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Collins Street Bicycle Lanes
Technical Assessment

January 2025

CELEBRATING 15 YEARS
2008 - 2023

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1. Executive Summary

This technical assessment evaluates Hobart City Council's proposed on-road bicycle lanes along Collins Street between Molle Street and Murray Street, Hobart. Council's project aims to enhance active transport infrastructure by providing dedicated cycling lanes, improving connectivity between the South Hobart Rivulet Track and the Hobart CBD. However, this assessment identifies several significant challenges that impact the feasibility and overall effectiveness of the proposal.

The proposed design removes critical turning lanes at intersections, significantly reducing road capacity and increasing delays at signalized intersections during peak periods. The loss of 44 high-turnover on-street parking spaces further exacerbates access challenges for businesses and customers, with an estimated annual parking revenue loss for Council exceeding $300,000. While the design seeks to prioritize cycling, survey data reveals limited midday and weekend cycling activity and a lack of connectivity at the northern end, diminishing its appeal for broader CBD cycling use.

The design introduces new road safety risks, including conflicts at intersections and bus stops. Moreover, public opposition, particularly from the business community, and the withdrawal of State Growth funding highlight the polarizing nature of the project. Although the project aligns with policy goals to promote sustainable transport, its limited technical justification, compounded by network congestion risks and economic implications, suggests it may not achieve the desired balance of benefits for all road users.

The report concludes that the proposed bicycle lanes, in their current form, are not warranted.

2. Introduction

2.1 Background

This report provides a technical assessment of the proposed on-road bicycle lanes in Collins Street between Molle Street and Murray Street.

2.2 Reference Resources

The following references were used in the preparation of this report:

- Austroads, Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, 2021
- Austroads, Guide to Road Design, Part 6A: Paths for Walking and Cycling, 2021
- Austroads, Guide to Traffic Management, Part 4: Network Management Strategies, 2020
- Department of State Growth, *Hobart Congestion – Traffic Analysis*, 2016

3. Existing Conditions

3.1 Transport Network

Whilst this study investigated the traffic impacts associated with the broader Hobart CBD network, the transport network relevant to the network directly impacted by the proposed on-road bicycle lanes consists of Collins Street, Molle Street, Barrack Street, Harrington Street, Victoria Street, and Murray Street. This directly impacted area is shown in Figure 1.

Figure 1 Transport Network

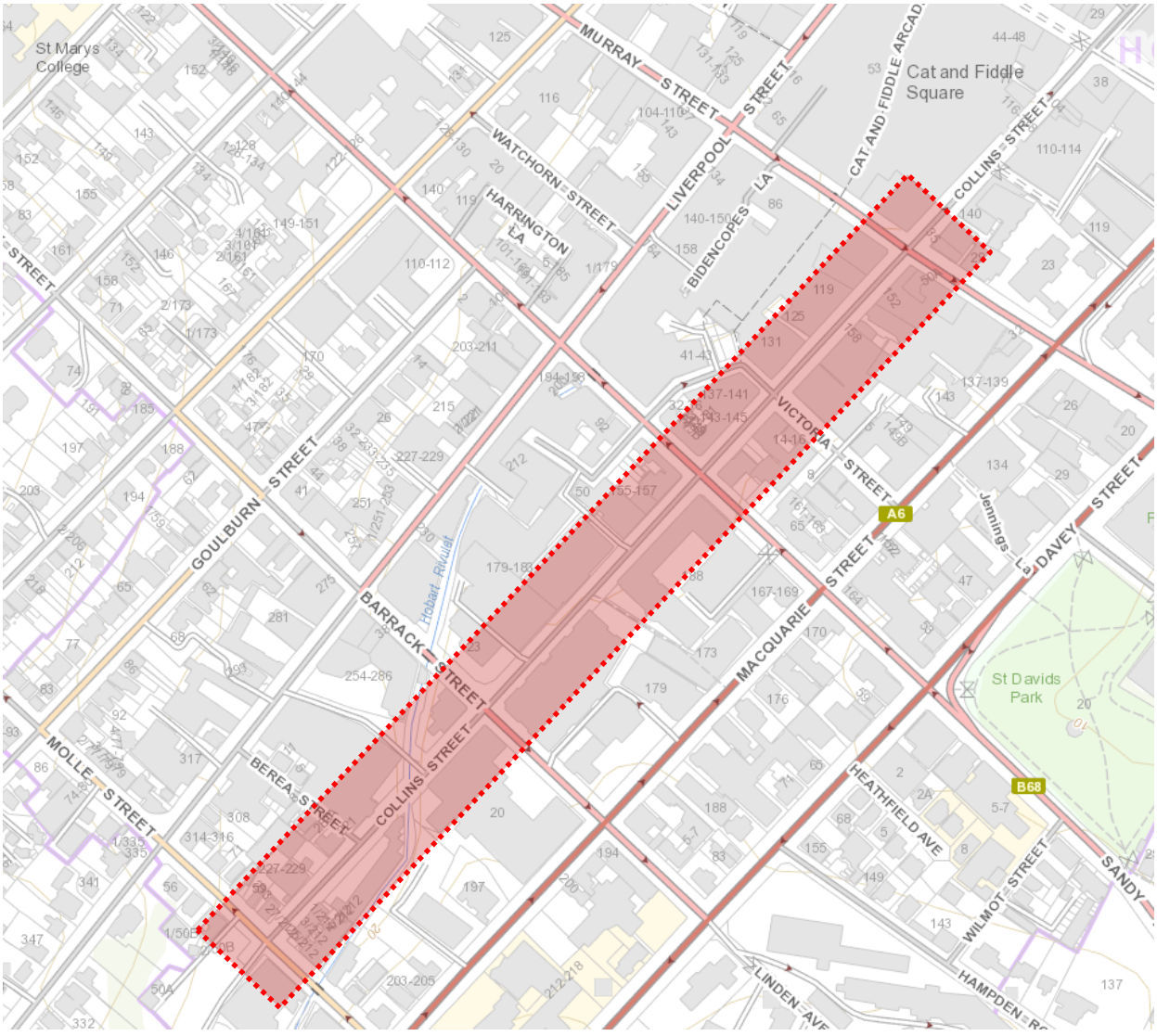


Image Source: LIST Map, DPIPWE

3.2 Collins Street

Collins Street connects between Molle Street at its southern end and Brooker Avenue at its northern end. Collins Street functions as an important road link through the heart of the CBD, providing access to commercial properties along its length. It is predominantly two-way, with a section of northbound one-way flow between Murray Street and Argyle Street.

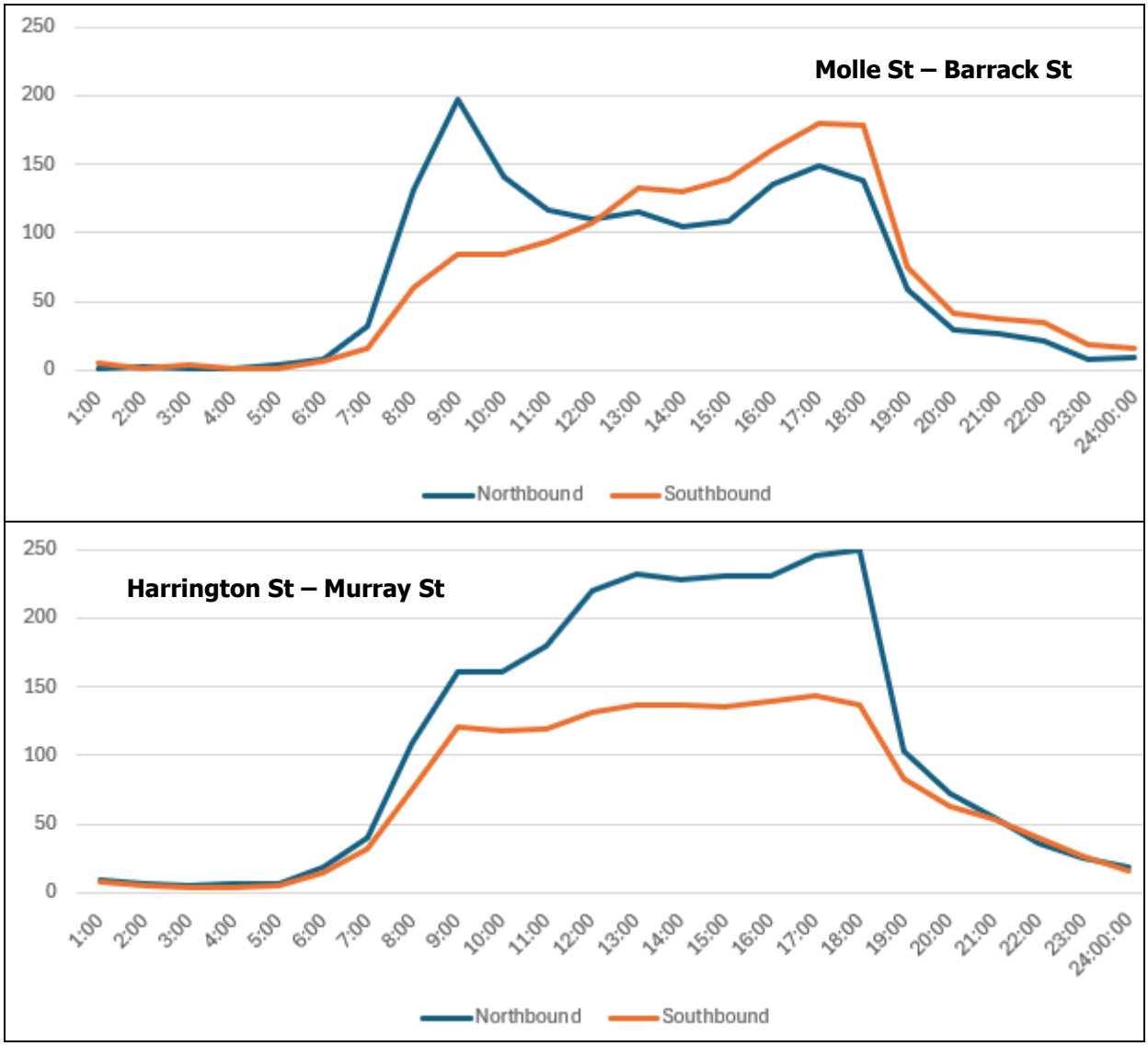
Weekday traffic volumes increase from approximately 2,900 vehicles per day north of Molle Street to approximately 4,800 vehicles per day south of Murray Street. Northbound traffic flow is dominant along the length of Collins Street within the study area, with the disparity in directional flow increasing towards the northern end of Collins Street (noting that north of Murray Street flow is one-way in a northbound direction).

Collins Street has a posted speed limit of 50-km/h between Molle Street and Harrington Street. The speed limit is signed 40-km/h north of Harrington Street.

On-road bicycle infrastructure has been installed along the Collins Street corridor and its approaches in the form of short approach lanes and advanced stop line markings (often referred to as 'Bicycle Boxes' at signalised intersections) at the Molle Street and Barrack Street junctions (all approaches), and the Harrington Street approach to the Collins Street intersection. Bicycle lane infrastructure is clearly marked in green pavement markings.

The weekday hourly flows of Collins Street near Molle Street and Murray Street are shown in Figure 2.

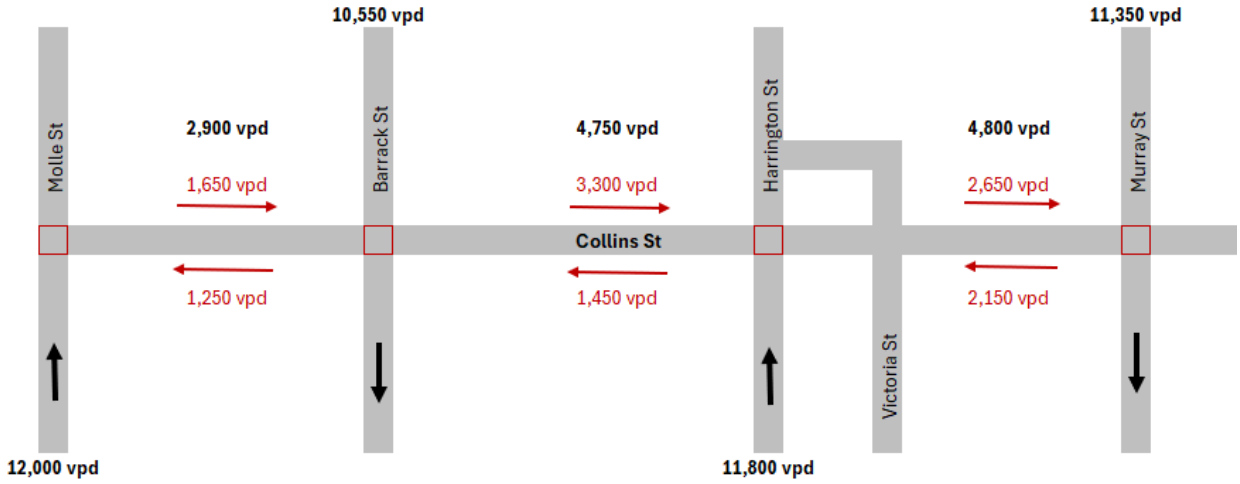
Figure 2 Collins Street Weekday Hourly Traffic Flow



3.3 Network Volumes

The average weekday daily traffic volumes for each of the road links associated with the study area are summarised in Figure 3.

Figure 3 Network Daily Traffic Volumes



3.4 Road Safety Performance

Road safety is a fundamental consideration for the installation of on-road bicycle facilities. One of the primary objectives of the installation of bicycle facilities is to provide a safe environment for cyclists along an identified route.

Crash data can provide valuable information on the road safety performance of a road network. Existing road safety deficiencies can be highlighted through the examination of crash data, which can assist in determining whether changes to network conditions (such as installation of on-road bicycle lanes) may exacerbate any identified issues. Identifying crash trends relevant to cyclists along a route is an important consideration at the early stages of a design.

Crash data was obtained from the Department of State Growth for a 5+ year period between 1st January 2019 and 30th September 2024 for Collins Street between Molle Street and Murray Street

The key findings of the crash data are summarised as follows:

- A total of 59 crashes were reported along Collins Street between Molle Street and Murray Street during this time. One of these reported crashes involved a cyclist.
- Vulnerable road users. Vulnerable road users are classified as pedestrians, cyclists and motorcyclists. The crashes involving these users are summarised as follows:
  - → 4 crashes involved pedestrians (2 crashes Murray Street intersection and 2 crashes at the Harrington Street intersection resulting in 1 serious injury, 2 minor injury, and 1 first aid at the scene);
  - → 2 crashes involved motorcycles (1 serious injury and 1 property damage only);

→ 1 crash involved a cyclist (8:27am, Monday 15th June 2020 at the intersection of Barrack Street involving a vehicle rolling backwards resulting in property damage only).

- Crash severity. Generally low severity crashes were noted along the route. 8 crashes involved injury (6 minor and 2 serious injury); 2 crashes involved first aid at the scene; 49 crashes resulted in property damage only.
- Time of day. 47 crashes were reported between 8:00am and 6:00pm. 5 crashes were reported prior to 7:00am and 7 crashes were reported after 6:000pm. Afternoon crashes were dominant, with a total of 27 crashes reported between 12:00pm and 5:00pm. Crash trends by time of day generally follow the traffic flow patterns on Collins Street.
- Day of week. Weekday crashes were dominant, with 12 crashes reported on Thursdays; 11 crashes reported on Wednesdays; 9 crashes reported on Fridays; 8 crashes reported on Tuesdays; 7 crashes reported on Sundays; and 6 crashes reported on Mondays and Saturdays.
- Crash types. Intersection crash types were dominant (including 7 x 'cross-traffic', 3 x 'right-through' crashes, 7 x 'side-swipe' collisions, 3 x 'rear-end' crashes); 10 crashes involved parking or parked vehicles; 4 crashes involved a vehicle emerging from a driveway or lane; and various other crash types with no clear crash trend.
- Crash locations. Crashes were relatively well disbursed along the road corridor, with 9 crashes reported at the Molle Street junction; 8 crashes at the Harrington Street junction; 7 crashes at the Victoria Street and Murray Street junctions; 6 crashes reported at the Barrack Street junction, and the balance relatively evenly distributed at midblock locations. Note that all crashes reported at the intersection of Molle Street with Collins Street occurred prior to the conversion of the intersection to traffic signals (Federal Black Spot program).

The crash history is considered typical of a CBD collector road with signalised intersections at the majority of its intersections. One of the key considerations for the installation of on-road bicycle lanes is road safety.

There is no history of crashes involving bicyclists, with the exception of one crash reported at the intersection of Barrack Street with Collins Street in 2020 resulting in property damage only. The police crash report states the following with regards to the bicycle crash:

> *"Unit 2 was travelling north on Collins Street approaching the intersection of Barrack Street. Unit 2 stopped at the red light approximately 3 cars back from the intersection (20 metres).*
>
> *Unit 1 (cyclist) was also travelling north on Collins Street. As Unit 1 approached the intersection of Barrack Street she was travelling at approximately 30kph (says witness) and was travelling on the inside lane between the kerb and stationary vehicles.*
>
> *As Unit 1 approached Unit 2, the front left passenger opened her car door as she was about the exit the vehicle.*
>
> *The door has collided with Unit 1, causing the cyclist to fall of her bicycle and onto the footpath".*

3.5 Cycling Volumes

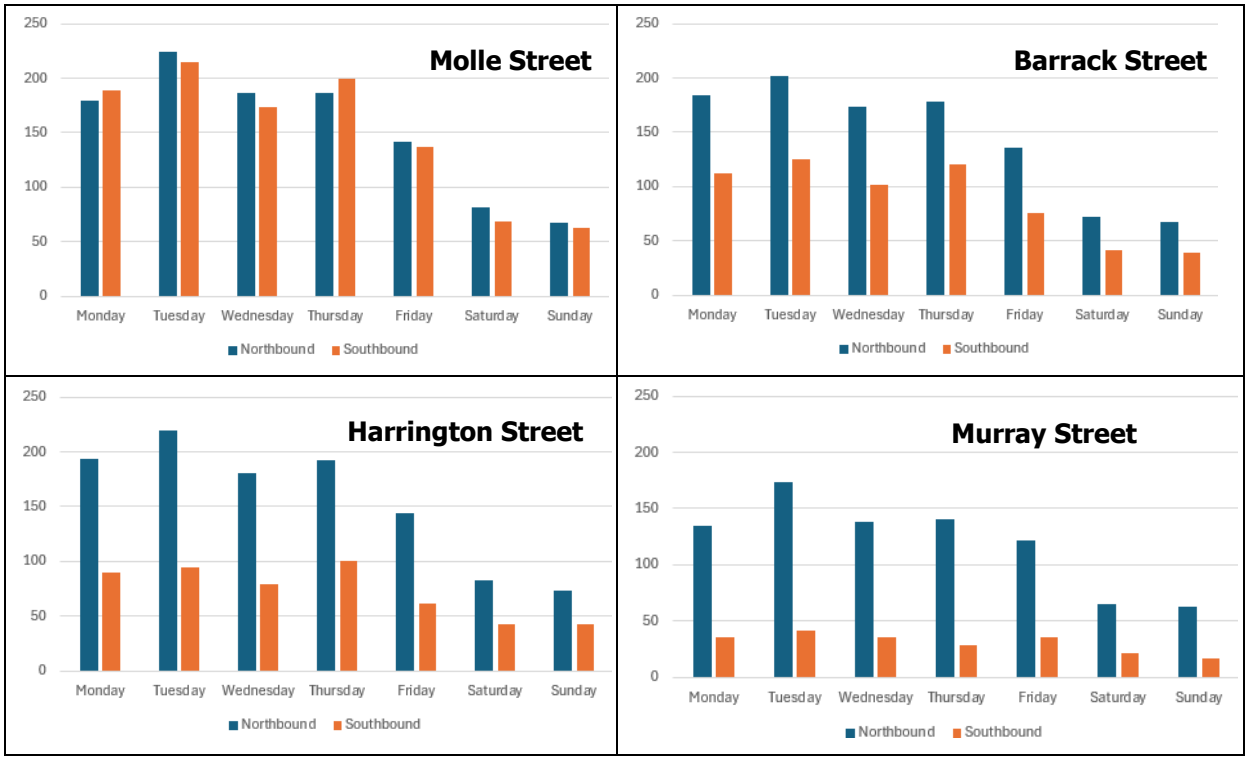
Extensive bicycle surveys were undertaken between 7:00am and 7:00pm for one full week between Thursday 7th November and Wednesday 13th November 2024. The bicycle surveys recorded the movement of bicycles along the Collins Street corridor in both directions, as well as bicycles turning into or from Collins Street and bicycles moving across Collins Street at the signalised intersections of Molle Street, Barrack Street, Harrington Street and Murray Street.

3.5.1 Cyclist Movements along Collins Street

The 12-hour cyclist volumes in Collins Street at each of the key intersections is shown in Figure 4. The following is noted with regards to the daily cyclist volumes along the Collins Street corridor:

- Weekday cyclist movements are dominant, with notably higher flows compared to weekends.
- Cyclist movements are higher at the southern end of Collins Street. Approximately 300 to 400 cyclists were recorded on weekdays at the Molle Street junction compared to 150 to 200 cyclists at the Murray Street junction.
- Northbound cyclist flow was dominant at all junctions with the exception of the Molle Street junction.

Figure 4 Collins Street 12-Hour Bicycle Volumes

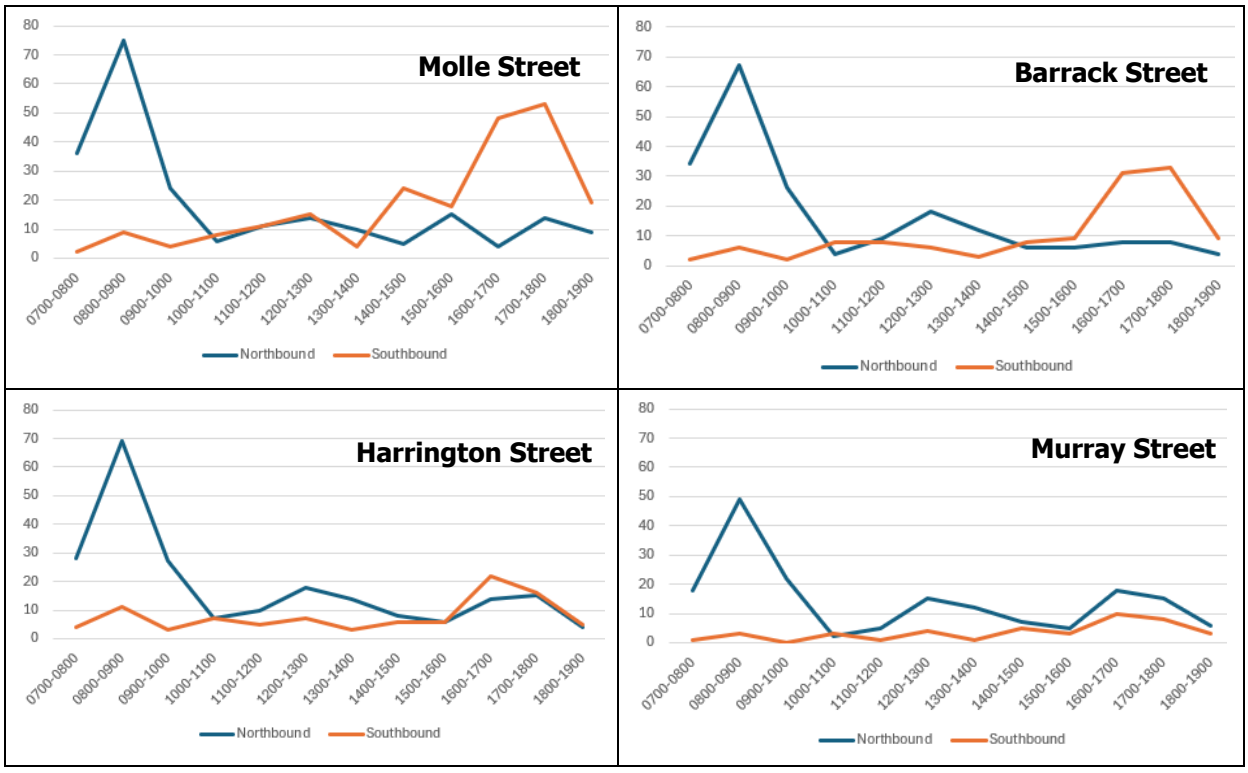


Tuesday 12th November had the highest recorded cyclist flow. Hourly flows for Tuesday 12th November are shown in Figure 5.

The following is noted with regard to the hourly cyclist flows:

- Cyclist volumes show strong commuter peak periods, with northbound flow dominant during the AM peak and southbound flow dominant during the PM peak, with the exception of Murray Street.
- The AM peak is more pronounced than the PM peak. This highlights the northbound flow dominance as noted in the 12-hour summary.
- The interpeak period between 10:00am and 3:00pm shows very little cycling activity along Collins Street (peak flows of approximately 25 cyclists per hour, or less than 1 cyclist every two minutes).

Figure 5 Collins St Bicycle Weekday Hourly Volumes



3.5.2 Side Road Cyclist Movements

The bicycle surveys recorded the movement of cyclists from Collins Street entering each of the side roads within the study area, as well as the movement of cyclists across Collins Street at each of the junctions.

Tuesday 12th November had the highest recorded cyclist flow. The 12-hour turning movements at each of the intersections within the study area for 12th November are summarised in Table 1, Table 2, Table 3 and Table 4 for each of the four intersections respectively.

Table 1 Collins St/ Molle St 12-hour Turning Movement

Approach	Left Turn	Through	Right Turn
Collins St South	43	178	3
Molle St East	21	31	25
Collins St North	8	200	7
Molle St West	1	30	0

Table 2 Collins St/ Barrack St 12-hour Turning Movements

Approach	Left Turn	Through	Right Turn
Collins St South	1	197	4
Barrack St East	3	0	3
Collins St North	10	112	3
Barrack St West	24	25	32

Table 3 Collins St/ Harrington St 12-hour Turning Movements

Approach	Left Turn	Through	Right Turn
Collins St South	44	173	3
Harrington St East	36	49	7
Collins St North	0	84	11
Harrington St West	1	0	0

Table 4 Collins St/ Murray St 12-hour Turning Movements

Approach	Left Turn	Through	Right Turn
Collins St South	8	132	34
Murray St East	7	0	7
Collins St North	6	36	0
Murray St West	9	94	41

It can be seen that there is a consistent filtering of cyclist movements from Collins Street to the connecting roads within the study area. Dominant turning movements relate to the one-way flows of each of the side roads. The through cyclist movements on the connecting roads vary, with Murray Street having the highest number of cyclists crossing Collins Street (94 cyclists over the 12-hour period). The lowest side road cyclist volumes were recorded at the Barrack Street junction.

Molle Street provides an existing on-road bicycle lane to the west of Collins Street. The turning movements from Collins Street are similar the turning movements at the Harrington Street and Murray Street junctions (which do not provide on-road bicycle lanes connecting to Collins Street).

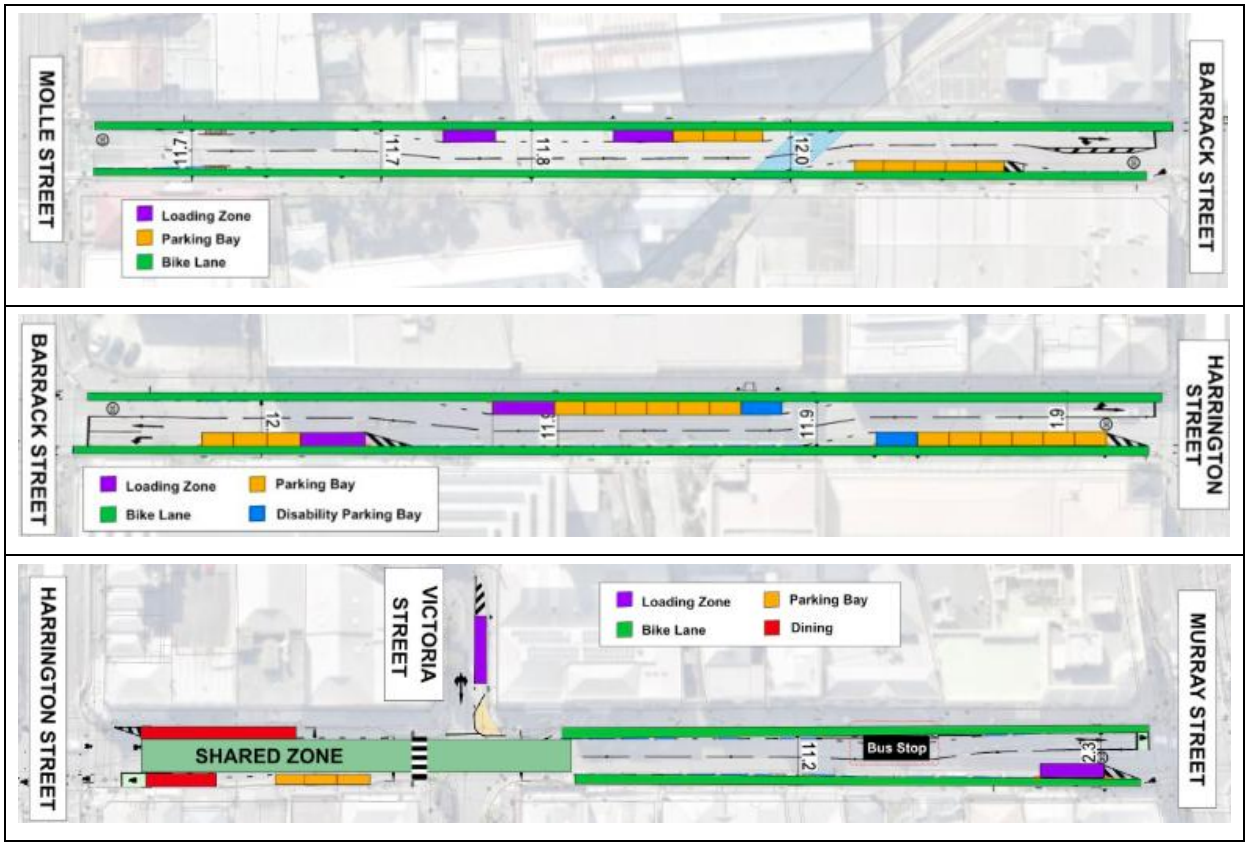
4. Proposed Bicycle Lanes

4.1 Development Proposal

Hobart City Council describes the project as 'Transforming Collins Street' along a 700 metres section of Collins Street between Molle Street and Murray Street. It involves the installation of streetside dining, the installation of on-road bicycle lanes, removal of a large amount of on-street parking, installation of street plantings, the installation of a pedestrian zebra crossing, and a reduced speed limit.

The overall project design is shown in Figure 6 and detailed in the following sections.

Figure 6 On-Road Bicycle Lane Design



4.1.1 Collins Street between Molle Street and Barrack Street

Council's website describes the project between Molle Street and Barrack Street as follows:

- Protected bicycle lanes will be installed in both traffic directions alongside the kerb and gutter for the length of the street.
- Three on-street parks and 22 metres of loading zone will be retained on the northern side of the street (within the vicinity of the Tasmanian Wine Centre).
- Five on-street parks will be retained on the southern side of the street (within the vicinity of Hyundai Hobart Motors).

This section of Collins Street will have a total of 23 on-street parking spaces removed.

4.1.2 Collins Street between Barrack Street and Harrington Street

Council's website describes the project between Barrack Street and Harrington Street as follows:

- Protected bicycle lanes will be installed in both traffic directions alongside the kerb and gutter for the length of the street.
- Six on-street parks, one accessible parking space and 12 metres of loading zone will be retained on the northern side of the street (within the vicinity of 175 Collins Street).
- Nine on-street parks, one accessible parking space and 12 metres of five-minute parking will be retained on the southern side of the street (within the vicinities of 200 Collins Street and 188 Collins Street).

This section of Collins Street will have a total of 21 on-street parking spaces removed.

4.1.3 Collins Street between Harrington Street and Victoria Street

Council's website describes the project between Harrington Street and Victoria Street as follows:

- Deck space for on-street dining will be installed on the northern side of the street for use by local hospitality businesses.
- The exact design of the on-street dining is currently being developed in conjunction with traders.
- A zebra crossing will be installed at the intersection of Collins Street and Victoria Street.
- All current on-street parks will be retained on the southern side of the street.

This section of Collins Street is not proposed to require any parking spaces removed.

4.1.4 Collins Street between Victoria Street and Murray Street

Council's website describes the project between Victoria Street and Murray Street as follows:

- Following a council resolution in November 2024, the project in this area has been paused to allow for further street design possibilities to be workshopped with businesses and other stakeholders in this block.
- A report with options along this stretch of the street will be provided to the city's elected members following this consultation. This is anticipated to occur in March 2025.

It is noted that the plans provided on Council's website show on-street bicycle lanes installed on both sides of the road, with all on-street parking removed and an in-lane bus stop on the northbound lane.

5. Bicycle Lane Design and Warrants

5.1 Design Warrants

The warrants for the installation of on-road bicycle lanes are typically based on guidance provided by Austroads as well as relevant state or local government policies. These warrants help determine when and where bicycle lanes are appropriate and include factors such as demand, safety, and road function. Some key considerations for the installation of on-road bicycle facilities include:

- Cycling Demand
  - → Existing and potential cycling volumes: If there is significant existing cycling activity or potential demand (e.g., in areas close to schools, employment hubs, public transport nodes, or residential neighbourhoods), a bike lane may be warranted.
  - → Strategic cycling networks: If the road is part of a planned or existing cycling network identified in a local or regional strategy, bike lanes are often prioritized.
- Road Function and Traffic Conditions
  - → Road classification: Bicycle lanes are generally warranted on arterial or collector roads where higher traffic volumes and speeds pose a risk to cyclists.
  - → Traffic volume: Roads with higher vehicle volumes (e.g. exceeding 3,000 vehicles per day) often justify dedicated bicycle facilities to separate cyclists from motor vehicles.
  - → Traffic speed: Roads with speed limits above 50 km/h typically warrant dedicated lanes to improve cyclist safety.
- Safety Concerns
  - → Crash history: Locations with a history of cyclist-involved crashes or near-misses may warrant the installation of on-road bicycle lanes to address safety risks.
  - → Potential conflict points: Roads with high volumes of turning vehicles, parking, or driveways may benefit from bicycle lanes to reduce conflicts between cyclists and motor vehicles.
- Roadway Geometry and Design
  - → Lane widths: Sufficient road width is needed to accommodate bike lanes (or the possibility of reallocation of road space, such as converting wide lanes or parking lanes).
  - → Connectivity: Bicycle lanes are warranted where they provide safe, direct, and continuous connections between key origins and destinations.
- Community and Stakeholder Support
  - → Community input: Public support for cycling infrastructure, particularly in areas with advocacy for sustainable transport, may influence decision-making.

- → Policy alignment: The installation of bicycle lanes often aligns with local or state government policies promoting active transport and sustainability.

- Land Use and Context
  - → Proximity to trip generators: Areas near schools, universities, shopping centres, and recreational facilities warrant bike lanes to support active travel.
  - → Urban versus rural context: Urban areas with higher cyclist activity and complex traffic environments are more likely to need on-road lanes compared to rural areas.
- Cost-Benefit Analysis
  - → Economic feasibility: The cost of installing bike lanes must be weighed against the potential safety and health benefits of increased cycling.

The assessment of the proposed on-road bicycle lanes are provided in Table 7 in Section 6.7.

6. Traffic Assessment

6.1 Traffic Lane Modifications

The proposed on-road bicycle lanes will connect on both sides of Collins Street between Molle Street and Murray Street. This section of Collins Street has two-way flow with traffic signals at each intersection along its length.

The installation of the on-road bicycle lanes will remove turning lanes on the Collins Street approach to the intersections of Collins Street with Barrack Street, Harrington Street and Murray Street (noting that the Murray Street junction will be subject to future design, with no changes in the current proposed layout). One lane will therefore be available on the Collins Street approaches to these intersections, compared to the existing situation where two lanes are provided (through lane and turning lane).

6.2 Traffic Signal Operational Changes

The proposed on-road bicycle lanes will require traffic signal modifications at each of the key intersections along Collins Street.

Council's plans do not provide details of the traffic signal requirements. A key consideration will be separating cyclist turning movements from pedestrian movements. The safest method of achieving this is to provide cyclist green phases (this treatment has been installed at Campbell Street/ Liverpool Street and Davey Street/ Campbell Street).

Due to the removal of turn lanes provided at each of the signalised intersections, it has been assumed that traffic signals will need to include cyclist phasing to provide an adequate level of pedestrian/ cyclist safety.

6.3 Traffic Congestion Impacts

Hobart is a relatively small CBD with a constrained road network. The road network consists of a number of one-way road links that work in couplets (such as Davey Street/ Macquarie Street, Liverpool Street/ Collins Street, Argyle Street/ Campbell Street, Barrack Street/ Harrington Street for example).

The proposed on-road bicycle lanes will remove the turning lanes on approaches to two key intersections within the study area (Barrack Street and Harrington Street, with potential future loss of Murray Street northbound lane loss) as identified above.

Hobart's traffic network has been subject to regular extensive traffic congestion due to instabilities in the network. Events such as a vehicle breakdown at a critical location can effectively 'gridlock' the city under certain circumstances. In 2016 heavy traffic congestion led to the preparation of a report titled 'Hobart Congestion Traffic Analysis' by the Department of State Growth (Congestion Report). The Hobart Congestion Report identified a number of short, medium and long term recommendations to improve traffic flow within Hobart CBD and the surrounding network.

The proposed installation of on-road bicycle lanes along Collins Street, which removes all turning lanes at intersections, will likely have a significant impact on traffic in the Hobart CBD. Considering the proposed on-road bicycle lanes in Collins Street with reference to the findings in the Congestion Report, the following is noted:

Reduction in Roadway Capacity

The removal of dedicated turning lanes will reduce intersection capacity, forcing turning vehicles to share lanes with through traffic. This change increases the likelihood of delays, particularly during peak periods when the CBD network operates near or at capacity.

The Congestion Report emphasises that Hobart's road network is consistently near capacity during peak hours, meaning even small reductions in capacity can create cascading delays across the network.

Propagation of Congestion

The Congestion Report discusses how localised reductions in capacity (ie. due to road works or lane closures) can cause "backward-propagating shockwaves," leading to longer queues and delays on feeder roads and intersections. The removal of turning lanes in Collins Street is likely to exacerbate this phenomenon in Collins Street and its connecting streets (specifically Barrack Street and Harrington Street).

Impacts on Traffic Signal Performance

Traffic data and traffic modelling analysed in the Congestion Report indicated that signalised intersections in the Hobart CBD already face challenges in managing peak-hour demands. The reconfiguration of Collins Street may disrupt the efficiency of signalized intersections by increasing cycle times and reducing green time available for through traffic.

Adjacent Road Impacts

Key adjacent roads such as Macquarie and Davey Streets may experience increased pressure as drivers seek alternative routes to avoid delays on Collins Street. The Congestion Report highlighted the interdependency of Hobart's traffic network and noted that congestion on one route often leads to redistribution of traffic across other parts of the network.

The proposed on-road bicycle lanes cross several critical road links in Hobart's road network. The Congestion report identified that during heavy congestion periods in Hobart's road network, Barrack Street was highlighted as one of the key locations experiencing lengthy queues and delays. Its connection to the Macquarie Street/ Davey Street Couplet contributed to its vulnerability to citywide congestion.

The Congestion Report identified Barrack Street as a 'weak link' in the network, where capacity constraints often triggered congestion across the broader CBD. In this context, it is considered critical that any changes to traffic signal timing at the Collins Street/ Barrack Street junction not reduce green time for the Barrack Street approach, particularly during the evening peak period. Maintaining Barrack Street flow would therefore result in increased delays for the Collins Street approaches to the junction (the impacts of which are detailed in Section 6.4).

Broader Network Impacts

The proposed installation of the on-road bicycle lanes in Collins Street will reduce road capacity and likely increase congestion in the Hobart CBD, particularly during peak times. This may result in:

- Longer travel times along key routes for all road users.
- Increased delays and queues at intersections along and feeding into Collins Street.
- Greater pressure on the broader CBD road network.
- Greater instability of the overall network resulting in more frequent 'gridlock' events.

6.4 Traffic Modelling

Traffic modelling was undertaken using SIDRA Intersection analysis software at the key signalised intersections along the Collins Street route.

It is noted that other typical installations of on-road bicycle lanes in Hobart have generally retained turn lanes to separate turning traffic from through traffic. It is noted that in other roads that have had reduced lanes (such as Liverpool Street that was reduced from two lanes to one in 2015, these links still have multiple lanes for separated turn and through movements). Only the southbound approach to the Barrack Street junction has retained the turn lane configuration.

It is also noted that the Collins Street Murray Street intersection has recently had the installation of a pedestrian 'scramble' phase where a separate all-pedestrian phase is incorporated into the signal design. This differs from the existing two-phase operation of the remaining traffic signals along the Collins Street route of the proposed on-road bicycle lanes.

The modelling has limitations in terms of the demand flows on the side roads of each of the intersections. Traffic data is obtained through sensors in the road and doesn't account for extensive queueing that occurs in some roads such as Barrack Street during peak periods. Network congestion conditions often limit the amount of volume that can travel through an intersection, and therefore the actual volume measured should not be considered as demand flow.

Traffic signal data (SCATS) was obtained from the Department of State Growth for the Barrack Street, Harrington Street and Murray Street junctions along the Collins Street corridor. A full week of SCATS data was obtained for these junctions between Monday 21st October to Sunday 27th October 2024, generally coinciding with the bicycle survey dataset.

Unclear whether additional cycle phases will be added. This has been done at the Campbell Street/ Liverpool Street junction, restricting right turning traffic from Campbell Street to Liverpool Street even when bicycles are not present in the network.

6.4.1 Collins Street/ Molle Street

No specific changes are identified for the Collins Street/ Molle Street junction.

6.4.2 Collins Street/ Barrack Street

The key changes to the Collins Street/ Barrack Street junction relate to the removal of the right turn lane on the southern Collins Street approach to the junction. It has been assumed that a short bicycle phase will be added to the signals to remove pedestrian/ cyclist and cyclist/ vehicle conflicts associated with turning movements.

Barrack Street is over-saturated during peak periods. Changes to traffic signal phasing cannot reduce the green time for the Barrack Street western approach to the junction. This then reduces the available green time for the Collins Street approaches to the intersection.

The potential traffic impacts associated with the bicycle lanes for Collins Street traffic flow at the Barrack Street intersection is summarised in Table 5. It can be seen that the modifications to the traffic signals will result in a significant queue increase in the northbound approach to the junction during the PM peak. Moderate increases in average delay per vehicle will also occur during both peak periods.

Table 5 Collins Street/ Barrack Street Intersection Modelling Summary

	AM Existing	AM Bike Lanes	PM Existing	PM Bike Lanes
Northbound 95th percentile queue	60.9 m	69.1 m	40.4 m	98.4 m
Southbound 95th percentile queue	14.0 m	12.9 m	39.9 m	39.9 m
Northbound average delay per vehicle	19.7 s	25.0 s	18.4 s	27.7 s
Southbound average delay per vehicle	26.8 s	23.3 s	25.6 s	24.4 s

6.4.3 Collins Street/ Harrington Street

The key changes to the Collins Street/ Harrington Street junction relate to the removal of turning lanes on both Collins Street approaches to the junction. It has been assumed that a short bicycle phase will be added to the signals to remove pedestrian/ cyclist and cyclist/ vehicle conflicts associated with turning movements.

Harrington Street operates at or close to saturation during peak periods. Changes to traffic signal phasing cannot reduce the green time for the Harrington Street eastern approach to the junction. This then reduces the available green time for the Collins Street approaches to the intersection.

The potential traffic impacts associated with the bicycle lanes for Collins Street traffic flow at the Harrington Street intersection is summarised in Table 6. It can be seen that the modifications to the traffic signals

will result in a moderately large queue increase in both approaches to the junction during the PM peak. Moderate increases in average delay per vehicle will also occur during both peak periods.

Table 6 Collins Street/ Harrington Street Intersection Modelling Summary

	AM Existing	AM Bike Lanes	PM Existing	PM Bike Lanes
Northbound 95th percentile queue	65.1 m	101.5 m	63.0 m	82.8 m
Southbound 95th percentile queue	86.5 m	111.4 m	69.5 m	80.9 m
Northbound average delay per vehicle	33.7 s	27.0 s	26.6 s	33.0 s
Southbound average delay per vehicle	14.8 s	22.9 s	18.9 s	33.2 s

6.4.4 Collins Street/ Murray Street

Council's current plans do not extend between Victoria Street and Murray Street. No changes to the current operation of Murray Street are therefore anticipated.

The existing intersection of Collins Street/ Murray Street has a pedestrian scramble crossing installed. This reduces the green times for both Collins Street and Murray Street approaches to the intersection. The future removal of the right-turn lane in Collins Street would further reduce the capacity of the intersection.

6.5 Road Safety Impacts

The proposed design is likely to result in increased intersection related crashes. This is primarily a result of the removal of the majority of approach turn lanes at the signalised intersections along the route. As a result, the increased delays and mixed queues will result in increased angle collisions and rear end collisions.

Normally a design such as proposed would reduce bicycle related crashes. In this case there is no notable history of bicycle crashes along the Collins Street corridor, despite modest bicycle activity. The one reported bicycle crash involved a car door opening on an approaching cyclist – this situation is likely to occur even with the installation of on-road bicycle lanes, with an increased likelihood of vehicles stopping on Collins Street for passenger set-down due to the reduced availability of on-street parking.

Depending on the design at the signalised intersections, there is a risk of increased pedestrian/ cyclist related crashes.

It is also noted that the South Hobart Rivulet Track has a strong reliance on use of privately owned car park between the northern termination of the South Hobart Rivulet Track and Molle Street. Increased

utilisation of bicyclists through the car park may result in increased conflicts and incidents within the car park.

6.6 Bicycle Connectivity

The proposed design does not connect directly to other bicycle lanes. The design ends abruptly at Murray Street. Existing surveys show that cyclist activity reduces from Molle street to Murray Street. Little cyclist activity was also observed in the southbound direction along Collins Street. The termination at Murray Street without connecting infrastructure is particularly problematic. Cyclists would be forced to mix with traffic in the CBD precisely where volumes are highest.

The South Hobart Rivulet Track connects to the South Hobart residential catchment area, but does not connect well to other areas. The general topography restricts future connectivity of the Rivulet Track with other areas.

Given these characteristics, this infrastructure might struggle to attract significant patronage because:

- It doesn't provide a complete journey solution for most trips.
- The relatively short length of the bicycle lanes means many cyclists might prefer alternative routes (noting the existing disparate northbound cyclist volume compared to southbound volume).
- The infrastructure might not feel sufficient to attract new/less confident cyclists given the contextual challenges.

6.7 Assessment against Design Warrants

The warrants for the installation of on-road bicycle infrastructure are set out in Section 5.1. The assessment of the proposed on-road bicycle design against the warrants is set out in Table 7.

Table 7 Assessment of Design against On-Road Bicycle Warrants

	Warrant	Design Context	Warrant met?
Cycling demand	Existing and potential cycling volumes	The design is located between the northern end of the South Hobart Rivulet track and Hobart CBD. It therefore connects between a residential catchment and an employment hub (CBD). Existing cycling volumes are strongly commuter based with little evidence of significant recreational use. The catchment areas south of the site is well established and not a growth area, limiting strong cyclist growth potential.	Yes
	Strategic cycling networks	The proposed bicycle lanes will connect to the South Hobart Rivulet Track and Hobart CBD.	Yes
Road function and traffic conditions	Road classification	Collins Street functions as a collector road connecting to and through Hobart CBD. It provides access to commercial properties along its length.	No
	Traffic volume	Collins Street carries a weekday traffic volume between 2,900 and 4,800 vehicles per day between Molle Street and Murray Street.	Yes
	Traffic speed	Collins Street has a posted speed limit of 50-km/h between Molle Street and Harrington Street, and 40-km/h between Harrington Street and Hobart CBD. Vehicle speeds are generally lower than the speed limit due to traffic calming associated with signalised intersections, parking side friction, etc.	No

Safety concerns	Crash history	The crash history of Collins Street within the study area shows a relatively low frequency crash rate, with an overall low severity of crashes occurring. Only one crash has been reported within the study area that involved a bicycle.	No
	Potential conflict points	Crash rates are likely to increase as a result of the removal of approach turn lanes at signalised intersections along the route. Potential conflicts between bicycle lane and pedestrians at in-lane bus stops as well as at signalised intersections.	No
Roadway geometry and design	Lane widths	Lane widths are appropriate. Various compromises have been made to accommodate buses. Removal of traffic turn lanes at intersections has been identified as an issue.	Yes
	Connectivity	The proposed bicycle lanes provide good connectivity between the South Hobart Rivulet Track and Hobart CBD. The northern end of the route lacks connectivity or bicycle end user facilities.	Yes
Community and stakeholder support	Community input	The project has been met with polarised community response. The project has been met with community support from cyclist user groups as well as strong objections from the business community. The perceived lack of support resulted in the Department of State Growth withdrawing grant funding support for the project in October 2024.	No
	Policy alignment	Policy objectives have not been assessed in this report.	N/A

Land use and context	Proximity to traffic generators	The cycle lanes connect to Hobart CBD. Cycling surveys indicate that cyclists are utilising Collins Street as a commuter route.	Yes
	Environment	The design is located within an urban CBD environment. Broader traffic congestion impacts are highly likely as a result of the bicycle lanes which will have negative environmental impacts through increased traffic congestion in the peripheries of Hobart CBD.	No
Cost benefit analysis	Economic feasibility	The design was funded using Council emergency funding. The project includes a significant ongoing loss of on-street parking revenue in the order of $300,000 per annum. Removal of further parking in the block between Victoria Street and Murray Street will increase the annual parking revenue further.	No

The summary provided in Table 7 indicates that there is a mix of outcomes associated with the proposed on-road bicycle lanes. The overall findings from the assessment suggest that the proposed on-road bicycle lanes on Collins Street, have some merits but are not entirely warranted.

While the proposed bicycle lanes have potential benefits for cyclists and improve network connectivity, significant issues such as safety, economic feasibility, and community opposition outweigh these advantages. Furthermore, the lanes introduce new challenges for traffic flow, intersection design, and local businesses.

7. Parking Assessment

7.1 Existing On-Street Parking Inventory

On-street parking on Collins Street within the study area contains a total of 70 parking meters (½-hour, 1-hour and 3-hour restrictions), 6 loading zones, 2 disabled spaces, 6 short-term spaces, and 7 motorcycle spaces.

The existing on-street parking inventory in Collins Street between Molle Street and Murray Street is summarised in Table 8.

Table 8 Collins Street On-Street Parking inventory

Location	Restriction	Supply (cars)	Applicable hours
Molle St & Barrack St - west	Loading zone	2	7am-6pm Mon-Fri/ 8am-12pm Sat
	1P meter	10	8:30am - 6pm Mon - Fri
	Loading zone	2	8am - 6pm Mon - Fri
	5 minutes	3	8am - 6pm Mon - Fri
Molle St & Barrack St - east	3P meter	7	8:30am - 6pm Mon - Fri
	1P meter	6	8:30am - 6pm Mon - Fri
	1P meter	5	8:30am - 6pm Mon - Sat
Barrack St & Harrington St - west	Loading zone	2	8am - 6pm Mon - Sat
	1P meter	10	8:30am - 6pm Mon - Sat
	Motorcycle parking	7MC	
Barrack St & Harrington St - east	5 minutes & No Parking	2	P5: 8am – 4pm Mon – Sat/ NP: 4pm – 6pm Mon – Sat
	1P meter	17	8:30am - 6pm Mon - Sat
	1P disabled	1	
Harrington St & Murray St - west	Loading zone & ¼P	2	LZ: 8am - 6pm Mon – Fri/ ¼P: 8am – 6pm Sat
	1P meter	4	8:30am - 6pm Mon – Sat, 9am – 4pm Sun
	1P disabled	1	
	Loading zone & ½P meter	4	LZ: 8am - 6pm Mon – Fri/ ¼P: 8:30am – 6pm Sat, 9am – 4pm Sun
Harrington St & Murray St - east	1P meter	10	8:30am - 6pm Mon – Sat, 9am – 4pm Sun
	Loading zone & ¼P	3	LZ: 8am - 6pm Mon – Fri/ ¼P: 8am – 6pm Sat, 9am – 4pm Sun
	¼P	1	8am - 6pm Mon - Fri

7.2 Parking Surveys

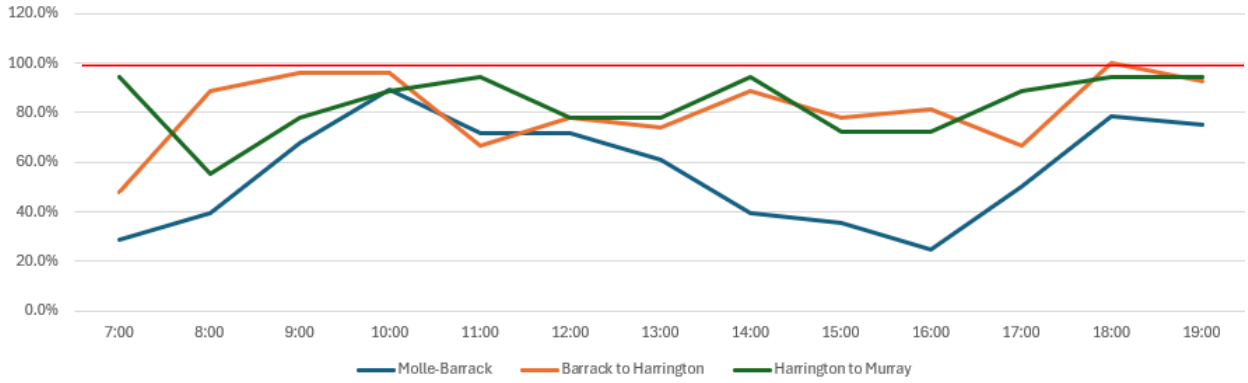
Car parking surveys were conducted in Collins Street between Molle Street and Murray Street throughout November and December 2024. Detailed surveys were conducted between 7:00am and 7:00pm on Wednesday 4th December 2024 of all parking spaces within the study area along Collins Street.

7.2.1 Parking Meters

The study area contains a total of 73 parking metres, comprising of 16 x 1-hour meters (Monday to Friday); 32 x 1-hour meters (Monday to Saturday); 14 x 1P (7-days); 7 x 3-hour meters (Monday to Friday); and 4 x ½-hour meters (7 days, and also functions as a loading zone on weekdays between 8am and 10am).

The occupancy of parking meter spaces within the study area is shown in Figure 7. It can be seen that parking meter spaces in the city blocks between Barrack Street and Murray Street generally have occupancies between 80% and 100% for the majority of the day. Parking meter occupancy is lower in the block between Molle Street and Barrack Street, with parking demand reducing during the afternoon period before increasing again during the PM peak period.

Figure 7 Parking Meter Occupancy



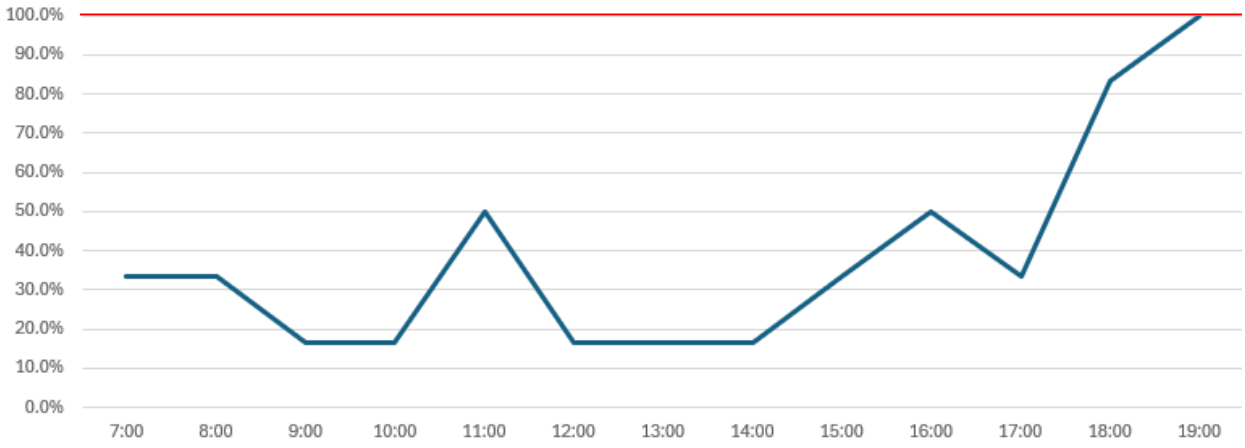
7.2.2 Short-Term Parking

The study area contains a number of short-term parking spaces, comprising of 4 x 5-minute parking spaces and 1 x ¼P parking space. It is further noted that additional short-term parking is provided on weekends when 5 x ¼P spaces are available (these spaces are loading zones during weekdays). The 5-minute parking zone also showed a high turnover, but had a lower demand due to the very short time period available limiting the usability of the spaces for anything other than drop-off or pick-up.

Observations of short-term parking indicated high turnover throughout the day. Due to the nature of the parking, vehicles can only stay for brief periods of time. The ¼P spaces typically turnover four to five times per hour (with durations of stay averaging less than 15 minutes with periods of time between parked cars when the space is unoccupied).

The occupancy of the short-term parking spaces is summarised in Figure 8. The lower occupancy shown in Figure 8 is due to the high turnover rather than low demand.

Figure 8 Short Term Parking Spaces Occupancy



7.2.3 Loading Zones

Loading zones are an essential component of a functional and efficient CBD environment. They provide designated spaces for commercial vehicles to load and unload goods, ensuring that businesses can receive deliveries and restock supplies without disrupting the flow of traffic. In dense urban areas, where space is at a premium, loading zones help prevent double parking and illegal stopping of vehicles, which can block travel lanes and create safety hazards for other road users, including pedestrians and cyclists. By facilitating quick and efficient access for delivery vehicles, loading zones play a critical role in supporting the economic vitality of CBD businesses, particularly those reliant on frequent restocking or time-sensitive deliveries.

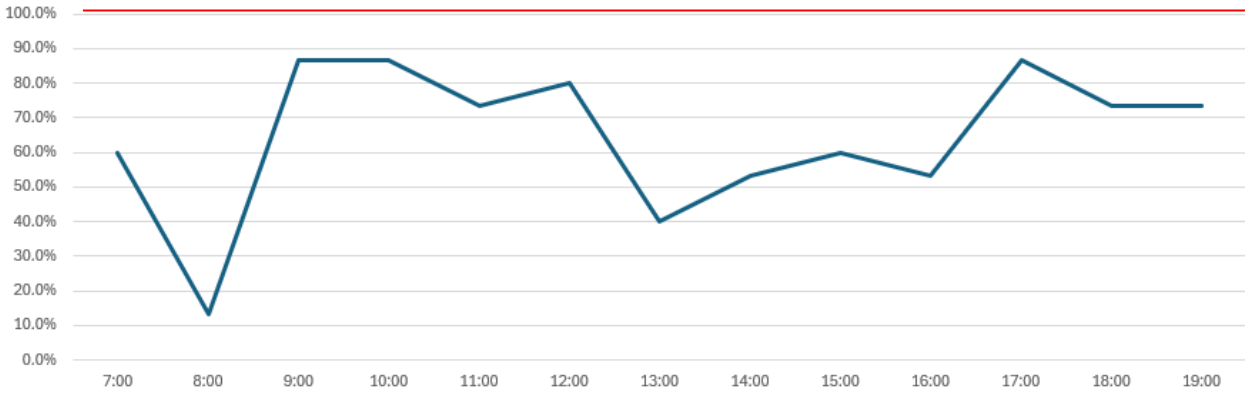
In addition to supporting commerce, loading zones contribute to the broader efficiency of the transport network. Without designated areas for loading and unloading, delivery vehicles may circulate through city streets in search of parking, exacerbating congestion and increasing emissions. Strategically located loading zones reduce this inefficiency, providing drivers with predictable and accessible spaces to perform their tasks.

For businesses, loading zones located as close as practicable to their premises improve operational efficiency and ensure that goods can be transported with minimal delay. In a CBD environment where the competition for curb space is intense, balancing the needs of delivery vehicles with those of other road users is therefore critical.

The study area contains a total of 6 loading zones located in Collins Street. Parking surveys indicate high utilisation of the loading zones as shown in Figure 9. Note that the loading zones are sufficiently long enough to accommodate a variety of vehicle types (1 large truck or several smaller vehicles for example). The summary of loading zone utilisation in Figure 9 represents when the loading zones were in use, but multiple vehicles were often observed parked within the loading zones at one time.

It can be seen that loading zone demands are relatively high throughout the day, with the morning and afternoon peak periods having the highest demands.

Figure 9 Loading Zone Occupancy



7.3 Car Parking Impacts

Whilst the occupancy surveys appear to show spare capacity in the on-street parking supply, observations indicate that spaces were unoccupied for very short periods of time. This is due to the relatively high turnover of the parking, commensurate with the time restrictions. The on-street parking therefore plays an important role in providing short-term parking to support nearby businesses. This differs greatly from the parking provision within the off-street parking stations (such as Centrepoint car park) where parking duration is typically longer and additional time is required to access and exit the car park due to queuing and ramp manoeuvring within the car park.

To highlight this, surveys were conducted of vehicles entering and exiting the Centrepoint car park (the closest public car parking station to the study area). The surveys indicate that during busy periods, it takes approximately 10 to 25 minutes for a vehicle to enter the car park, circulate around the parking ramps, park and travel to street level (via stairs or elevator). A similar timeframe is required to exit the car park (paying for the ticket, stairs or elevator to car, circulating to exit, etc). In this regard, off-street parking stations cannot replace the convenience of on-street parking for short-term trips within the CBD. Furthermore, the amount of on-street parking that is proposed to be removed from Collins Street to accommodate the proposed bicycle lanes represents almost a ramp of parking within the Centrepoint car park, which would increase existing high demands for the car park, thus increasing delays associated with parking and unparking.

The loss of on-street parking associated with the proposed bicycle lanes is therefore not offset by off-street parking as the usage patterns differ significantly between the two. The provision of on-street parking along Collins Street is important for various businesses who require convenient and accessible short-term parking options (key examples located along the Collins Street corridor include medical centre, dentists, retail, bottle shop, etc).

The proposed on-road bicycle lanes will have the following impacts on parking demands:

- Insufficient Transition Planning. Abrupt removal of parking without alternatives (such as nearby off-street parking or improved public transport) can lead to a loss of regular customers. This is particularly evident in cities with high car dependency and limited active transport infrastructure.
- Urban Vibrancy. On-street parking contributes to vibrant streetscapes by supporting quick visits to multiple destinations, while parking stations are better for less frequent, longer-duration trips.
- On-Street parking convenience and accessibility. On-street parking provides direct access to businesses and services, making it particularly appealing for short trips such as quick shopping, pick-ups/ drop-offs, or medical appointments. On-street parking is often located closer to retail frontage and other high-demand destinations than parking stations.
- Support for Local Businesses. Short-term parking encourages turnover, allowing more customers to access businesses throughout the day. On-street parking also attracts 'impulse' or convenience-driven trips that can increase foot traffic and retail sales.
- Traffic Calming. On-street parking can act as a buffer between moving traffic and pedestrians, contributing to a safer and more pedestrian-friendly streetscape.
- Efficient Land Use for Short Stays. On-street parking provides a more efficient parking solution for users who only need to stay briefly, as they avoid the time spent entering and exiting parking stations.

7.4 Parking Revenue Loss

The most recent update from Hobart City Council states that a total of 44 on-street parking spaces will be removed to facilitate the design. This would result in the removal of the following on-street parking provision:

- Between Molle Street and Barrack Street. 5 on-street parking spaces are reported to be retained on the southern side of Collins Street. This is a loss of 23 metered spaces, as well as 3 short-term parking spaces.
- Between Barrack Street and Harrington Street. 6 on-street parking are reported to be retained, as well as a loading zone and one accessible parking space. This is a loss of 21 metered spaces.
- Between Harrington Street and Victoria Street. No loss of parking.

Using average parking occupancies identified in the parking surveys and noting the hourly parking rates ($3.50 per hour between Molle Street and Harrington Street and $5.60 per hour between Harrington Street and Victoria Street), the likely daily loss of revenue is $1,052. This equates to around $302,000 per annum (noting that the removed parking spaces do not operate on Sundays and not all operate on Saturdays).

7.5 Bus Stop Impacts

The proposed on-road bicycle lanes will reconfigure the existing Airport Shuttle bus stop to an 'in-lane bus stop' that will be shared by Metro. This will result in buses stopping through traffic when dropping off or picking up passengers.

In-lane bus stops are not commonly installed on Hobart's roads. The nearest example in Hobart is located in Hill Street, West Hobart.

There are circumstances when in-lane bus stops may be appropriate, including:

- High frequency public transport corridors. In-lane bus stops can be used to minimise delays for buses merging back into traffic (typically high volume roads). In-lane bus stops are used in this scenario where bus travel times and reliability are critical for public transport operations.
- Road space constraints. On narrow roads or in urban areas where there is insufficient width to provide a dedicated pull-over bay, in-lane bus stops are often necessary. The proposed on-road bicycle lanes reduces the available road width, necessitating the design of an in-lane bus stop.
- Traffic calming. In-lane stops can act as a traffic-calming measure by slowing down other vehicles when buses are stopped, particularly in residential or school zones. This application is relevant to the existing bus stop in Hill Street.
- Pedestrian safety and accessibility. When the design prioritises pedestrian safety, in-lane stops allow passengers to alight closer to the curb or crossing facilities without needing to navigate additional road space. In this case however, a bicycle lane will be located between the pedestrian footpath and the bus stop. There will therefore be an unusual conflict between cyclists and pedestrians accessing or egressing the bus at the in-lane bus stop.
- Bus priority. In-lane stops align with broader strategies to prioritize public transport over private vehicle traffic, especially in cities aiming to reduce car dependency. In the context of the proposed changes to Collins Street, the in-lane bus stop is not considered to emphasise bus priority (as it is constructed in isolation and is not a high frequency public transport corridor).
- Low traffic roads. On roads with low traffic volumes or where buses operate infrequently, in-lane stops are unlikely to cause significant disruptions to other vehicles.

In-lane bus stops may not be appropriate in the following circumstances:

- High traffic arterial roads. On roads with high traffic volumes and limited overtaking opportunities, stopping buses in the through lane can cause excessive delays for other vehicles.
- Proximity to intersections. In-lane stops close to intersections can disrupt traffic flow and cause queuing through the intersection. In this case the in-lane bus stop is located on the approach to the Harrington Street intersection. This will not cause queuing through the intersection but will prevent traffic from approaching the intersection during times when a bus is stopped. The increased queueing arising from the removal of the turning lane on the approach to the Harrington Street junction is also likely to result in vehicles queuing back from the junction, potentially over the in-lane bus stop location.

- Emergency vehicle routes. They may hinder the movement of emergency vehicles that rely on free-flowing traffic lanes.
- Cyclist and pedestrian safety. Depending on the final design of the bus stops, there is potential for conflict between the cycle lane and pedestrians accessing or alighting the bus. From a safety perspective it would be appropriate to terminate the bicycle lane at the bus stop to prevent conflicts occurring.

It is clear that the in-lane bus stop has been designed as a compromise due to the reduction in available road width arising from the on-road bicycle lanes.

8. Summary and Conclusions

The technical assessment of the proposed on-road bicycle lanes in Collins Street between Molle Street and Murray Street has identified several significant impacts on Hobart's CBD transport network.

The proposed on-road bicycle lanes on Collins Street will fundamentally transform the nature of the road corridor within Hobart's CBD. Unlike previous transport infrastructure projects in the city that have removed midblock lanes while preserving approach lanes (turn lanes) at intersections, this initiative will remove the majority of turning lanes on the approaches to intersections along the route (only southbound approach to Barrack Street retains the left-turn lane). This design is therefore unusual and represents a significant departure from the established approach to lane reallocation in Hobart's CBD. By requiring all traffic to share a single through lane at intersections, the project will notably reduce the vehicular capacity of Collins Street, altering its operational dynamics and prioritising sustainable transport modes over traditional car-based traffic.

This reconfiguration will also redefine the hierarchy of Collins Street. Historically functioning as a mixed-use urban thoroughfare catering to vehicles, pedestrians, and limited cycling activity, the street will transition to a more multimodal transport corridor with a strong emphasis on active transport. The introduction of dedicated bicycle lanes elevates the role of cyclists, promoting accessibility and safety for non-motorized road users while de-emphasizing private vehicle convenience. This change aligns with broader goals of reducing car dependency and encouraging sustainable transport but also challenges existing traffic patterns and priorities. For businesses and commuters, the altered road hierarchy will demand adaptation to new traffic flows. It will create a street environment that caters for diverse road users but with significant implications for vehicle movement and intersection functionality.

The key findings of this assessment are provided in the following sections.

8.1 Network Operation and Traffic Flow

The removal of dedicated turning lanes at key intersections along Collins Street represents a fundamental change to intersection operations in Hobart's CBD, departing from established practices of maintaining separate turn lanes at major intersections (noting that only the southbound approach of Collins Street at the Barrack Street intersection will retain its left-turn lane).

Traffic modelling indicates that the reduction to single lanes at intersections will create:

- Increased delays at signalized intersections along Collins Street.
- Potential queue spillback affecting adjacent intersections.
- Reduced intersection capacity, particularly during peak periods.
- Limited flexibility in signal timing adjustments due to existing network constraints.

The changes may exacerbate existing network vulnerabilities identified in the 2016 Hobart Congestion Traffic Analysis report, particularly:

- Increased pressure on the already sensitive Barrack Street corridor.
- Reduced network resilience during peak periods.
- Greater potential for "gridlock" events in the CBD.
- Cascade effects on the broader network, including Macquarie and Davey Streets.

8.2 Parking and Access Impacts

The removal of on-street parking will have substantial impacts that cannot be effectively offset by nearby off-street parking facilities:

- Loss of high-turnover parking spaces that serve different purposes than long-term parking stations.
- Reduced accessibility for short-term business visitors and customers.
- Impacts on loading zone operations and business servicing.
- Significant loss of parking revenue for Council.

The conversion to in-lane bus stops presents operational challenges:

- Potential traffic flow disruption during bus boarding/alighting.
- Unusual conflicts between cyclists and bus passengers.
- Queuing impacts at the approach to Harrington Street intersection.

8.3 Bicycle Infrastructure Effectiveness

The bicycle lane design presents several limitations:

- Lack of connectivity at the Murray Street end creates a significant gap in the bicycle network.
- Reliance on informal connection to the Rivulet track via a car park.
- Limited potential for future network expansion due to topographical constraints.
- Bicycle survey data shows highest bicycle volumes at the Molle Street end (connecting to the Rivulet track) with progressively lower volumes toward Murray Street, suggesting the route primarily serves South Hobart connections rather than broader CBD distribution.

Extensive bicycle survey data indicates:

- Strong commuter-focused usage patterns.
- Limited middle-of-day and weekend activity.
- Predominantly northbound cyclist movement patterns.

8.4 Road Safety Considerations

While the dedicated bicycle facilities may reduce bicycle-related crashes:

- Historical crash data shows minimal bicycle crash history (1 recorded incident resulting in property damage only).
- New conflict points are introduced at bus stops and at intersections relating to bicycle lane treatments.
- Changed intersection operations may increase the risk of rear-end and angle crashes.

8.5 Overall Assessment

Collins Street has limited road space to accommodate bicycle lanes without loss of parking and/ or through lanes. Other recent bicycle lane installations in Hobart have removed through lanes with parking retained often with associated clearways. In this case the limited road space has resulted in the removal of significant amount of on-street parking. The design therefore prioritises bicycle mobility over kerbside parking space.

The design is not considered a critical component of the transport network in the sense that it does not improve congestion or provide significant mode shift attractiveness. The Collins Street route is currently being utilised by cyclists, particularly commuter cyclists. The existing transport infrastructure already caters for cyclists in a relatively safe manner due to the existing low traffic volumes and low speed environment that Collins Street already provides. In this sense the design appears to be heavily biased towards bicycle policy rather than actual technical need.

To minimise the loss of important on-street parking infrastructure it would be more appropriate to provide a design that utilises a shared space for vehicles and cyclists with a reduced speed limit (ie. 30-km/h). This would provide more balance for all road users to maintain a healthy CBD environment.

The proposed changes to Collins Street represent a significant modification to Hobart's CBD transport network that carries substantial risks to network operation and business accessibility. While the project aims to improve active transport infrastructure, the specific design approach creates several operational challenges that could negatively impact both the immediate corridor and the broader CBD network.

The removal of all turning lanes at intersections, combined with the loss of high-turnover parking and introduction of in-lane bus stops, may create compounding effects that reduce network resilience and increase congestion vulnerability. These impacts appear disproportionate to the current and projected bicycle usage patterns along the corridor.

Midson Traffic Pty Ltd ABN: 26 133 583 025

E: admin@midsontraffic.com.au W: www.midsontraffic.com.au

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