

Double Bay Commercial Centre – Pedestrianisation Study

Recommendation Report

Prepared by: Jennifer Chen

Review by: Jonathan Busch

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Purpose

Purpose

This study seeks to provide guidance to Woollahra Municipal Council (WMC) on options to expand on Double Bay's vibrant commercial centre and create highly activated, safe and exciting pedestrian streets.

In 2019, Council considered a Notice of Motion and resolved: Investigate the opportunities and formulate a plan for turning more of the Double Bay Commercial Centre into pedestrian only precincts. Suggested streets to include, but not necessarily be limited to: i. Knox Street, and ii. Transvaal Avenue.

This study:

- Summarises the existing land use and transport context including road features, levels of traffic, public transport provision, as well as walking and cycling facilities;
- Identifies options to transform Double Bay Commercial Centre into a vibrant area that attracts local and non-locals residents by increasing pedestrian priority; and
- Provides a summary of infrastructure works and cost estimate to achieve this vision.

This study, together with the Double Bay Traffic Study (including cycling recommendations), aims to progress WMC's vision to enhance walking and cycling connectivity between Double Bay and its surrounds.

Study area



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Strategic Context

What is pedestrianisation?

Pedestrianisation is about increasing the priority given to pedestrians in the transport network. Pedestrians are often required to give way to cars, making walking less desirable.

There are **a range of different treatments** to improve pedestrian priority, from implementing **40km/h High Pedestrian Area** signage to **completely banning vehicles** from entering a street.

The vision is to **increase the attractiveness** of Double Bay, so that businesses attract more customers and customers travel by more sustainable modes of transport.



Photo location: Kiara Lane, Double Bay

Benefits of pedestrianising streets

A review of published literature suggests there is an increase in business turnover and retail spending resulting from pedestrianisation of retail areas. Studies reviewing the impact of pedestrianisation on local businesses in the United Kingdom, Germany, and Hong Kong, all provide similar conclusions despite differences in geographical context, urban design, and culture.

Well-designed pedestrianisation schemes have seen significant increases in pedestrian traffic. This is directly correlated with improvements in pedestrian environment safety and connectivity, and, in some cases, improved public transport facilities. Increases of 20 - 40% of pedestrian volumes within the first year are not uncommon and presents a driving factor for increases in business revenue. This cascades to increases in footfall trading by up to 40%, with individuals walking into shops spending up to 6 times more than drivers.

Some of these benefits are passed onto both local council and landlords as pedestrianisation often leads to increase in retail rental costs. A study in Hong Kong showed the complete pedestrianisation of a streetscape resulted in a 17% increase in retail rental value. However, increases in rental costs are sufficiently offset by increases in business revenue from higher foot traffic. Furthermore, vacancy rates have been shown to drop within one year of pedestrianisation, with corresponding increases in employment and expected wage growth.

Benefits of pedestrianising streets

A study conducted in Old Town of Brighton, United Kingdom, assessed public perceptions of road closures within the small retail district. The study showed increased retail spending, improvements to the urban environment and achievement of modal shift. Both the general public and businesses were surveyed to conclude overall positive perceptions of pedestrianisation. Impacts of restricted vehicle access for deliveries were manageable through effective timing of road closures allowing deliveries to occur outside of peak pedestrian activity.

Sources:

- Hass Klaw, 1993, Impact of Pedestrianisation and Traffic Calming on Retailing, Transport Policy, vol. 1, no. 1, pp. 21-31.
- Lawlor 2014, The Pedestrian Pound, <https://www.livingstreets.org.uk/media/3890/pedestrian-pound-2018.pdf>
- Chung 2011, Impact of Pedestrian Scheme on Retail Rent: Empirical Test in Hong Kong, Journal of Place Management and Development, vol. 4, no. 3, pp. 231-242.
- Soni & Soni 2016, Benefits of Pedestrianisation and Warrants to Pedestrianise an Area, Land Use Policy, vol. 57, pp. 139-150.
- Melia and Shergold 2018, Pedestrian and Politics: A Case Study, Transport, vol. 171

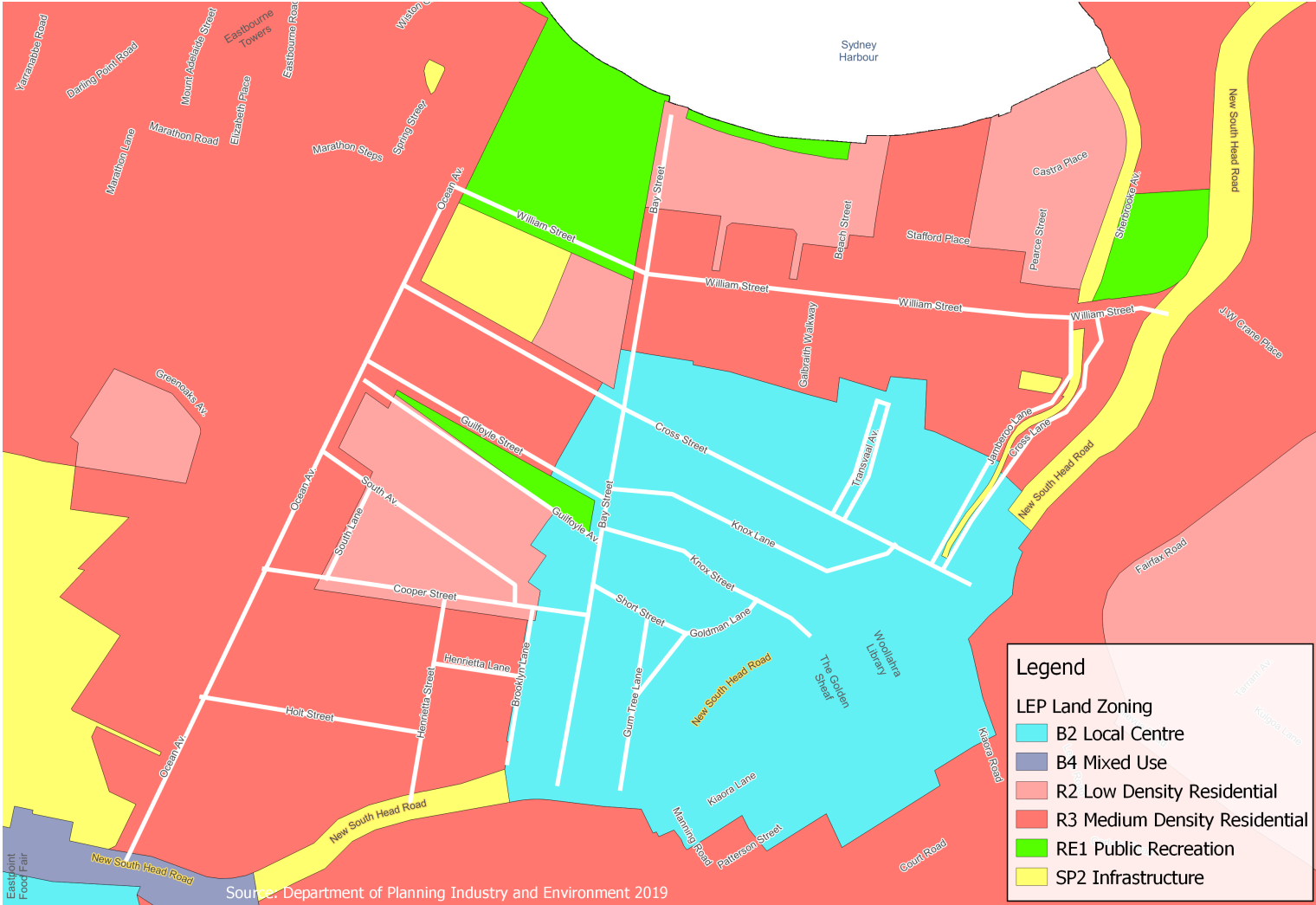
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Existing Conditions

Land use

Land zoning around Double Bay shows the commercial centre zoned as B2 Local Centre bound by Cross Street and Bay Street and along Transvaal Avenue.

The commercial centre is surrounded by a mix of R2 Low Density and R3 Medium Density Residential zones.



Road directions

Some streets within the Double Bay local centre are one-way streets. This will need to be considered to **ensure traffic circulation is maintained** when roads are closed to allow pedestrian only access.

For example, Guilfoyle Avenue is a two way street separated by Gilfoyle Park. Access to Guilfoyle Avenue in the westbound direction will need to be adjusted if Bay Street was considered for pedestrianisation.



Parking features

Most roads within Double Bay allow on-street parking. Almost all spaces are time restricted.

When pedestrianising a street the following will need to be considered in relation to on street parking:

- Removing parking around the Double Bay area has challenges, especially along streets where local residents typically park to access their homes.
- Removing parking around local retail / shops may be considered by business owners as reducing ease of access / convenience to their businesses.
- Loading zones may need to be relocated to a nearby area to allow for goods to be loaded and unloaded.



Driveway features

Driveways are a key component of the local street network when considering pedestrianisation around Double Bay.

Roads where there is no driveway can be fully pedestrianised as vehicles do not use the road for access and driveways do not need to be relocated.

Roads where there are residential driveways cannot be considered for full pedestrianisation as it will be too difficult to relocate vehicle access for all homes.



Road width

Road widths can provide an indication of the amount of vehicles travelling along the road.

Wider roads are often associated with larger traffic volumes as well as larger vehicles. These roads are often strategically important and will often need to be retained for their traffic function. Wider roads are also more costly and difficult to design because there is more space to fill.

Narrower roads often generate less traffic and discourage heavy vehicles like trucks to travel along them. Narrow roads also encourage slower speed of travel, making them more appropriate for pedestrianisation.



Movement and Place classifications

A Movement and Place classification for roads within Double Bay helps to illustrate the priorities of a road.

Roads with high movement functions will prioritise the thorough movement of vehicles as they travel along a street safely and without interruptions.

Roads with high places functions will prioritise the movement of people as they move between shops and cafes and open spaces.

Roads with high place and low movement are more desirable for creating shared zones and road closures for pedestrianisation.



Public transport

Buses and ferries are beneficial for busy commercial centres as they provides residents and customers with better access to areas like Double Bay Commercial Centre resulting in increased business revenue for business owners.

When assessing streets for pedestrianisation, roads with bus routes and bus stops are harder to close because buses will need to be rerouted and bus stops relocated.



Speed limit

Most roads in Double Bay currently have 50km/h speed limits.

Research into the benefits of 40km/h zones by the Centre for Road Safety (2018) showed that over a five year period from implementation, there was a 16% crash reduction compared with locations without the treatment.

A number of Councils are also looking into the potential for 30k/h speeds on streets to further improve road safety.

Double Bay presents a number of streets that would benefit from this treatment, which could save lives and improve the quality of the street environment.



Cycling facilities

Cycling facilities provide better access to Double Bay commercial centre for residents in surrounding areas and will help to reduce traffic on nearby roads and parking demands in the centre.

Current and future cycle routes would benefit from pedestrianisation along these routes to reduce conflicts with general traffic, making it safer and more attractive to access Double Bay by cycling.



AM peak traffic volumes and Level of Service

Traffic volumes and LOS in the AM peak (7:45 – 8:45AM) show most traffic activity occurring along New South Head Road, Ocean Avenue, William Street and Cross Street.

Roads with lower traffic volumes are more suited for pedestrianisation as it would have a smaller impact to the surrounding road network once implemented.



PM peak traffic volumes and Level of Service

Traffic volumes and LOS in the PM peak (5:30 – 6:30 PM) shows most traffic activity occurring along New South Head Road, Ocean Avenue, William Street and Cross Street.

Roads with lower traffic volumes are more suited for pedestrianisation as it would have a smaller impact to the surrounding road network once implemented.



Weekend traffic volumes and Level of Service

Similar to weekday AM and PM conditions, traffic volumes and LOS during the weekend peak (11:45AM – 12:45PM) shows most traffic activity occurring along New South Head Road, Ocean Avenue, William Street and Cross Street.

Roads with lower traffic volumes are more suited for pedestrianisation as it would have a smaller impact to the surrounding road network once implemented.



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Options Assessment

Centre access vision

Establishing a vision assists in informing how treatments 'fit' into the overall strategy for the centre. Key aspects of the vision are:

Regional Connectivity: New South Head Rd provides regional transport connections, where movement efficiency is paramount.

Centre Bypass: this bypass is served by Ocean Avenue and William Street and encourages local traffic to avoid the centre and the high pedestrian areas.

Vibrant Boulevard: Cross Street provides access for cars into the centre and accommodates a mix of movement and place.

Pedestrian Core and Ferry Link: Streets like Knox Street, Transvaal Street and Bay Street are vibrant, pedestrian-focussed streets.

Slow Residential Streets: encouraging slow traffic for safety and so that walking or cycling to the centre is attractive.

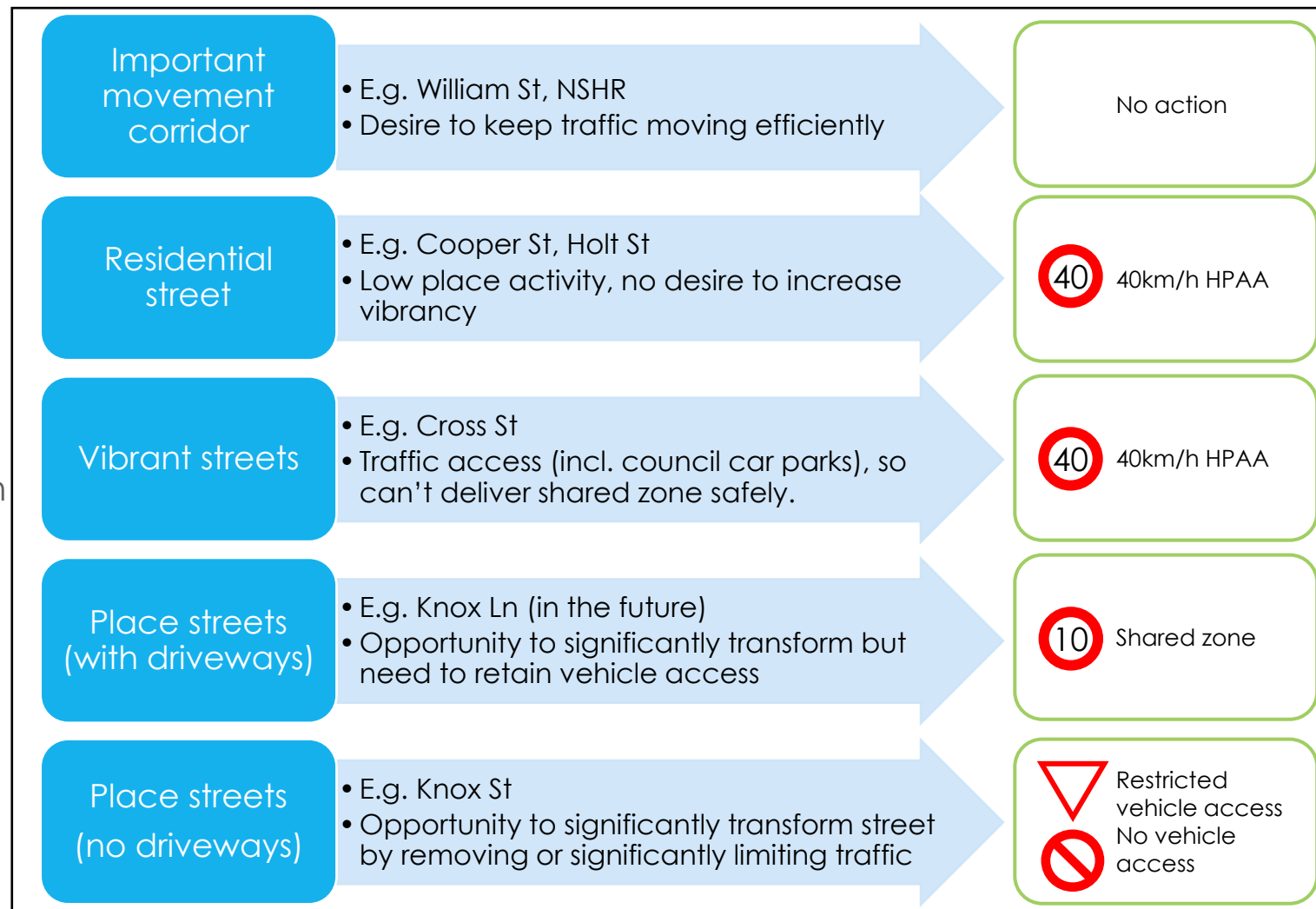


Methodology



The methodology to the right was used to long-list options for pedestrianisation. The intent of this methodology is to ensure the streets best suited to pedestrianisation were selected.

It is noted that increasingly 30km/h zones are being trialled in locations were vulnerable road users – such as near schools or in town centres.

While a 40km/h High Pedestrian Activity Area is identified in this plan, implementation of 30km/h speeds in areas with vulnerable road users should be considered.




Maximum potential pedestrianisation

Road Name	From	To	Driveway Type	Movement Classification*	Place Classification*	Opportunity
Ocean Rd	NSH Rd	William St	Residential	4	1	No Change
Cooper St	Ocean Ave	South Ave	Residential	3	1	No Change
William St	Bay St	NSH Rd	Residential	3	1/2	No Change
Guilfoyle Ave, Henrietta St, Holt St, South Ave, Jamberoo Ln, South Ln, Cross St west	Various		Residential	3	2	
Cross Lane, Henrietta Lane, Brooklyn Lane	Various		Residential	1	1	
Bay St North	Cross St	William St	Mixed Use	3	2	
Goldman Ln	Short St	Knox St	Commercial	2	1	
Short St	Bay St	Goldman Ln	Commercial	2	1	
Gum Tree Ln	NSH Rd	Short St	Commercial	1	1	

*Movement/Place classifications range between 1 and 4 with 1 being the lowest and 4 the highest.

 40k/h High Pedestrian Activity Area

 10 Shared zone

 Restricted vehicle access

 No vehicle access

Maximum potential pedestrianisation

Road Name	From	To	Driveway Type	Movement Classification*	Place Classification*	Opportunity
Goldman Ln	Gum Tree Ln	Short St	Commercial	1	2	40 or 10
Knox Ln	Cross St	Bay St	Commercial	1	2	
Transvaal Ave	Galbraith Wlkwy	Galbraith Wlkwy	Mixed Use	2	3	
Transvaal Ave	Cross St	Galbraith Wlkwy	Commercial	2	4	
Cross St	Bay St	NSH Rd	Council carpark & commercial	3	4	
Bay St	William Street	Double Bay Wharf	Residential	2	2	10
Transvaal Ave	Galbraith Wlkwy	Cross St	None	2	4	40 or 10 ▽ or ⚡
Cooper St	South Ave	Bay St	None	3	2	
Bay St	NSH Rd	Cooper St	None	3	3	
Bay St	Cooper St	Short St	None	3	3	
Bay St	Short St	Knox St	None	3	4	
Bay St	Knox St	Knox Ln	None	3	3	
Bay St	Knox Ln	Cross St	Commercial (x1)	3	4	
Knox St	NSH Rd	Goldman Ln	None	3	4	
Knox St	Goldman Ln	Bay St	None	3	4	

*Movement/Place classifications range between 1 and 4 with 1 being the lowest and 4 the highest.



40k/h High Pedestrian Activity Area



10 Shared zone











Restricted vehicle access



No vehicle access



Other considerations

Road Name	From	To	Access needs	Recommendation	Justification
Goldman Ln	Gum Tree Ln	Short St	• Commercial driveways		Low surveillance could create CPTED risks with full pedestrianisation.
Knox Ln	Cross St	Bay St	• Commercial driveways		Low surveillance could create CPTED risks with full pedestrianisation.
Transvaal Ave (top)	Galbraith Wlkwy	Galbraith Wlkwy	• Residential driveways	 & truck turnaround	Residential and service vehicle access can't be relocated
Transvaal Ave (west)	Cross St	Galbraith Wlkwy	• Commercial driveway • Access to residential driveways	 & convert to 2-way	Sufficient width for shared path and access to residential driveways
Transvaal Ave (east)	Galbraith Wlkwy	Cross St	• Nil (if Transvaal west made 2-way)		No driveways or access needs
Cross St	Bay St	NSH Rd	• Cross St & Wilson car parks • Through traffic		Long, straight stretch of road is not compatible with shared zone
Knox St	Goldman Ln	Bay St	• Nil		No driveways or access needs
Knox St	NSH Rd	Goldman Ln	• Short St (can't be closed, reversed or made 2-way)		Short St serves the Cosmopolitan. Directional driveways and insufficient room for a turning head mean access can't be diverted.

 40k/h High Pedestrian Activity Area
  Shared zone
  Restricted vehicle access

 No vehicle access

Other considerations

Road Name	From	To	Access needs	Recommendation	Justification
Bay St	William St	Double Bay Wharf	• Residential driveways on the eastern side of Bay Street		Access to Double Bay Wharf and Steyne Park
Bay St	Short St	Knox Ln	• Guilfoyle Ave Eastbound		No driveways or access needs
Bay St	Knox Ln	Cross St	• 51 Bay St Retail Driveway		No driveways or access needs. 51 Bay St retail driveway to be relocated.
Bay St	Cooper St	Short St	• Short St (can't be closed, reversed or made 2-way)	 or 	Access to Short St must pass through this road.
Bay St	NSH Rd	Cooper St	• Short St (can't be closed, reversed or made 2-way)	 or 	Access to Short St must either be by Bay St or Cooper St
Cooper St	South Ave	Bay St	• Short St (can't be closed, reversed or made 2-way)	 or 	Access to Short St must either be by Bay St or Cooper St



40k/h High Pedestrian Activity Area



Shared zone



Restricted vehicle access



No vehicle access

Pedestrianisation – Option 1 (preferred)

Option 1 proposes the following changes:

- Pedestrianisation with no vehicle access along parts of Transvaal Avenue and Knox Street.
- This option allows for improved pedestrian priority in the commercial centre core while retaining vehicle access along Bay Street.
- Shared zones are proposed along roads with high pedestrian activity and driveway access to residential and commercial buildings.
- Options 2 and 3 can still be considered in the medium or long-term after option 1 is implemented.



Pedestrianisation – Option 2

Option 2 proposes the following changes:

- Pedestrianisation with no vehicle access along Double Bay's most vibrant streets like Knox Street, Transvaal Avenue and Bay Street while retaining access to Short Street from Bay Street.
- Connecting Guilfoyle Avenue on the eastern end to allow for road closures along Bay Street.
- Shared zones along roads with high pedestrian activity and driveway access to residential and commercial buildings.



Pedestrianisation – Option 3

Option 3 proposes the following changes:

- Pedestrianisation with no vehicle access along Double Bay's most vibrant streets like Knox Street, Transvaal Avenue and Bay Street .
- This option proposed the maximum amount of fully pedestrianised areas.
- Vehicles accessing Short Street will need to travel along Ocean Street and Cooper Street instead of Bay Street (current movement pattern).
- Connecting Guilfoyle Avenue on the eastern end to allow for road closures along Bay Street.
- Shared zones along roads with high pedestrian activity and driveway access to residential and commercial buildings.



Render of Knox Street pedestrianisation



[05]

Implementation Plan

Cost estimate assumptions

Cost estimates were completed for Option 1 with the following assumptions:

Treatment	Assumptions
No Change	Recommendations to retain roads as they currently were assumed to have zero cost.
40km/h posted speed and traffic calmed	Signage and line marking <ul style="list-style-type: none">Assumes 2 40km/h speed limit signs are required on both ends of specified streets. Additional signs were added at the intersection of Bay Street and Cross Street to improve safety.Assumes a 40km/h speed limit pavement marking will be at the entry point of roads where the speed limit has changed and there are no raised thresholds. Raised Thresholds <p>Assumes raised thresholds at the entry/exit points intersecting roads with speed limits of 50km/h and higher</p>
Shared Zone (10km/h)	Cost estimates were completed for two treatment options along shared zones Assumes shared zone treatment will be similar to treatments at Kiaora Lane. This is following the “Category 1” shared zone treatment from TTD 2016/001 <i>Design and implementation of shared zones including provision for parking</i> .
Pedestrianised with No Vehicle Access	Assumes shared zone treatment will be the same as treatments done at Kiaora Lane but with temporary or permanent restrictions on vehicles.

Cost estimates

A summary of the cost estimates for Option 1 are shown below in stages. Detailed cost estimates including key assumptions and exclusions can be found in Appendix B.

Treatment	Construction cost	Development cost*	Cost	Stage cost
Stage 1				
Knox Street pedestrian only zone	\$2,690,000	\$560,000	\$3,250,000	\$3,250,000
Stage 2				
40km/h High Pedestrian Activity Area x12 streets	\$360,000	\$80,000	\$430,000	\$430,000
Stage 3				
Transvaal Avenue shared zone	\$720,000	\$150,000	\$880,000	\$2,370,000
Transvaal Avenue pedestrian only zone	\$1,230,000	\$260,000	\$1,490,000	
Stage 4				
Bay Street shared zone	\$2,300,000	\$480,000	\$2,780,000	\$7,020,000
Knox Lane shared zone	\$1,830,000	\$380,000	\$2,210,000	
Short Street shared zone	\$860,000	\$180,000	\$1,040,000	
Gum Tree Lane	\$270,000	\$60,000	\$330,000	
Goldman Lane shared zone (Short Street to Knox Street)	\$550,000	\$120,000	\$660,000	
Total Project Cost @ July 2020 (Ex. GST)	\$10,810,000	\$2,270,000	\$13,070,000	\$13,070,000

*Contingency of 10%, Consultant fees of 8%, project management fees of 2% and statutory fees of 1%.

[06]

Appendix A - Detailed Road Assessment

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Rd Name	From	To	Direction	Rd Width	Parking	Driveway	Parking Restriction	Parking Conditions	Speed Limit	Mvmt Class	Place Class	Mvmt Feat	Place Feat	Opportunity
Ocean Rd	New South Head Rd	William St	Two way	12.9	2P residential on both sides	Residential Driveways to apartment buildings	2P	Residential	50/School Zone	4	1	A lot of through traffic in a large catchment area	Wide footpaths, steep grades at the intersection of Ocean Rd and NSHR	Retain Current Treatment
Cooper St	Ocean Ave	South Ave	Two way	12.9	2P residential on both sides	Residential Driveways to apartment buildings	2P	Residential	50	3	1	Some through traffic	Low density res, wide footpaths	Retain Current Treatment
William St	Bay St	New South Head Rd	Two way	12.7	2P residential on both sides	Residential Driveways	2P	Residential	50/School Zone	3	1	Some through traffic	Low/medium density housing	Retain Current Treatment
William St	Ocean Ave	Bay St	Two way	12.7	2P residential on both sides	Residential Driveways	2P	Residential	50/School Zone	3	2	Some through traffic	Steyne Park, Double Bay Primary School and low/medium density housing	Retain Current Treatment/ 1. 40kph posted speed & traffic calmed (localised)
Guilfoyle Ave	Ocean Ave	Bay St	One way	7.1	3P/2P ticket and residential on both sides	Residential Driveways	2P	Ticket and Residential	50	3	2	Some through traffic	Footpaths, large median through out- features seating and playground, no footpath	1. 40kph posted speed & traffic calmed
Guilfoyle Ave	Bay St	Ocean Ave	One way	7.2	3P/2P ticket and residential on both sides	Residential Driveways	2P	Ticket and Residential	50	3	2	Some through traffic	Footpaths, large median through out- features seating and playground, no footpath	1. 40kph posted speed & traffic calmed
Henrietta St	New South Head Rd	Cooper St	Two way	8.5	2P residential on both sides	Driveway to residential and apartment buildings	2P	Residential	50	2	1	Local traffic, turn restricted at intersection of NSHR	Medium density dwellings, steep grade, compliant footpaths	1. 40kph posted speed & traffic calmed
Holt St	Ocean St	Henrietta St	Two way	9.4	2P residential, some unrestricted	Residential Driveways	2P	Residential/Unrestricted	50	2	1	Local traffic	Lower density housing, steep grades at the intersection of Holt and Ocean St	1. 40kph posted speed & traffic calmed
South Ave	Ocean Ave	Cooper St	Two way	12.1	2P residential on both sides	Residential Driveways	2P	Residential	50	2	1	Low traffic movement	low/medium density housing, kerb build outs to accommodate trees, 8.1m Rd width	1. 40kph posted speed & traffic calmed
Jamberoo Ln	William St	Cross St	Two way	6.5	N/A	Residential driveway	N/A	N/A	50	1	1	Low traffic movement	Residential and council carpark on one side and stormwater culvert on other side	1. 40kph posted speed & traffic calmed
Jamberoo Ln	William St	Cross St	One way	5	N/A	Residential driveway	N/A	N/A	50	1	1	Low traffic movement	Residential on one side and stormwater culvert on other side	1. 40kph posted speed & traffic calmed
South Ln	Cooper St	South Ave	Two way	5	Unrestricted parking on one side	Residential Driveways	Unrestricted	Unrestricted	50	1	1	Low traffic movement	Steep grade, no footpaths	1. 40kph posted speed & traffic calmed
Cross St	Ocean Ave	Bay St	Two way	12.7	2P residential and P5 outside school	Residential Driveways	2P	Residential	50/School Zone	3	2	Slow moving, some through traffic	Double Bay Primary School, compliant footpaths	1. 40kph posted speed & traffic calmed

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Rd Name	From	To	Direction	Rd Width	Parking	Driveway	Parking Restriction	Parking Conditions	Speed Limit	Mvmt Class	Place Class	Mvmt Feat	Place Feat	Opportunity
Bay St	Cross St	William St	Two way	10	2P ticket on both sides	Mixed Use driveways (Residential and Commercial)	2P	Ticket	50/School Zone	3	2	Some through traffic	Medium density housing and some retail and commercial	1. 40kph posted speed & traffic calmed
Goldman Ln	Short St	Knox St	One way	6.1	1/2P on one side	Commercial driveways servicing the Cosmopolitan Shopping Centre	1/2P	N/A	50	2	1	Some traffic movement of cars turning onto Knox St	Back of commercial and retail buildings	1. 40kph posted speed & traffic calmed
Short St	Bay St	Goldman Ln	One way	6	Loading zone on one side of the Rd	Commercial driveway servicing the Cosmopolitan Shopping Centre	N/A	Loading Zone	50	2	1	Some through traffic	Back of commercial and retail buildings	1. 40kph posted speed & traffic calmed
Gum Tree Ln	New South Head Rd	Short St	One way	3.6	N/A	Commercial driveways servicing the back of commercial buildings	N/A	N/A	50	1	1	Low traffic movement, servicing back of commercial buildings	Back of commercial buildings	1. 40kph posted speed & traffic calmed
Goldman Ln	Gum Tree Ln	Short St	One way	3	N/A	Commercial driveways	N/A	N/A	10	1	2	Low traffic movement, narrow lanes	Commercial, retail and dining	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph)
Knox Ln	Cross St	Bay St	One way	5.6	1P ticket on one side	Commercial Driveways servicing retail stores	1P	Ticket	50	1	2	Traffic servicing retail stores and service vehicles for rubbish collection	Footpaths, few shop fronts,	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph)
Transvaal Ave	Galbraith Walkway	Galbraith Walkway	One way	6	N/A	Mixed Use driveways	N/A	N/A	50	2	3	Traffic to residential apartment	Medium density housing	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph)
Transvaal Ave	Cross St	Galbraith Walkway	One way	5.6	2P ticket on one side	Commercial Driveways	2P	Ticket	50	2	4	Local traffic, no through movement at Transvaal St and Galbraith Wlkwy	Retail on both sides and cafe seating on the Rd median	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph)
Transvaal Ave	Galbraith Walkway	Cross St	One way	5.5	2P ticket on one side	N/A	2P	Ticket	50	2	4	Local traffic, no through movement at Transvaal St and Galbraith Wlkwy	Retail on both sides and cafe seating on the Rd median	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Cross St	Bay St	New South Head Rd	Two way	11.5	2P ticket on both sides	Council carpark, commercial and hotel driveway	2P	Ticket	50	3	4	High through movement, heavy vehicle movements possibly due to construction	Retail on both sides, very wide footpaths	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph)
Bay St	New South Head Rd	Cooper St	Two way	10	2P ticket on both sides	N/A	2P	Ticket	50	3	3	Some through traffic	Retail and commercial use, outdoor dining at Bay St and Cooper St	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access

Appendix A - Detailed Road Assessment

Rd Name	From	To	Direction	Rd Width	Parking	Driveway	Parking Restriction	Parking Conditions	Speed Limit	Mvmt Class	Place Class	Mvmt Feat	Place Feat	Opportunity
Cooper St	South Ave	Bay St	Two way	12.9	2P ticket parking on both sides	N/A	2P	Ticket	50	3	2	Some through traffic	Retail and Dining	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Bay St	Cooper St	Short St	Two way	10	2P ticket and mail zone	N/A	2P	Ticket	50	3	3	Some through traffic	Retail use and outdoor dining	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Bay St	Short St	Knox St	Two way	10	2P ticket and mail zone	N/A	2P	Ticket	50	3	4	Some through traffic	Retail use and outdoor dining	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Bay St	Knox St	Knox Ln	Two way	10	2P ticket on both sides	N/A	2P	Ticket/Mail Zone	50	3	3	Some through traffic	Retail and commercial use, outdoor dining	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Bay St	Knox Ln	Cross St	Two way	10	2P ticket on both sides	1 Retail Driveway next to 51 Bay St	2P	Ticket	50	3	4	Some through traffic	Retail and commercial use, outdoor dining at Bay St and Cooper St	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Knox St	New South Head Rd	Goldman Ln	Two way	12.4	2P ticket on both sides	N/A	2P	Ticket	50	3	4	Low traffic movement compared to Cross St, landscaped median	Retail along the Rd and some on outdoor seating on footpath, wide footpaths	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Knox St	Goldman Ln	Bay St	Two way	12.4	2P ticket on both sides	N/A	2P	Ticket	50	3	4	Low traffic movement compared to Cross St, landscaped median	Retail along the Rd and some on outdoor seating on footpath, wide footpaths	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph) 3. Pedestrianised with restricted vehicle access 4. Pedestrianised with no vehicle access
Cross Lane	William Street	Cross Street	Two way	4.8	No Parking	Residential Driveways	N/A	N/A	50	1	1	Low traffic movement	Residential on one side and stormwater culvert on other side	1. 40kph posted speed & traffic calmed
Henrietta Lane	Henrietta Street	Brooklyn Lane	Two way	6	N/A	Residential Driveways	N/A	N/A	50	1	1	Low traffic movement	Access road for low and medium residential driveways	1. 40kph posted speed & traffic calmed
Brooklyn Lane	Cooper Street	N/A	Two way	6	No Parking	Residential Driveways	N/A	N/A	50	1	1	Low traffic movement	low/medium density housing	1. 40kph posted speed & traffic calmed
Bay Street	William Street	Double Bay Wharf	Two way	9	2P on both sides	Residential Driveways	2P	N/A	50/School Zone	2	2	Low traffic movement	Adjacent to Steyne Park and Double Bay Wharf	1. 40kph posted speed & traffic calmed 2. Shared Zone (10kph)

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Appendix B – Detailed Cost Estimate

Double Bay Local Roads (Option 1) - BUDGET ESTIMATE								
Code	Description	Quantities				Rate	Sub-Total	Total
1	No Change (no action)							
	Road			Length(m)				
	Ocean Road			596	596m			
	William Street			583	583m			
	Total			1179	1,179m	\$0	0	0.00
2	40kph Posted Speed and Traffic Calmed							
2.1	Install 40km/hr Speed Limit signs every 500m	Approx width (kerb to kerb)	Length(m)	Sign and Signpost				
	Cross Street	10.8	489	4	4			
	Bay Street	12.3	410	4	4			
	Guilfoyle Avenue	8	432	4	4			
	Cooper Street	13	258	4	4			
	South Avenue	9	201	4	4			
	South Lane	4.3	82	4	4			
	Holt Street	10	176	4	4			
	Henrietta Street	7.5	169	4	4			
	Henrietta Lane	5.8	70	4	4			
	Brooklyn Lane	5	125	4	4			
	Jamberoo Lane	5.2	483	4	4			
	Knox Street	12.5	50	4	4			
	Intersections			8	8			
	Total		2945	48	48No	\$375/ea	18,000.00	
2.2	Raised thresholds at mid-block points	Ave Width		Mid points				
	Traffic calmers; road width x 4m	8.62		14	14No	\$24,200/ea	338,800.00	
2.2	Pavement Markings			Entry Points				
	Remove existing speed limit pavement markings			0	0			
	Install 40km/hr speed limit pavement markings			12	12No	\$200/ea	2,400.00	359,000.00
3	Shared Zone (10km/hr)							
	Road	Road width (lot boundary to lot boundary)	Length(m)	Area (m2)				
	Bay Street	19.5	126	2457				
	Knox Lane	8	244	1952				
	Transvaal Avenue**	7.3	106	774				
	Short Street	10	83	830				
	Goldman Lane (north)	9	65	585				
	Goldman Lane (south)	6	66	396				
	Gum Tree Lane	4	72	288				
	Total		762	7282	7,282m2			
3.1	Road Treatment (Similar to Kiaora Lane)		Length(m)	m2				
	Install pavement surface that is different to the surrounding road network			7282	7,282m2	\$890/m2	6,480,802.00	
	Preserve/re-use Trachite kerbs**				106m	\$750/m	79,500.00	
3.2	Signage			Entry Points				
	Install shared zone signs at each road entry point			5	5No	\$375/ea	1,875.00	
	Install end of shared zone signs at each road exit point			4	4No	\$375/ea	1,500.00	
3.4	Lighting	Allow			7,282m2	\$45/m2	327,681.00	
3.5	Landscaping	Allow			Incl in Road Cost			
3.6	Street Furniture	Allow			Incl in Road Cost			
3.7	Acquisition (excluded - see notes below)	N/a						6,891,000.00
4	Pedestrianised with No Vehicle Access							
	Road	Carriageway Width (m)	Length(m)	Area (m2)				
	Transvaal Avenue**	12.2	99	1208				
	Knox Street	20.8	137	2850				
	Total		236	4057	4057.4m2			
4.1	Road Treatment (Similar to Kiaora Lane)							
	Install pavement surface that is different to the surrounding road network			4057	4,057m2	\$890/m2	3,611,086.00	
	Preserve/re-use Trachite kerbs**				99m	\$750/m	74,250.00	
4.2	Signage			Entry Points				
	Install road closure signs at each road entry point			4	4No	\$375/ea	1,500.00	
4.3	Bollards			Entry/Exit Points				
	Removable bollards to stop cars from entering pedestrianisation areas. (1 every 2m at entry and exit points)			32	32No	\$1,500/ea	48,000.00	
4.4	Lighting	Allow			4,057m2	\$45/m2	182,583.00	
4.5	Landscaping	Allow			Incl in Road Cost			
4.6	Street Furniture	Allow			Incl in Road Cost			
4.7	Acquisition (excluded)	n/a						3,917,000.00
TOTAL CONSTRUCTION COST @ JULY 2020								11,167,000.00
DEVELOPMENT COSTS								
	Contingency @ 10%					10%	1,116,700.00	
	Consultants Fees @ 8%					8%	893,360.00	
	Project Management Fees @ 2%					2%	223,340.00	
	Statutory Fees @ 1% (TBC)					1%	111,670.00	
	Total Development Costs							2,345,000.00
TOTAL PROJECT COST @ JULY 2020								13,512,000.00
	GST					10%		1,351,200.00
TOTAL PROJECT COST @ JULY 2020 (INCL GST)								14,863,200.00

Notes

Rates include contractors Preliminaries and Margin
 Costs exclude staging
 Estimate dated July 2020; escalation beyond that date excluded
 Pedestrian/Shared Streetscapes based on existing Kiaora Lane treatment
 Land Costs Excluded
 Legal Costs Excluded
 Hazardous material disposal excluded (Existing road base regarded as recyclable GSW)
 Utility diversions excluded
 Utility upgrades excluded (uno)
 Work carried out between lot boundaries; no allowance for works within lot setbacks
 **Trachite kerbs observed to Shared and Pedestrian Streets - Preservation/re-use allowed for
 Pedestrian/Shared Zone rates include demolition, hardcore and concrete beds, pavings, tactiles, bollards, drainage channel, drainage gullies, levelling utility covers, tree pits and trees, planter beds, street furniture

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