the majority of the project costs. A development application for the works has been submitted.

Ref	Title	Report / Action	Action Officer	Comments
21	**HUON ROAD - UPHILL BICYCLE PASSING OPPORTUNITY PROJECT** Open Council 16/12/2019, Item 12	1. The General Manager be authorised to sign and attach the common seal of the City of Hobart to the grant deed when received for the provision of passing opportunities for vehicle drivers to safely pass uphill bicycle riders on Huon Road. 2. On completion of part 1 of the recommendation, the City of Hobart proceed to procurement of the proposed works for the provision of passing opportunities for vehicle drivers to safely pass uphill bicycle riders on Huon Road between Stephenson Place and 432 Huon Road, as detailed in the concept design drawings provided as Attachment A to item 6.3 of the Open City Infrastructure Committee agenda of 11 December 2019.	Director City Planning	Construction underway, scope extended.
22	**CAMPBELL STREET AND ARGYLE STREET BICYCLE CONNECTIONS** Open Council 16/12/2019, Item 13	1. The initial concept design for bicycle facilities on Argyle Street, Campbell Street, Liverpool Street and Bathurst Street, including sections of separated cycleways is provided as Attachment A to item 6.4 of the Open City Infrastructure Committee agenda of 11 December 2019 be used as the basis to commence public engagement with key stakeholders in early 2020.	Director City Planning	Funding secured through DSG *Vulnerable Road Users Program*. A report on the matter is listed on the agenda.

Ref	Title	Report / Action	Action Officer	Comments
		(i) That consultation occur with relevant stakeholders, in particular, property owners, land owners, residents and lease holders of the affected streets. (ii) The facilities be trialled for a one year period. 2. A further report detailing the proposal be provided to the Council following the public engagement with key stakeholders. 3. A report be provided on the feasibility of introducing priority car pool and bus lanes on Campbell and Argyle Streets.		
23	**BROOKE / DESPARD STREETS - CONGESTION REDUCING INITIATIVE - THREE-MONTH TRIAL** Open Council 10/3/2020, item 16	1. Approval be given to implement a three-month trial congestion reducing initiative that would: (i) Close Brooke Street at Morrison Street to taxi and rideshare vehicles on Friday and Saturday evenings from 11.00 pm to 5.00 am; (ii) Create a taxi holding area in the CSIRO car park in Castray Esplanade on Friday and Saturday evenings between 11.00 pm and 5.00 am; (iii) Create a nominated waiting location for ride share vehicles in	Director City Planning Deputy General Manager	Further options have been discussed with the Salamanca Late Night Stakeholder Group for potential options. Council to commence consultation with business owners (April/May 2021).

Ref	Title	Report / Action	Action Officer	Comments
		Salamanca Place between Davey Street and Gladstone Street; and (iv) Create four pick-up locations for ride share passengers across the waterfront precinct. 2. The Lord Mayor write to the State Treasurer seeking co-funding of the trial congestion reducing initiative and potential ongoing funding should the trial be successful. 3. Funding of $17,483 to implement the three-month trial will be allocated to the Special Events Traffic Management budget allocation in the Traffic Strategy and Projects function area of the 2019-20 annual plan.		
24	**NETWORK OPERATING PLAN (NOP) – BRIEFING** Open CIC 24/6/2020, item 6.1	A further report on the progress of the inner Hobart Network Operation Plan (NOP) be provided at the appropriate time.	Director City Planning	NOP Phase 1 report is being finalised by the Department of State Growth.
25	**REQUEST FOR SPEED LIMIT REDUCTION IN HOBART CENTRAL BUSINESS DISTRICT AND RETAIL PRECINCTS** Open Council 6/7/2020, item 10	That: 1. The Council endorse the engagement with key stakeholders and the preparation of supporting documentation to allow a submission to the Transport Commissioner requesting the following speed limit changes in Hobart's Central Business District indicatively proposed as:	Director City Planning	Clause 1 complete. Clause 2(b) Application to reduce speed has been approved by Commissioner for Transport with funding secured to implement the changes.

Ref	Title	Report / Action	Action Officer	Comments
		a) Elizabeth Street between Melville and Morrison Streets (excluding the Elizabeth Street Mall and Macquarie and Davey Street crossing points) from 50 km/hour to 40km/hour. (Note: Elizabeth Street between Collins and Davey Streets is currently 30km/hr). b) Collins and Liverpool Streets between Murray and Argyle from 50 km/hour to 40km/hour (Note: Criterion Lane and Liverpool St between Elizabeth Street and Murray Street is currently 30km/hr). c) Melville and Bathurst Streets between Harrington and Campbell Streets from 50 km/hour to 40km/ hour. d) Harrington, Murray, Argyle and Campbell Streets between Melville and Davey Streets (excluding the Davey and Macquarie Street crossings), from 50 km/hour to 40km/hour. e) Liverpool and Collins Streets between Harrington and Murray Streets, and between Argyle and Campbell Streets from 50 km/hour to 40km/hour.		

Ref	Title	Report / Action	Action Officer	Comments
		(Note: Collins Street from Argyle to Elizabeth Street is currently 30 km/hour) f) Market Place, Kemp Street, Trafalgar Place, Purdys Mart, Wellington Court, Harrington Lane, Watchorn Street, Victoria Street, Bidencopes Lane from 50 km/hour to 40km/hour. 2. The Council endorse engagement with key stakeholders and the preparation of supporting documentation to allow a submission to the Transport Commissioner for the following speed limit changes in the Suburban Retail Precincts between the hours of 7:00am until 7:00pm Monday to Thursday and 7:00am until 10:00pm Friday to Sunday indicatively proposed as: a) North Hobart between Burnett Street and Tasma Street from 50km/hour to 40km/ hour (Note: Extending the existing 40km/hour zone between Federal Street and Burnett Street). b) Lenah Valley between Giblin Street and Greenway Avenue from 50km/hour to 40km/ hour.		

Ref	Title	Report / Action	Action Officer	Comments
		c) South Hobart from Excell Lane and the Southern Outlet Junction from 50km/hour to 40km/ hour. d) Sandy Bay along Sandy Bay Road from Osborne Street and Russell Crescent, and including King Street between Grosvenor Street and Princes Street, Gregory Street between Grosvenor and Sandy Bay Road, Princes Street between King Street and Sandy Bay Road, and Russell Crescent between Sandy Bay Road and King Street from 50km/hour to 40km/ hour. e) New Town: New Town Road from Marsh Street to the Pirie Street intersection, and Risdon Road between New Town Road and Swanston Street from 50km/hour to 40km/ hour.		
26	**The North Hobart Retail and Entertainment Precinct Place Vision and Access and Parking Plan Project** Open Council 23/11/2020, Item 17 Open Council 7/12/2020, item 18	That: 1. The Council approve the 10 questions for community engagement marked as Attachment A to item 3.1 of the Special Meeting of All Council Committees agenda of 7 December 2020 with the following amendments: (i) Questions 2,3 and 4 be answered in order of priority (from 1 to 5)	Director City Planning Director City Innovation	The Council decision is being actioned

Ref	Title	Report / Action	Action Officer	Comments
		(ii) Question 4 action 4 be amended to read: "The current operation of Condell Place as a car park be maintained and include long term car parking options and / or multi-storey purpose uses." 2. Taking account of the busy period leading up to the end of the current calendar year, particularly for businesses and the post New Year holiday period, the public engagement process be undertaken for an eight (8) week period, commencing on Monday 1 February 2021, in line with the methodology detailed in this report. 3. A further report detailing the outcomes of the engagement process and proposed project action plan, including the associated capital and operating cost implications, be submitted to a Council meeting in the second quarter of 2021.		
27	**Petition - Dynnyrne Road – Resealing** Open Council 22/2/2021	The General Manager tabled a petition from residents of Dynnyrne Road requesting the Council undertake immediate remedial work on Dynnyrne Road to rectify problems with the resealing of the road. There were 20 signatories to the petition.	Director City Amenity	A report on the matter is being prepared.

Ref	Title	Report / Action	Action Officer	Comments
		That the petition be received and noted and referred to the appropriate Committee.		
28	**Request for Speed Limit Reduction 490 to 601 Huon Road South Hobart** Open Council 9/3/2021, item 12	The General Manager be authorised to make application on behalf of the City of Hobart to the Transport Commission for speed limit changes broadly in keeping with the proposed changes described in Attachment B item 6.1 of the Open City Infrastructure Committee agenda of 24 February 2021.	Director City Planning	Approval from Commissioner for Transport received. Signage changes underway. Complete
29	**48-50 New Town Road and 52 New Town Road and 46 New Town Road and 7A Clare Street, New Town and Adjacent Road Reserve - Demolition, New Building for Hospital Services, Business and Professional Services, and General Retail and Hire, Signage, and Associated Works** Open Council 9/3/2021, item 9.1	That: (i) The City Infrastructure Committee be requested to consider commuter parking and traffic issues in the surrounding residential areas of New Town Road, Jennings Street, Seymour Street, Clare Street and Augusta Road. (ii) An active travel plan for the site be developed with a focus on the overall traffic movements, ingress and egress from the site at 48-50 New Town Road.	Director City Planning	Hobart Active Travel Committee *Primary Walking Plan (Draft)* has been developed (April 2021). HTSIF Key relevant projects: • *Hobart Parking Policy* • *Hobart Primary Walking Plan* Implementation • *Central Hobart Precincts Plan* • *Local Area Mobility Plan* (Lenah Valley/ New Town) proposed to commence in 2021. Initial discussions with City of Hobart Accessibility Advisory Committee Coordinator for new consultancy/ audit: *DDA Access Review: Hobart Centres and surrounds*

Ref	Title	Report / Action	Action Officer	Comments
30	**Request to Vary Council Policy - Permanent Private Signage on Highway Reservation - Huon Road** Open Council 31/3/2021, item 11	That: 1. The strong commitment in the City of Hobart's 'Capital City Strategic Plan 2019-29' to celebrate and support Tasmanian Aboriginal community, heritage and culture, and to invite people to engage with Tasmanian Aboriginal history and culture be noted. 2. The Council Policy 'Permanent Private Signage on Highways Reservations' be waived for the purposes of considering the application for the retention of the "Always Was Always Will Be" sign erected on a street tree on Huon Road at Pillinger Drive in Fern Tree. 3. The General Manager be authorised to issue an annual permit under the Public Spaces By Law for the retention of the "Always Was Always Will Be" sign, and to reissue the permit on an annual basis as deemed appropriate. 4. In the event that the permit is issued, it be issued for the initial annual fee of $100 (as listed in the 2020-21 approved fees and charges), and subject to future adjustment as part of the fees and charges process.	Director City Planning	Complete

8. RESPONSES TO QUESTIONS WITHOUT NOTICE

Regulation 29(3) *Local Government (Meeting Procedures) Regulations 2015.*
File Ref: 13-1-10

The Acting General Manager reports:-

"In accordance with the procedures approved in respect to Questions Without Notice, the following responses to questions taken on notice are provided to the Committee for information.

The Committee is reminded that in accordance with Regulation 29(3) of the *Local Government (Meeting Procedures) Regulations 2015*, the Chairman is not to allow discussion or debate on either the question or the response."

8.1 Transport Programs and City Projects
File Ref: F20/68825; 13-1-10

Memorandum of the Director City Amenity and the Director City Innovation of 30 March 2021.

8.2 Public FOGO Bins
File Ref: F21/26594; 13-1-10

Memorandum of the Director City Amenity of 22 April 2021.

8.3 Public Waste and Recycling Bins
File Ref: F21/26624; 13-1-10

Memorandum of the Director City Amenity of 22 April 2021.

Delegation: Committee

That the information be received and noted.

City of HOBART

Memorandum: **Lord Mayor**
Deputy Lord Mayor
Elected Members

Response to Question Without Notice

TRANSPORT PROGRAMS AND CITY PROJECTS

Meeting: City Infrastructure Committee **Meeting date: 24 June 2020**

Raised by: Lord Mayor Reynolds

Question:

Could the Director please advise if this Committee can get prior notice of the various state and federal road and transport grant funding programs and what projects the City is planning to submit?

Can criteria be developed for what projects are prioritised for these programs?

Response:

There are several road and transport grant funding programs available to Local Government.

Pre-allocated Grant Funding Programs

These grant programs are provided to the City with a financial quantum as determined by the grant providers, utilising various criteria.

The City is then required to submit its proposed projects to the funding body for its endorsement to use those funds for that purpose.

Competitive Grants

Made available on an ad hoc basis, often with very short lead times for applications.

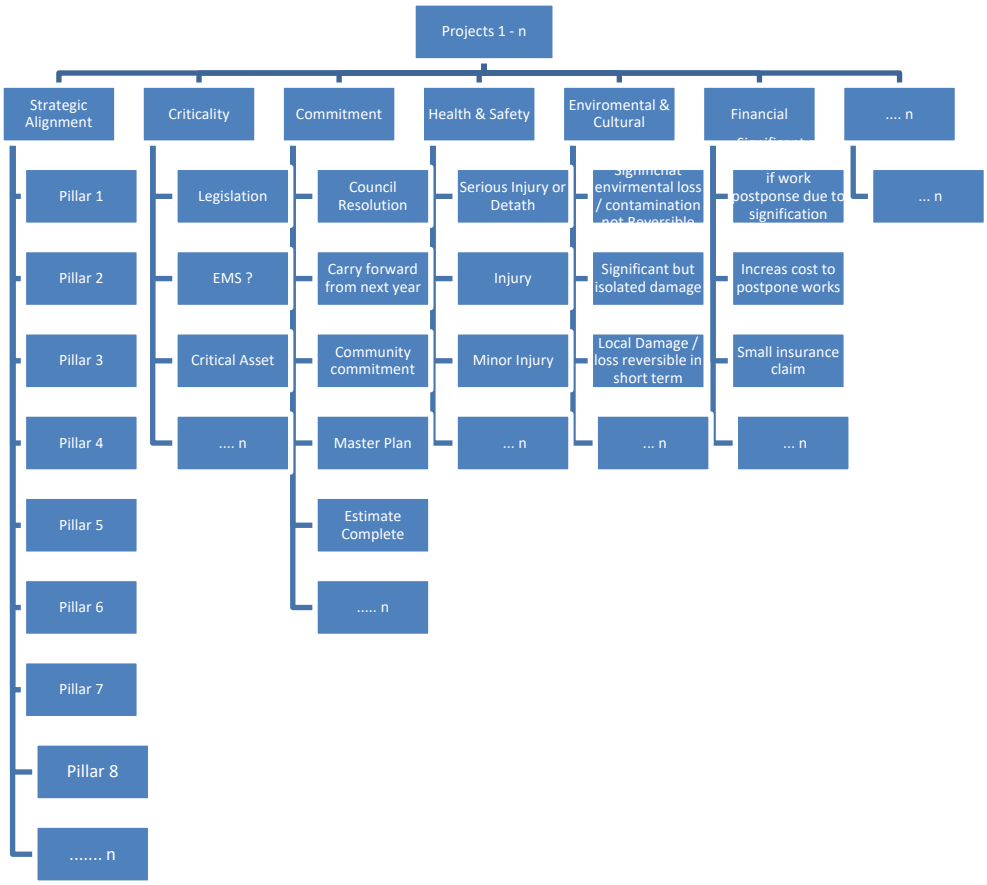
Project Prioritisation Process

The City has an established Analytical Hierarchy Process framework to enable the prioritisation of proposals seeking to develop either new or upgraded assets.

The Analytic Hierarchy Process (AHP) is a multi-criteria decision making methodology which uses incremental subjective assessments to calculate a prioritised ranking.

The AHP methodology priorities projects based on 7 main criteria, with each criteria further divided into sub criteria, as per the diagram below.

Weighted factors may be applied against criteria and sub criteria to prioritise risk:



With prioritisation of the proposed projects, those as having the highest priority are available to be aligned to grant funding programs as they become available.

As signatory to this report, I certify that, pursuant to Section 55(1) of the Local Government Act 1993, I hold no interest, as referred to in Section 49 of the Local Government Act 1993, in matters contained in this report.

Glenn Doyle
DIRECTOR CITY AMENITY

Peter Carr
DIRECTOR CITY INNOVATION

Date: 30 March 2021
File Reference: F20/68825; 13-1-10

City of HOBART

Memorandum: **Lord Mayor**
Deputy Lord Mayor
Elected Members

Response to Question Without Notice

PUBLIC FOGO BINS

Meeting: City Infrastructure Committee **Meeting date: 24 March 2021**

Raised by: Councillor Ewin

Question:

Could the Director please advise if there is a plan to roll-out a FOGO collection service in respect to the pubic litter bins throughout the City of Hobart?

Response:

The City has been considering the provision of public place organic bins since it introduced the residential kerbside FOGO collection service, however there are complexities to consider including the cost to manufacture infrastructure, collection and processing costs, and placement in the streetscapes so as not to overcrowd pathways and impede access.

As the City's Single Use Plastic by-Law takes effect there will be more organic packaging in the community, and the current intent is to identify zones where a public organics bin could be installed with some confidence that the food packaging material generated in the area is suitable for composting.

The City is currently scheduling the placement of the first public organics bin at The Springs, kunanyi / Mount Wellington.

This is a very popular location for both tourists and locals, with the one food vendor on site fully compliant with the City's Single Use Plastic By-Law.

As such the City can be confident that any food, food packaging, cutlery, and coffee cups purchased at the site can go in the public organics bin and be composted.

Other suitable areas may include popular parks such as Waterworks Reserve.

The City is not aware of any other permanent public organics facilities being provided in Tasmania.

As signatory to this report, I certify that, pursuant to Section 55(1) of the Local Government Act 1993, I hold no interest, as referred to in Section 49 of the Local Government Act 1993, in matters contained in this report.

Glenn Doyle
DIRECTOR CITY AMENITY

Date: 22 April 2021
File Reference: F21/26594; 13-1-10

City of HOBART

Memorandum: **Lord Mayor**
Deputy Lord Mayor
Elected Members

Response to Question Without Notice

PUBLIC WASTE AND RECYCLING BINS

Meeting: City Infrastructure Committee **Meeting date: 24 March 2021**

Raised by: Deputy Lord Mayor Burnet

Question:

Could the Director please provide advice on the following:

(a) The new Kemp Street refuse system;

(b) As to the impacts from COVID-19 related cuts to services, including public / municipal (not household) bin emptying, and are they being emptied often enough; and

(c) Have we any plans to roll out more recycling bins near sportsgrounds or other key spots?

Response:

The follow responses are provided:

(a) The Kemp Street waste and recycling system is progressing.

All civil works and plant and equipment are complete and operational.

The raising and lowering mechanisms have been trialled and tested with bins loaded and unloaded indicating that all hardware, hydraulics and electrics are functioning as intended.

However there have been delays associated with getting the technological and software systems up and running, which has affected the ability to allocate individual access cards to customers to record usage and weights of material disposed, and remote monitoring of bin volumes via internet platforms.

The City is working with local high tech engineering companies that are assisting in this process, and are confident of a solution in the near future.

(b) The City's public litter bin collection regime has not been impacted by COVID-19.

(c) Publically accessible recycling bins are available at various locations throughout the City.

From time to time the City receives requests for installation of new/additional public infrastructure that are investigated and assessed on a case-by-case basis.

Assessment includes reviewing the surrounding streetscape (ie not to obstruct other assets or access), access for the collection of bins, residential/business impacts, and a determination of need.

New or upgraded parks generally include public waste and recycling infrastructure, such as Legacy Park.

New or replacement bins have recently been installed at Cornelian Bay, Girrabong Park and Princes Park.

As signatory to this report, I certify that, pursuant to Section 55(1) of the Local Government Act 1993, I hold no interest, as referred to in Section 49 of the Local Government Act 1993, in matters contained in this report.

Glenn Doyle
DIRECTOR CITY AMENITY

Date: 22 April 2021
File Reference: F21/26624; 13-1-10

9. QUESTIONS WITHOUT NOTICE

Section 29 of the *Local Government (Meeting Procedures) Regulations 2015*.
File Ref: 13-1-10

An Elected Member may ask a question without notice of the Chairman, another Elected Member, the Acting General Manager or the Acting General Manager's representative, in line with the following procedures:

1. The Chairman will refuse to accept a question without notice if it does not relate to the Terms of Reference of the Council committee at which it is asked.
2. In putting a question without notice, an Elected Member must not:
   (i) offer an argument or opinion; or
   (ii) draw any inferences or make any imputations – except so far as may be necessary to explain the question.
3. The Chairman must not permit any debate of a question without notice or its answer.
4. The Chairman, Elected Members, Acting General Manager or Acting General Manager's representative who is asked a question may decline to answer the question, if in the opinion of the respondent it is considered inappropriate due to its being unclear, insulting or improper.
5. The Chairman may require a question to be put in writing.
6. Where a question without notice is asked and answered at a meeting, both the question and the response will be recorded in the minutes of that meeting.
7. Where a response is not able to be provided at the meeting, the question will be taken on notice and
   (i) the minutes of the meeting at which the question is asked will record the question and the fact that it has been taken on notice.
   (ii) a written response will be provided to all Elected Members, at the appropriate time.
   (iii) upon the answer to the question being circulated to Elected Members, both the question and the answer will be listed on the agenda for the next available ordinary meeting of the committee at which it was asked, where it will be listed for noting purposes only.

10. CLOSED PORTION OF THE MEETING

RECOMMENDATION

That the Committee resolve by majority that the meeting be closed to the public pursuant to regulation 15(1) of the *Local Government (Meeting Procedures) Regulations 2015* because the items included on the closed agenda contain the following matters:

- Commercial information of a commercial nature; and
- Acquisition of land.

The following items are listed for discussion:-

Item No. 1	Minutes of the last meeting of the Closed Portion of the Committee Meeting
Item No. 2	Consideration of supplementary items to the agenda
Item No. 3	Indications of pecuniary and conflicts of interest
Item No. 4	Committee Action Status Report
Item No. 4.1	Committee Actions - Status Report LG(MP)R 15(2)(b) and (f)
Item No. 5	Questions Without Notice