



# Middle Head, Mosman

## Transport and Access Management Plan

Prepared by: Stantec Australia Pty Ltd for Sydney Harbour Federation Trust

on 06/07/2023

Reference: PL986764

Issue #: D

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### Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	14/04/2021	Final	Raymond Zhang Ashish Modessa	Rhys Hazell	Rhys Hazell	Rhys Hazell
B	03/05/2021	Final – minor amendments	Raymond Zhang Ashish Modessa	Rhys Hazell	Rhys Hazell	Rhys Hazell
C	04/07/2023	Updated to include minor modifications	Bernadette Chuan, Ashish Modessa	Rhys Hazell	Rhys Hazell	Rhys Hazell
D	06/07/2023	Updated to include minor modifications	Bernadette Chuan, Ashish Modessa	Rhys Hazell	Rhys Hazell	

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# 1. INTRODUCTION

01



### 1.1. Background

The Sydney Harbour Federation Trust (Harbour Trust) manages and maintains various lands on or near the foreshores of Sydney Harbour. The Commonwealth Government announced funding to provide public domain improvements at Middle Head with the Comprehensive Plan and subsequent Management Plan for the Middle Head Precinct outlining the Updated Masterplan for the potential development of the precinct. Considering this and in line with the objectives identified in the Management Plan, Harbour Trust is investigating the potential renewal of the 10 Terminal buildings and improvements to precinct access for all transport modes.

Middle Head is rich in natural and historical heritage and uniquely accessed via a single road, Middle Head Road. The road provides one traffic lane in each direction. This inherently limits the opportunity for the precinct to effectively manage growth and as recognised in the Management Plan, there is a desire to facilitate access via other transport modes. This includes greater use of public transport services and active travel to reduce the traffic and parking impacts that may be associated with any potential development of the precinct.

Recognising the key transport constraints and opportunities remains critical to the precinct, together with the need to strike the right balance between accommodating growth associated with the changes in land use while enhancing public access. Key elements to success in this regard will be to recognise the relationship between land use, transport network and planning policy, and developing a strong transport plan underpinned by evidence-based traffic information. Unmanaged growth would likely lead to unsustainable congestion, inefficient travel behaviour and lack of incentive for active and public transport use.

Harbour Trust engaged Stantec to prepare a Transport and Access Management Plan (TAMP) to identify the key transport constraints and opportunities and consider realistic methods in which to improve transport access to the precinct, with consideration to the potential adaptive reuse of the 10 Terminal buildings.

### 1.2. Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposal while considering the broader transport related opportunities and constraints of the precinct. This includes consideration of the following:

- existing traffic and parking conditions within the precinct
- service and emergency vehicle requirements
- pedestrian and bicycle requirements
- suitable access arrangements for the precinct
- trip and parking generating characteristics of the potential land uses
- transport impact of any potential development on the surrounding road network.



### 1.3. References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds, completed in September 2020
- Updated Middle Head Masterplan, prepared by Sydney Harbour Federation Trust
- Middle Head Management Plan 2017, prepared by Sydney Harbour Federation Trust
- Temporary Markets, Middle Head Traffic and Parking Assessment, dated 16 October 2019, prepared by ptc.
- Australian Standard/ New Zealand Standard, Parking Facilities, Parts 1, 2 & 6 (AS/NZS 2890.1:2004, AS 2890.2:2018, AS/NZS 2890.6:2009)
- traffic and car parking surveys undertaken by Matrix as referenced in the context of this report
- other documents and data as referenced in the context of this report.

## 2. STRATEGIC CONTEXT

02

### 2.1. Preamble

This section summarises the key strategy documents that will influence any potential redevelopment of the precinct to create quality open space and generate employment through the reuse of the 10 Terminal buildings.

### 2.2. North District Plan

The North District covers Hornsby, Hunter's Hill, Ku-ring-gai, Lane Cove, Mosman, North Sydney, Northern Beaches, Ryde and Willoughby local government areas.

This North District Plan is a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney. It is a guide for implementing the Greater Sydney Region Plan, A Metropolis of Three Cities, at a district level and is a bridge between regional and local planning.

The District Plan informs local strategic planning statements and local environmental plans, the assessment of planning proposals as well as community strategic plans and policies. The District Plan also assists councils to plan for and support growth and change; and align their local planning strategies to place-based outcomes.

The vision of the North District will be achieved by:

- supporting jobs growth in strategic centres
- sustaining local centres to provide jobs, services and amenity
- providing fast and efficient transport connections to achieve a 30-minute city
- creating and renewing great places while protecting heritage and local character and improving places for people
- improving walking and cycling
- enhancing the quality and improving access to open space.

Of particular relevance to Middle Head are priorities related to delivering Sydney's "Green Grid" of parks and open spaces. The Harbour Trust sites at Headland Park, including Middle Head, are identified as part of the Great Coastal Walk, which aligns with the Harbour Trust's aim of maximising public access to its sites, and creating a network of paths that are integrated with adjoining lands.

### 2.3. Middle Head Management Plan 2017

The Middle Head Management Plan has been developed to guide the future of Harbour Trust land. It interprets the Harbour Trust's Comprehensive Plan, the overarching plan that provides the strategic direction and planning context for all the management plans prepared for Harbour Trust land within the Mosman Local Government Area. The Management Plan guides its implementation by providing more explicit detail about the way the precinct is adaptively reused and conserved.

The aim of this Management Plan is to:

- conserve and interpret the Commonwealth Heritage values of Middle Head
- maximise public access
- facilitate the adaptive reuse of the precinct's buildings for appropriate uses
- integrate the precinct with adjoining lands as part of a unified Headland Park and network of open space in collaboration with the NSW National Parks and Wildlife Service (NPWS).

In doing so, it also aims to:

- conserve and interpret the whole site as a historic precinct
- encourage uses and activities that promote sustainable transport modes and ensure that traffic generated by the site's re-use has minimal impact on the surrounding areas
- provide visitor facilities and amenities including parking and walking tracks
- realise the potential for easy access including access for the disabled
- enhance views to and from the precinct.

### 3. EXISTING CONDITIONS

03

### 3.1. Preamble

This section sets out the existing traffic and transport conditions near and within the precinct to understand travel behaviours and parking demand generated by the existing land uses and facilities.

### 3.2. Precinct Location

The Middle Head Precinct is on the Mosman peninsula and forms part of Headland Park, former defence lands currently managed by the Harbour Trust (with the exception of the HMAS Penguin Naval Base). Headland Park comprises the three distinct precincts of Middle Head, Georges Heights and Chowder Bay. The Middle Head precinct covers an area of about 11 hectares and is centrally located within the Middle Head ridge. It is bound by the naval base that occupies the western end of the Middle Head ridge, Sydney Harbour National Park to the east and south, and Georges Heights and Chowder Bay Precincts to the south.

Central to the Middle Head Precinct is a cluster of buildings, including the disused former 10 Terminal (single storey structures and two storey disused timber barracks respectively south and north of Middle Head Road) and the former Australian School of Pacific Administration (ASOPA) currently occupied by a range of small scale commercial and retail tenancies. 10 Terminal was once used as an army transport depot, training facility and army accommodation. Middle Head Oval and Middle Head Café are also within the precinct, located between HMAS Penguin and the barracks. Burnt Orange café is further west, on the southern side of Middle Head Road on the periphery of the precinct and close to car park 7 (see Section 3.7). Pedestrian and vehicular access to historically significant sites within Sydney Harbour National Park and harbour beaches rely on access through the precinct.

Confirmed bookings for use of Middle Head Oval were obtained for the 22-week period between 15 March 2021 and 31 August 2021. HMAS Penguin is a key user and has regular use of the oval for training most weekday mornings with periodic daytime and afternoon use. Several football clubs also use the oval on weekday afternoons for training and on weekends for junior and senior games. Overall, the oval is well utilised and in constant use weekday mornings and afternoons/evenings. Weekend game days are also common and can see the oval used right across the day.

The precinct location and its surrounding environs is shown in Figure 3.1.

## EXISTING CONDITIONS

Figure 3.1: Subject site and its environs



Base image source: Nearmap

### 3.3. Road Network

Headland Park is uniquely accessed via a single road, Middle Head Road, with access to Chowder Bay provided south from Middle Head via Chowder Bay Road. Access to the precinct more generally is provided via Military Road, an arterial road linking Middle Head Road with the M1 at North Sydney. The site is therefore relatively easily accessible via road from different regions of the metropolitan area.

Middle Head Road provides access between Mosman and Middle Head. It is a two-way road configured with one travel lane in each direction with a 40 km/h speed limit near the site and 25 km/h east of Chowder Bay Road. It intersects with Chowder Bay Road at a roundabout immediately south-west of Middle Head Oval. Chowder Bay Road is aligned in a north-south direction, traversing Harbour Trust land and Sydney Harbour National Park to provide access between Middle Head and Chowder Bay. It is a two-way road configured with one travel lane in each direction with a 40 km/h speed limit.



## EXISTING CONDITIONS

Kerbside parking is generally not permitted throughout Middle Head with the exception of ticketed 14 hour 90-degree parking along Chowder Bay Road provided by National Parks.

Middle Head Road and Chowder Bay Road are shown respectively in Figure 3.2 and Figure 3.3.

Figure 3.2: Middle Head Road (looking west)



Figure 3.3: Chowder Bay Road (looking south)



## 3.4. Active Transport

### 3.4.1. Pedestrians

The existing pedestrian infrastructure through the precinct is shown in Figure 3.4 and illustrates both existing connectivity to the surrounding area and identifies areas of opportunity to continue to promote walking as a mode a travel to/ from and throughout the precinct. This includes between Middle Head and Chowder Bay, as well as improved connections along Middle Head Road generally. The map demonstrates that walking tracks are prominent throughout, providing key pedestrian access to both historical sites within the Sydney Harbour National Park, as well as Cobblers and Obelisk Beaches. The precinct also has direct and continuous pedestrian connections to Balmoral, Mosman and Chowder Bay via walking paths and tracks.

## EXISTING CONDITIONS

Figure 3.4: Pedestrian network



Base image source: Nearmap

Middle Head is located just north of the popular Sydney Harbour Scenic Walk between Taronga Zoo and Balmoral Beach via Bradleys Head and Chowder Bay, with the end of the walking track at Balmoral Park illustrated in Figure 3.4. It is understood that the National Parks and Wildlife Service is planning to construct a new

walking track in the Sydney Harbour National Park linking Middle Head and Georges Head to the Sydney Harbour Scenic Walk which links Bondi to Manly. Construction is expected to be completed in 2022<sup>1</sup>.

Within the precinct, an established footpath is provided on both sides of Middle Head Road west of Chowder Bay Road. The northern footpath follows the road alignment while the southern footpath traverses the natural bushland and car park 7 west of Burnt Orange café (see Section 3.7). The northern footpath terminates at a raised midblock pedestrian crossing 75 metres west of Chowder Bay Road and continues along the southern side of the road (past the existing bus stop) and adjacent to the reserve to the south. A footpath then dissects car park 2 to either access ASOPA or re-join the footpath south of Middle Head Road, east of Chowder Bay Road.

This footpath (east of Chowder Bay Road) is somewhat separated from Middle Head Road and partially obstructed by established landscaping. Pedestrians may also confuse the footpath as private and associated only with ASOPA. This leads to pedestrian tendency to share the road with vehicles, especially given the low traffic, low speed environment. There may also be opportunity to extend the northern footpath further east past the old HMAS Penguin access driveway and allow for an improved connection with the existing footpath on the southern side of Chowder Bay Road. These details are discussed in Section 6 and shown graphically in Appendix B.

### 3.4.2. Cycling

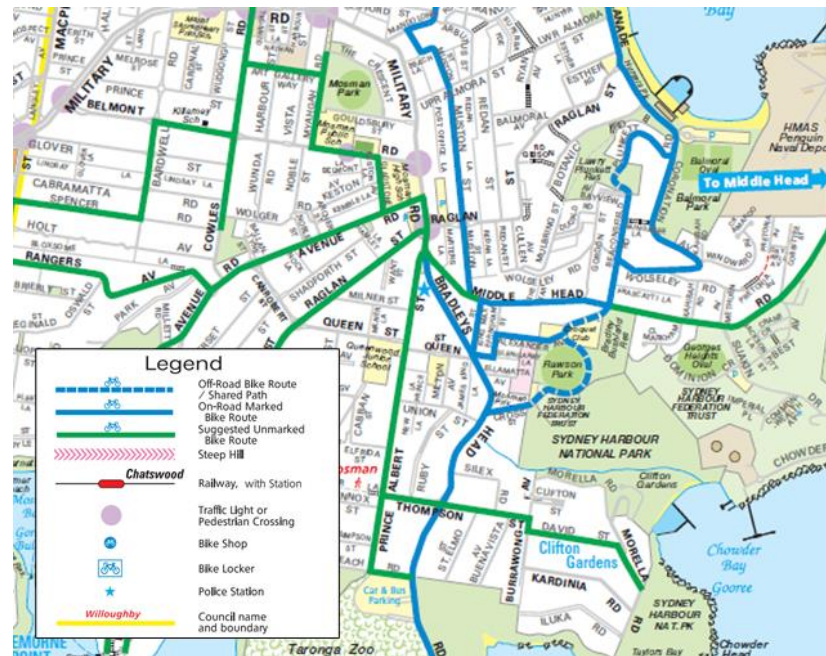
The existing cycling network near the precinct is shown Figure 3.5 and indicates that Middle Head Road is an unmarked on-road bicycle route. The Strava heat mapping tool has also been referenced and reproduced in Figure 3.6 to better understand existing cycling demand more generally in the area. As shown, there is significant demand for cycling along Middle Head Road and Chowder Bay Road. It is understood this route is popular for sporting cyclists, i.e., those that travel longer distances on typically arterial roads for fitness purposes, with several regular bicycle user groups organising rides that regularly use this route (Bicycle NSW, Bike North etc.). Sporting cyclists typically prefer on road routes to maintain higher speeds and reduce conflicts with other cyclists. As such, the on-road nature of cycling in the Headland Park is appropriate for these users. Notwithstanding, there is room for improvement for better cycling facilities generally in the Middle Head Precinct including end of trip facilities and off-road bicycle paths to encourage recreational users, including families to regularly cycle to the area from local and regional areas.

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<sup>1</sup> [www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas](http://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas)

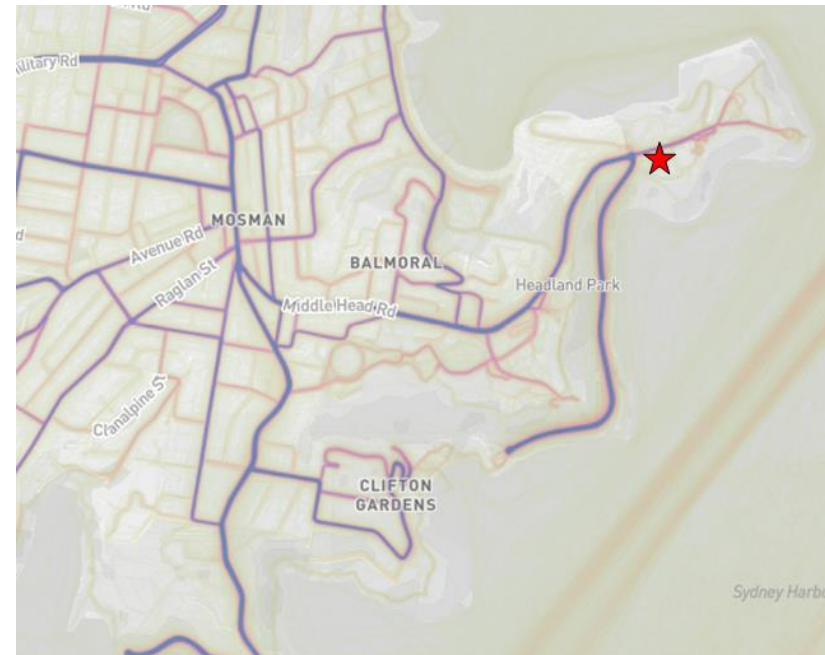


Figure 3.5: Surrounding cycling network



Source: Northern Sydney Cycling Map, Mosman Council, accessed October 2020

Figure 3.6: Strava Cycling Heat Map



Source: [www.strava.com/heatmap](https://www.strava.com/heatmap)

### 3.5. Public Transport

The site (and Headland Park more generally) is supported by one primary bus service, bus route 111, which links Middle Head to Chowder Bay and the South Mosman Wharf. Notwithstanding, patrons can transfer at the bus stop on Military Road near Raglan Street to a multitude of bus services providing connectivity across Sydney and the opportunity for interchange to destinations/ origins in Sydney's outer areas. This includes bus route 100, a loop service that operates between Taronga Zoo and the City. There are services every five to 10 minutes across the day reducing to 20 minutes after around 9pm.

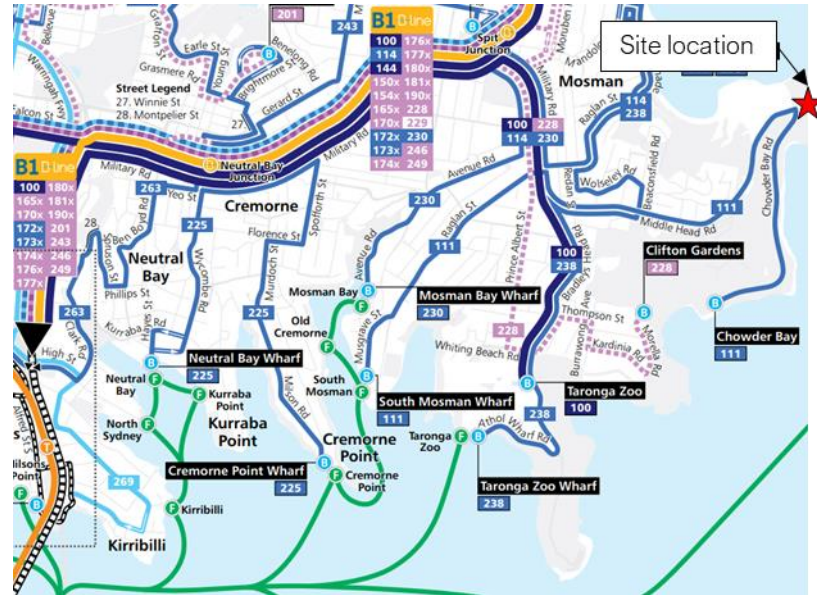
Bus route 111 replaced bus route 244 (City to Chowder Bay service) in December 2020 and provides services from South Mosman Wharf every 40 minutes before 9:00am and every 30 minutes until 7:30pm. Services are every 30 minutes across the day from Chowder Bay. On weekends and public holidays, services are also every 30 minutes.

The nearest bus stop servicing the Middle Head precinct is on Middle Head Road immediately west of Chowder Bay Road, within 200 metres or a two-minute walk of the 10 Terminal buildings. The surrounding bus network is shown in Figure 3.7.

## EXISTING CONDITIONS

The bus stop is also shown in Figure 3.8 and has recently been upgraded to include a shelter and seating. Being the only bus stop to service the precinct, it was observed to cater for large user numbers on peak days.

Figure 3.7: Surrounding bus network



Base image source: [transportnsw.info/document/5202/region\\_8\\_map](https://transportnsw.info/document/5202/region_8_map), effective January 2021

Figure 3.8: Middle Head bus stop near Chowder Bay Road



### 3.6. Existing Travel Behaviour

Journey to Work data has been sourced from the Australian Bureau of Statistics 2016 census and provides an indication of existing commuter travel patterns to/ from the local area. The 2016 data represents the most recent accurate data set with Figure 3.9 detailing the catchment of the census data analysed which corresponds to the Australian Bureau of Statistics 2016 Destination Zones 114153396 (Headland Park).

Although the precinct is not recognised as a key commuter destination, it is important for recreation purposes and is well utilised at various times of the day and week. In recognising the desire to generate greater activity in the precinct generally and in-turn, encourage more people to use active and public transport modes, it is important to understand how commuters are currently travelling to the site. Overall, most commuters drive alone to work, mostly due to convenience and the real or perceived lack of frequent public transport services and active travel facilities. This is consistent with the travel mode of the lower north shore generally where there is a higher occurrence of people who generally travel by private car daily.



Figure 3.9: Destination zone containing the subject site



Base image source: Nearmap

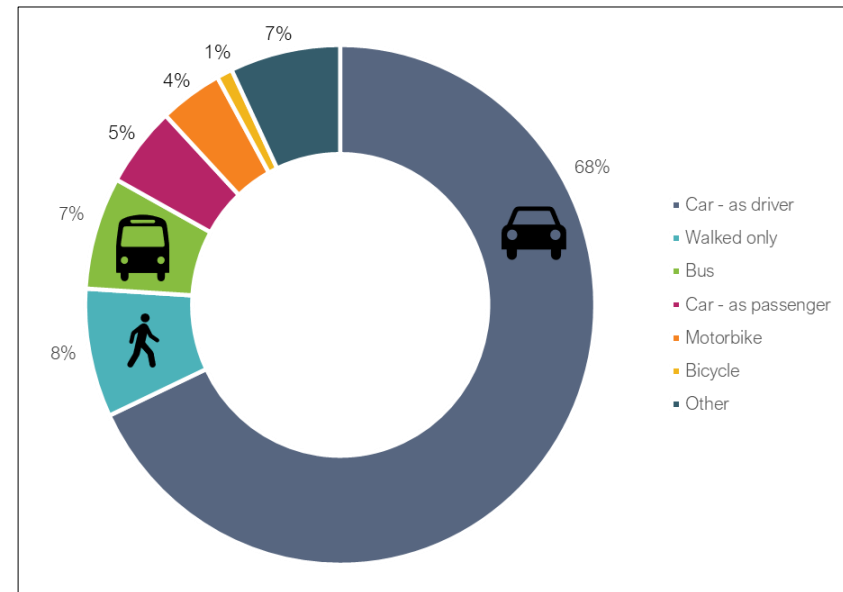
Table 3.1 and Figure 3.10 provide a summary of the existing modes of travel to work for the surrounding area. The results indicate that driving (68 per cent) is the most common transport mode by a significant margin, followed by walking (8 per cent) and bus (7 per cent), with nominal bicycle use (1 per cent).

## EXISTING CONDITIONS

Table 3.1: Existing precinct staff travel mode share

Mode of Travel	Mode Share [1]
Car as driver	68
Walked only	8
Bus	7
Car as passenger	5
Motorcycle	4
Bicycle	1
Other	7
<b>Total</b>	<b>100%</b>

Figure 3.10: Existing precinct staff travel mode share



## 3.7. Car Parking

### 3.7.1. Supply

Several separated car parking areas are provided within the precinct and currently used by staff and visitors daily. The car parking areas are shown in Figure 3.11 with a detailed breakdown of parking supply detailed in Table 3.2.

A total of 319 spaces are provided, with the following breakdown:

- 233 publicly accessible time restricted and ticketed spaces (9-to-14-hour time limit)
- 4 motorcycle spaces
- 6 disabled spaces
- 3 drop off/ pick up zone spaces (15 min time limit)
- 73 staff/ authorised vehicle only spaces (including 1 bus drop off and pick up space limited to 5 minutes only).



## EXISTING CONDITIONS

HMAS Penguin has a separate parking area adjacent to the Middle Head Oval with access provided via the Middle Head Road/ Chowder Bay Road intersection. Parking at this location is private with authorised vehicles only permitted to access the area.

At the time of parking surveys, Middle Head Markets operated in Car Park 3 between 8:00am and 2:00pm on Wednesdays. All parking is generally occupied by market stalls between 7:00am and 4:00pm on these days with the car park again open to the general public from around 5:00pm. For a range of reasons, these markets were permanently relocated to Georges Heights in late 2020.

Figure 3.11: Car park supply



Base image source: Nearmap

## EXISTING CONDITIONS

Table 3.2: Car parking supply

Map Reference	Description	Restrictions	Supply (spaces)
0	Chowder Bay Road near Middle Head Road	Motorcycle only (SHFT)	2
		14P (NPWS)	9
		<b>Subtotal</b>	<b>11</b>
1&2 [1]	Middle Head Car Park 1&2	9P	<b>82</b>
3 [2]	Middle Head Car Park 3	Reserved motorcycle parking	2
		P15min (drop off/ pick up zone)	3
		Disabled parking,	3
		9P	33
		<b>Subtotal</b>	<b>41</b>
4	Middle Head Car Park 4	P5min, bus only	1
		Authorised vehicles only (2P)	2
		Authorised vehicles only (unrestricted)	69
		<b>Subtotal</b>	<b>72</b>
5	Middle Head Car Park 5	Disabled parking	2
		9P	56
		<b>Subtotal</b>	<b>58</b>
6	Middle Head Car Park 6	9P	<b>14</b>
7	The Club House, Burnt Orange	9P	39
		Burnt Orange staff parking	1
		Mobility Parking Scheme Permit	1
		<b>Subtotal</b>	<b>41</b>
8	HMAS Penguin	Private parking	<b>N/A</b>
<b>Total</b>			<b>319</b>

[1] Includes one space sign posted as 'keep clear at all times'.

[2] Each Wednesday, Middle Head Markets historically operated in Car Park 3 hence all parking was generally occupied by market staff from 7:00am to 4:00pm with parking open to the general public from 5:00pm. The markets were permanently relocated to Georges Heights in late 2020.

### 3.7.2. Sergeants Mess Car Park Arrangements

It is understood that Car park 4 is designated to accommodate the parking demand of guests to Sergeants Mess in Chowder Bay, with the function centre providing a shuttle bus service to the venue. Sergeants Mess in Chowder Bay regularly holds evening functions, typically from 5:30pm when the precinct has significantly lower parking demand. These functions occur on Fridays, Saturdays and Sundays with attendance up to 250 guests.

### 3.7.3. Parking Surveys

To appreciate car parking demand for the precinct, detailed parking surveys of the seven on-site car parks were completed on Wednesday 23 September 2020 and Saturday 26 September 2020. The Wednesday reached 24 degrees and no rain in Sydney; whilst Saturday reached 18 degrees with about a millimetre of rain. Given car parking demand in the precinct is seasonal and driven by general weather conditions, the Saturday would not be considered representative of a typical weekend at times when it is clear and warm, conducive to attracting visitors. A number of parking areas cater for authorised vehicles only or are considered to service the surrounding area rather than Middle Head. As such, to better understand the actual publicly accessible parking supply and demand profiles for the immediate area surrounding 10 Terminal, the following parking areas have been excluded from the assessment:

- car park 0 (primarily used by visitors of Sydney Harbour National Park)
- car park 4 (currently not open to the public and used for evening guest to Sergeants Mess in Chowder Bay)
- car park 7 (primarily used by the Club House Burnt Orange Cafe).

This has historically resulted in a parking supply of 162 spaces on Wednesdays when 33 spaces were reserved for market staff. With the markets relocated, 195 spaces are now available for use seven days a week. The historical demand profiles are detailed in Table 3.3 and Table 3.4, with the full results included in Appendix A.

## EXISTING CONDITIONS

Table 3.3: Car parking demand on Wednesday 23 September 2020 (Markets Active)

Area reference	Supply (spaces)	Demand																
		6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm
2	82	9	9	10	24	38	45	52	52	62	45	36	29	10	3	48	50	41
3	8	0	0	2	1	2	2	2	4	4	6	3	1	0	0	0	0	0
4	0	3	7	11	7	8	10	11	9	10	7	6	6	6	4	0	0	0
5	58	2	1	1	8	30	34	31	36	28	24	12	5	3	1	1	0	0
6	14	0	0	0	1	7	12	14	14	10	9	7	8	4	1	1	0	0
<b>Total</b>	<b>162</b>	<b>14</b>	<b>17</b>	<b>24</b>	<b>41</b>	<b>85</b>	<b>103</b>	<b>110</b>	<b>115</b>	<b>114</b>	<b>91</b>	<b>64</b>	<b>49</b>	<b>23</b>	<b>9</b>	<b>50</b>	<b>50</b>	<b>41</b>

Table 3.4: Car parking demand on Saturday 26 September 2020

Area reference	Supply (spaces)	Demand															
		8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	
2	82	7	17	19	30	33	31	32	33	26	7	2	0	0	0	0	
3	41	11	13	12	16	13	17	20	8	5	1	1	1	1	0	0	
4	0	4	7	12	12	12	12	11	2	2	3	3	3	3	3	3	
5	58	1	1	2	3	3	4	7	7	8	14	13	2	0	2	1	
6	14	2	3	3	2	2	7	11	14	8	1	0	0	0	1	1	
Total	195	25	41	48	63	63	71	81	64	49	26	19	6	4	6	5	

Table 3.3 and Table 3.4 indicates that peak parking demand occurred between 10:00am and 2:00pm with up to 70 per cent of the survey area occupied and 47 vacant spaces on Wednesday 23 September. The peak parking demand on Saturday 26 September occurred between 11:00am and 2:00pm with up to 40 per cent of the survey area occupied and 114 vacant spaces.

The results also highlight that parking demand generated by the existing commercial tenancies on a weekday is the key difference to the weekend demand (granted inclement weather conditions resulting in low visitors to the Precinct) when most of these tenancies are not operating.

## EXISTING CONDITIONS

The parking supply and demand is shown in Figure 3.12 (Markets Active) and Figure 3.13.

Figure 3.12: Car parking demand (Wed 23 September 2020)

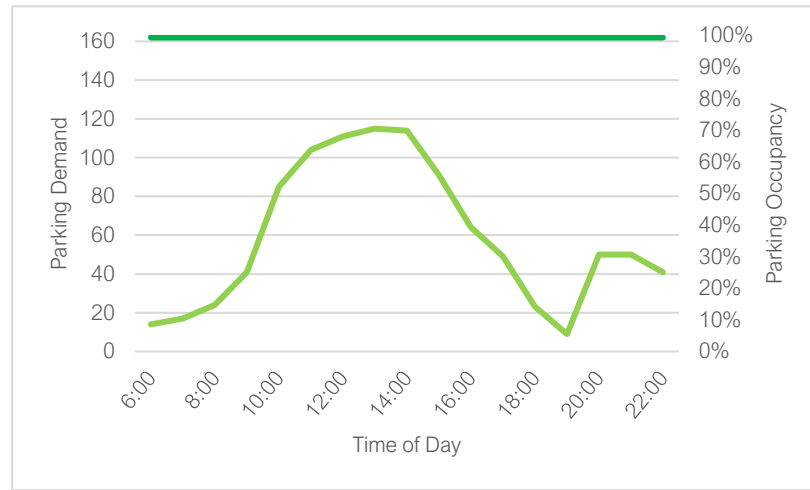
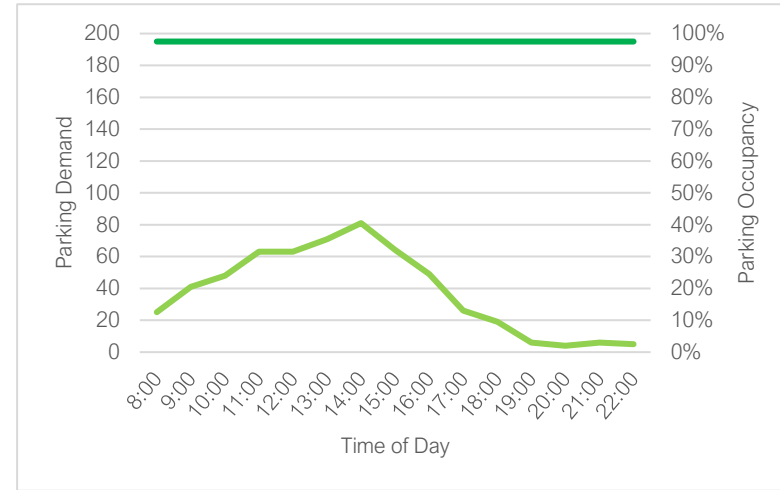


Figure 3.13: Car parking demand (Sat 26 September 2020)



As discussed, parking demand is largely determined by weather conditions. A warm day in spring is expected to generate a peak in demand with more beach goers in comparison to a cloudy day where the demand could be expected to be comparatively reduced by 50 per cent. This is evident when comparing the demand on the surveyed Wednesday which was fine and sunny and the surveyed Saturday which was generally cool and overcast. As such, a desktop assessment of the key precinct car parks (car park 2 and 5) has also been completed using Nearmap aerial imagery to better understand these daily fluctuations.

Overall, car park 2 parking demand varied significantly between five and 75 spaces (six and 90 per cent occupied) with the lowest demand being during the mid-morning period in spring and the highest demand on a sunny spring day at a time that coincided with the local markets. On this day car park 3 was occupied by market staff with visitors utilising the remaining precinct car parks. Car park 5 demand ranged between five and 45 spaces (10 and 75 per cent occupied) with the lowest demand in winter and the highest demand in Spring on market day. This confirms that the precinct remains highly sensitive to weather conditions and day to day activity. As expected, the winter months see a marked decline in demand, rising again as the weather improves throughout spring and summer. This also indicates that much of the demand is associated with recreational users; those that visit the National Park, precinct cafes and beaches.

## 3.7.4. Historical Parking Survey

Given the effects of COVID-19 and associated limitations on public gatherings, it is acknowledged that the 2020 parking demands may also not be considered typical or 'normal'. As such, parking survey data from the Temporary Markets, Middle Head Traffic and Parking Assessment, prepared by ptc. in October 2019 were also analysed. The data was obtained for the purposes of assessing the impact associated with the Middle Head markets when they were operating, the markets effectively increased demand for parking in the precinct while also occupying 33 spaces in car park 3.

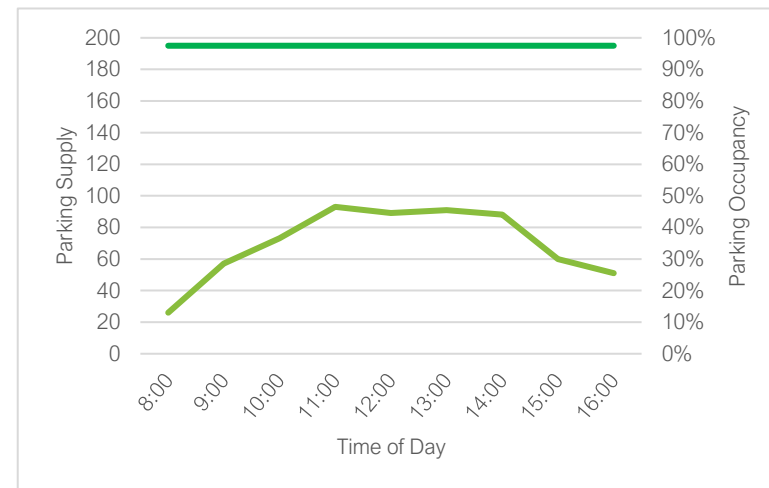
The ptc. parking surveys were completed on three consecutive Wednesdays in September 2019 (4<sup>th</sup>, 11<sup>th</sup> and 25<sup>th</sup>) with the results indicating that peak parking demand occurred between 11:00am and 2:00pm. These results coincide with the surveyed 2020 peak periods. As expected, parking demand was higher in 2020, particularly in car parks 4 and 5. The increase in demand is attributed to the markets.

A summary of parking occupancy on the peak ptc. survey day (Wednesday 25 September 2019) is detailed in Figure 3.14 and Figure 3.15. It is noted there is a minor discrepancy in the total supply for car parks 3 and 5, nonetheless the total supply is recorded as 195 spaces. The 2019 peak occupancy of 48 per cent remains less than the 2020 peak demand (71 per cent). This indicates that the effects of COVID-19 were minor by late September 2020, with the survey results considered an accurate reflection of typical demand in the precinct.

Figure 3.14: Car parking demand (Wed 25 September 2019)

Area reference	Supply (spaces)	Demand								
		8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm
2	82	4	18	28	38	35	33	32	31	29
3	40	14	21	25	28	28	31	30	17	13
4	0	2	2	2	2	2	3	3	2	2
5	59	2	7	6	11	11	14	13	5	4
6	14	4	9	12	14	13	10	10	5	3
<b>Total</b>	<b>195</b>	<b>26</b>	<b>57</b>	<b>73</b>	<b>93</b>	<b>89</b>	<b>91</b>	<b>88</b>	<b>60</b>	<b>51</b>

Figure 3.15: Car parking demand (Wed 25 September 2019)





### 3.8. Traffic Volumes

Traffic volume data was collected on Middle Head Road with the seven-day tube counts covering the period between Wednesday 24 September 2020 and Tuesday 29 September 2020 at the following locations and as shown in Figure 3.16:

- Location 1 – East of Effingham Street
- Location 2 – East of Cobbittee Street
- Location 3 – East of Car Park 2 access.

Figure 3.16: Traffic survey locations



Base image source: Nearmap

The purpose of selecting the above locations was to specifically understand the split of vehicles along Middle Head Road traveling to the precinct itself compared to nearby residential areas or along Chowder Bay Road towards Sergeants Mess and Georges Head.

The survey showed around 95 per cent of vehicles were light vehicles with very few trucks. The average speed was 50 km/h east of Effingham Street, 40 km/h east of Cobbittee Street and 30 km/ hr east of Chowder Bay Road. The traffic volumes are summarised in Table 3.5 with full survey results included in Appendix A.



## EXISTING CONDITIONS

Table 3.5: Existing traffic volumes

Location	Description	Direction	Average Weekday Daily Volumes	Peak Hour (no. vehicles)		Saturday Daily Volumes	Peak Hour (no. vehicles)
				AM (morning)	PM (afternoon)		
1	Middle Head Road, east of Effingham Street	Eastbound	3,697	8:00m (325)	12:00pm (296)	3,727	10:00am (449)
		Westbound	3,704	11:00am (274)	1:00pm (297)	3,781	12:00pm (400)
		<b>Combined</b>	<b>7,401</b>	<b>11:00am (575)</b>	<b>3:00pm (593)</b>	<b>7,508</b>	<b>12:00pm (711)</b>
2	Middle Head Road, east of Cobbittee Street	Northbound	1,474	6:00am (145)	12:00pm (137)	1,352	12:00pm (146)
		Southbound	1,499	11:00am (91)	3:00pm (155)	1,359	3:00pm (172)
		<b>Combined</b>	<b>2,973</b>	<b>11:00am (253)</b>	<b>12:00pm (253)</b>	<b>2,711</b>	<b>2:00pm (289)</b>
3	Middle Head Road, east of Car Park 2 access	Eastbound	387	11:00am (43)	12:00pm (44)	451	1:00pm (66)
		Westbound	387	11:00am (28)	1:00pm (42)	445	3:00pm (70)
		<b>Combined</b>	<b>774</b>	<b>11:00am (71)</b>	<b>12:00pm (85)</b>	<b>842</b>	<b>3:00pm (114)</b>

As expected, Table 3.5 illustrates the distinct decline in vehicle volumes traveling further east on Middle Head Road towards the precinct. This reflects that fact that local residents travel to and from the west only, accessing local amenities in the Mosman retail and business centre or traveling further west towards the CBD and other key centres. For vehicles that travel east, it is predominantly for recreational or commuting purposes associated with Headland Park. There are also the known seasonal variations to recognise.

The weather conditions were generally fine during the survey period, noting it was perhaps not warm enough to generate much beach goer activity. The lunch time period between 11:00am and 1:00pm saw peak vehicle movements to/ from the Middle Head Precinct. The precinct experienced its busiest day on Wednesday 23 September with a peak at 1:00pm, which corresponds with the surveyed peak parking demand. Two-way traffic volumes into the precinct were less than 85 vehicles per hour during the weekdays and up to 115 vehicles per hour on Saturday. These are low traffic volumes considering the road hierarchy and free flow conditions throughout. The average weekday and Saturday volumes are shown in Figure 3.17 to Figure 3.18.

Given the surveys were completed during the COVID-19 period, the traffic survey data as collected by ptc. as part of the previous local markets study was also reviewed. The surveys were completed between Wednesday 4 September 2019 and Thursday 12 September 2019 at the same locations. The data indicates that 2019 traffic volumes were lower than 2020 traffic volumes, indicating that COVID-19 does not appear to have had a strong influence on user behaviour by late September 2020. As discussed, weather conditions tend to present the key differentiator in precinct visitation rates generally across the year, along with sports activity at Middle Head Oval. Demand generated by the existing commercial and retail uses in the precinct appears to be generally consistent.

## EXISTING CONDITIONS

Figure 3.17: Weekday traffic volumes (east of Effingham St)

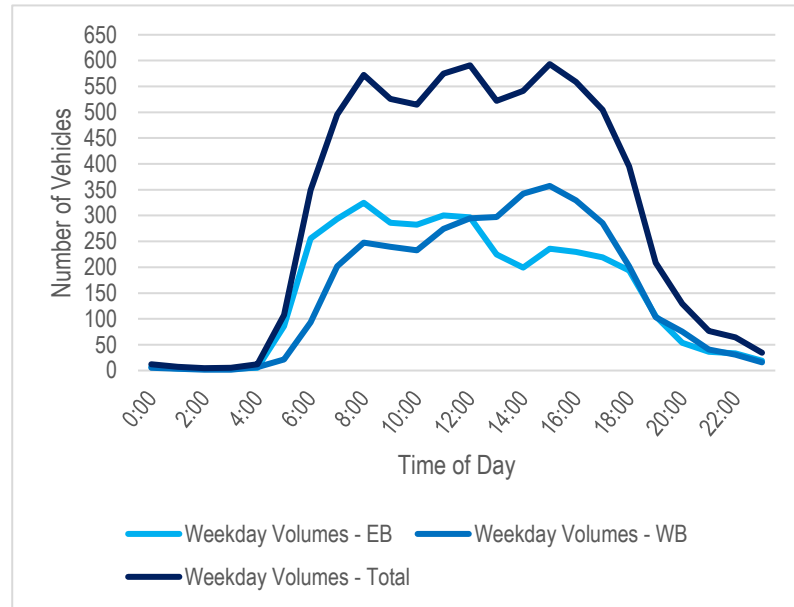
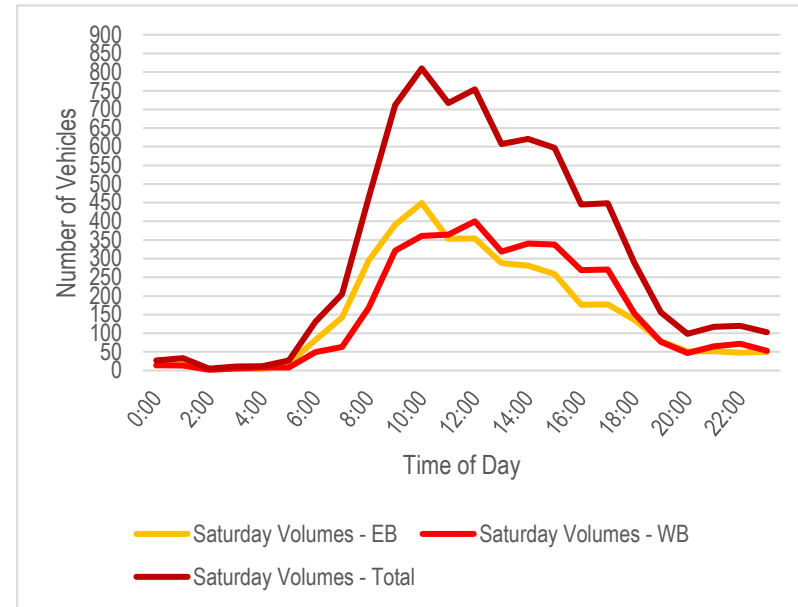


Figure 3.18: Saturday traffic volumes (east of Effingham St)



## EXISTING CONDITIONS

Figure 3.19: Weekday traffic volumes (east of Cobbittee St)

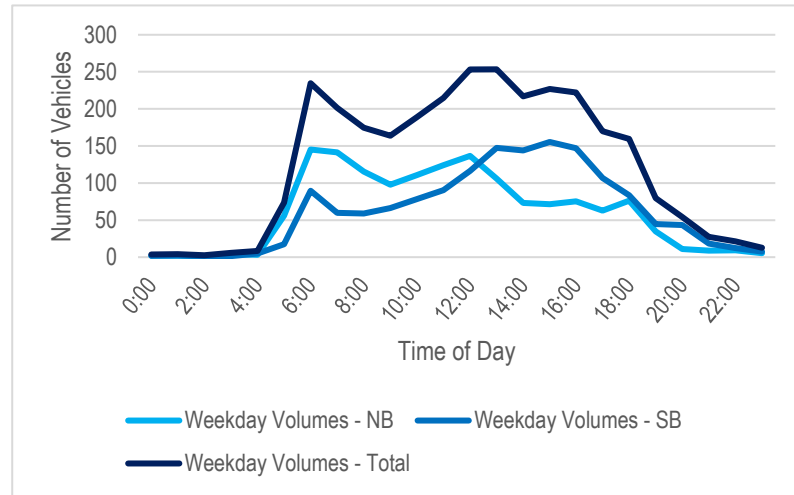


Figure 3.20: Saturday traffic volumes (east of Cobbittee St)

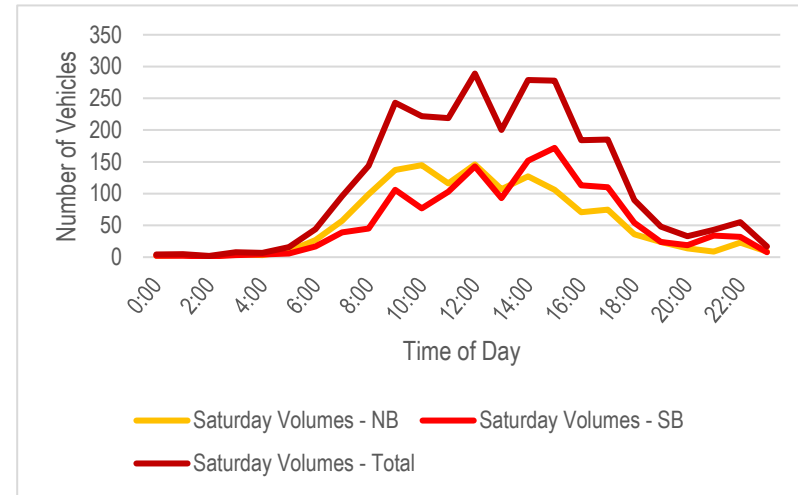


Figure 3.21: Weekday traffic volumes (east of Car Park 2 access)

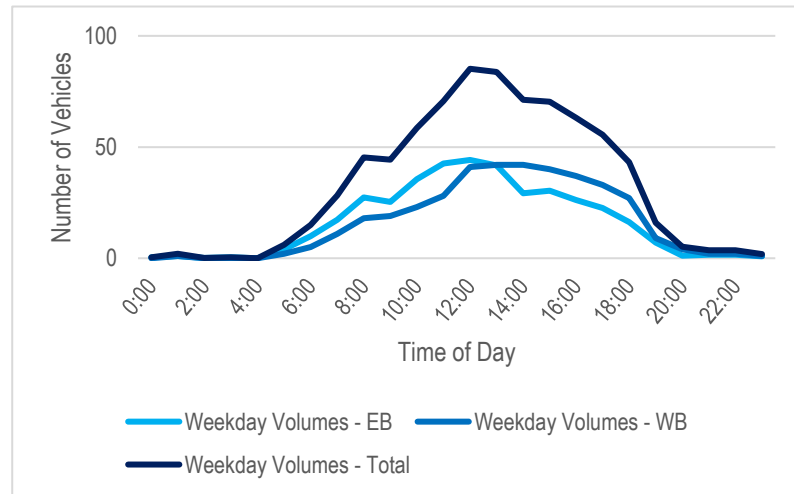
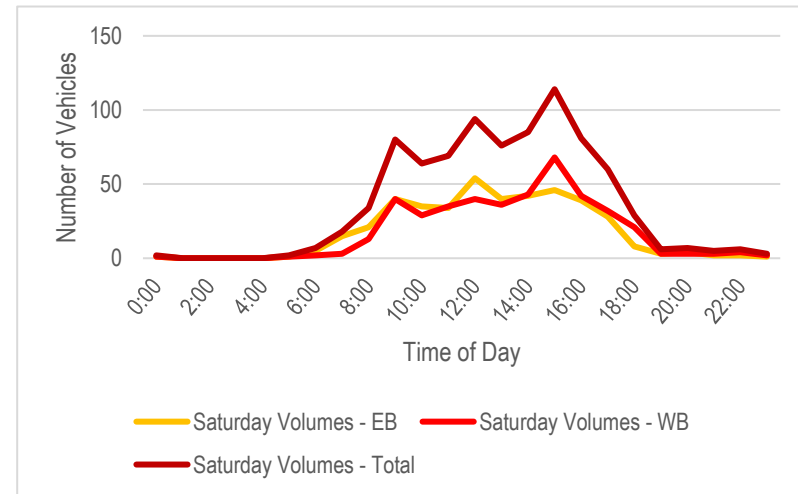


Figure 3.22: Saturday traffic volumes (east of Car Park 2 access)



## 4. PRECINCT DEVELOPMENT

04



### 4.1. Vision

Based on the Middle Head Management Plan, the vision for the Middle Head Precinct is to protect the natural and cultural heritage and provide better access to areas that have long been inaccessible to the public, by providing a network of walking tracks to link the various former military uses and other places of interest. The vision is also for the adaptable reuse of existing facilities for appropriate community, recreational and commercial uses to generate employment and increased visitation to the precinct as a destination. The Draft Master Plan is shown in Figure 4.1.

Figure 4.1: Draft Master Plan



Base image source: Harbour Trust

The Master Plan intends to carry out the following:

- provide visitor facilities and amenities, including parking and walking tracks
- maximise public access with numerous entry points
- realise the potential for accessible access
- encourage uses and activities that promote the use of sustainable modes of transport
- improve drop-off/ pick-up arrangements for Middle Head Oval
- improve vehicle, cyclist and pedestrian safety
- ensure that traffic generated by the site's re-use has a minimal impact on the surrounding residential areas
- provide opportunities and site interpretation for visitors to understand and appreciate the totality of the site's heritage.

### 4.2. Land Uses

The Middle Head precinct comprises a cluster of buildings that define the history of the precinct. A selection of existing buildings are considered for the following uses:

- 10 Terminal buildings on the southern side of Middle Head Road will be restored to attract visitation and enhance employment, with a combination of commercial, retail, food outlet, public assembly and visitor centre offerings.
- The three two-storey timber barracks on the northern side of Middle Head Road will be demolished and replaced with public parkland.

Once refurbished, Buildings 1, 3, 6 and 7 in 10 Terminal will comprise some 2,119 square metres gross floor area (GFA) of, including 215 square metres GFA of public assembly area. In this regard, the Draft Master Plan allocates the following potential land uses:

- Commercial – 821.5 sqm, retail – 267.5 sqm, food outlet – 535 sqm.
- Public assembly – 215 sqm.
- Visitor centre – 280 sqm.

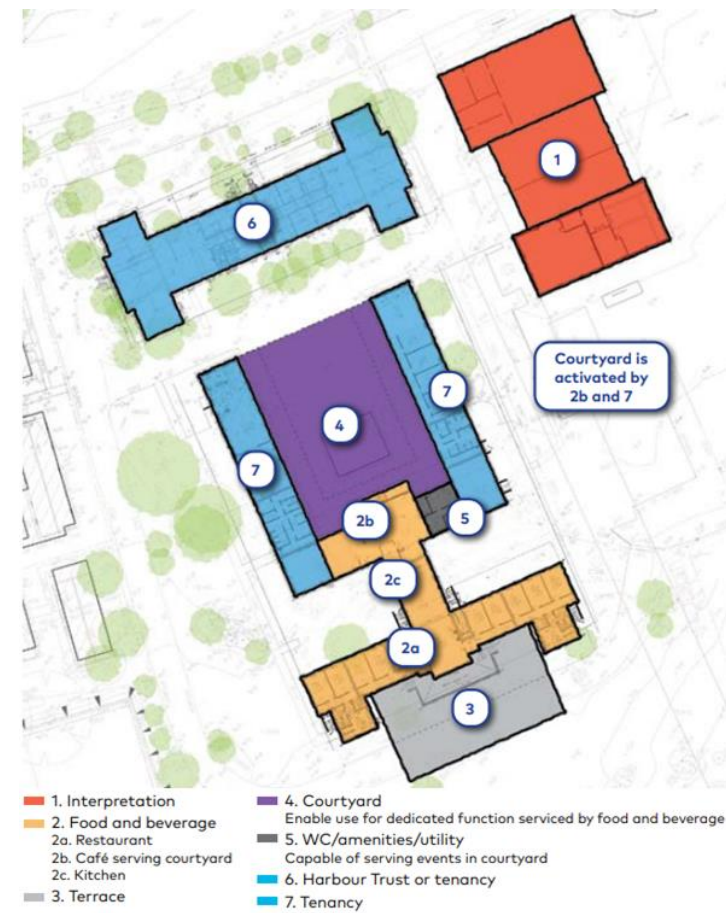


## PRECINCT DEVELOPMENT

Figure 4.2: Building Floorplan Areas



Figure 4.3: Functional Use of Building Areas



### 4.3. Car Parking Supply

The draft master plan seeks to minimise vehicle related impacts on the primary locations by reconfiguring select car parks and improving pedestrian infrastructure and desire lines separated from vehicles.



## 5. PARKING AND TRAFFIC ASSESSMENT

05

### 5.1. Preamble

This section includes an assessment of the anticipated parking and traffic generating characteristics of potential reuse of the 10 Terminal buildings based on the allocation of potential uses defined in Section 4.

### 5.2. Car Parking

#### 5.2.1. Indicative Parking Requirements

While not constituting a formal requirement for development on Harbour Trust land, Mosman Council DCP 2012 does provide context in terms of understanding anticipated parking demand. In this regard a review of the car parking requirements for the potential land uses has been completed based on the applicable rates and detailed in Table 5.1.

**Table 5.1: DCP 2012 car parking requirements**

Use	Size	Car parking rate	Car parking requirement
Commercial	821.5sqm	1 space per 37sqm	22
Food outlet	535sqm	1 space per 16sqm (restaurant)	33
Retail	267.5sqm	1 space per 16sqm	17
Public Assembly	215sqm	1 space per 7 sqm	31
Visitor Centre	280sqm	1 space per 37sqm [1]	8
Total			111

[1] The visitor centre is expected to be largely ancillary to the other uses provided in the precinct, therefore the commercial parking rates has been adopted to capture staffing requirements.

Table 5.1 indicates that this specific indicative land use mix could generate a demand of about 111 parking spaces. The type of restaurants/ food outlets the precinct will adopt is yet to be determined and when accounting for additional external seating for outdoor dining (estimated to be around 100 to 200 square metres), an additional six to 12 spaces would be required resulting in a theoretical demand of up to about 123 spaces.

To substantiate this, a comparison with the car parking requirements based on TfNSW Guide to Traffic Generating Developments 2002 (TfNSW 2002) for this indicative land use mix is summarised in Table 5.2.

## PARKING AND TRAFFIC ASSESSMENT

Table 5.2: TfNSW 2002 car parking requirements

Use	Size	Car parking rate	Car parking requirement
Commercial	821.5sqm	1 space per 40sqm	21
Food outlet (restaurant)	535sqm	12 spaces per 100sqm	64
Specialty Retail	267.5sqm	4.5 spaces per 100sqm	12
Public Assembly	215sqm	15 spaces per 100 sqm	32
Visitor Centre	280sqm	1 space per 40sqm [1]	7
<b>Total</b>			<b>136</b>

[1] The visitor centre is expected to be largely ancillary to the other uses provided in the precinct, therefore the commercial parking rates has been adopted to capture staffing requirements.

Table 5.2 indicates this specific land use mix generate a demand for up to 136 parking spaces based on TfNSW Guidelines. Adding spaces to account for external seating, TfNSW guidelines indicate an overall demand for around 148 spaces could be realised.

Therefore, the requirements based on the DCP 2012 and TfNSW 2002 are generally consistent resulting in a potential overall demand of between 110 and 150 parking spaces when accounting for external seating.

### 5.2.2. Empirical Assessment of Car Parking Demand

The various precinct activities and potential land uses will have differing peak demand profiles across the day. An empirical assessment has been completed based on the DCP 2012 and TfNSW 2002 parking requirements to better understand the likely demand profiles associated with the proposed land uses. The complimentary uses would generally contribute to mitigating the effects of the peak demand periods.

The assessment was completed by determining the proportional parking demand for each land use across the day and evening periods. This was determined by a common understanding of demand and assuming flexibility in operating hours for the restaurants and use of the public space more broadly. In addition, it is estimated that 50 per cent of the retail and food outlet space will generate its own demand with the remaining demand linked to other land uses in the precinct. On this basis, the parking demand profiles are shown in Figure 5.1 and Figure 5.2.

## PARKING AND TRAFFIC ASSESSMENT

Figure 5.1: Anticipated weekday parking demand profile

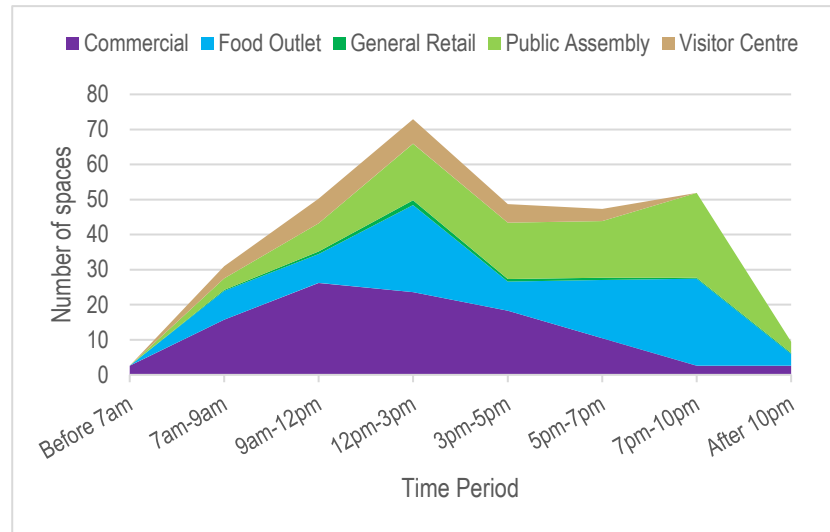
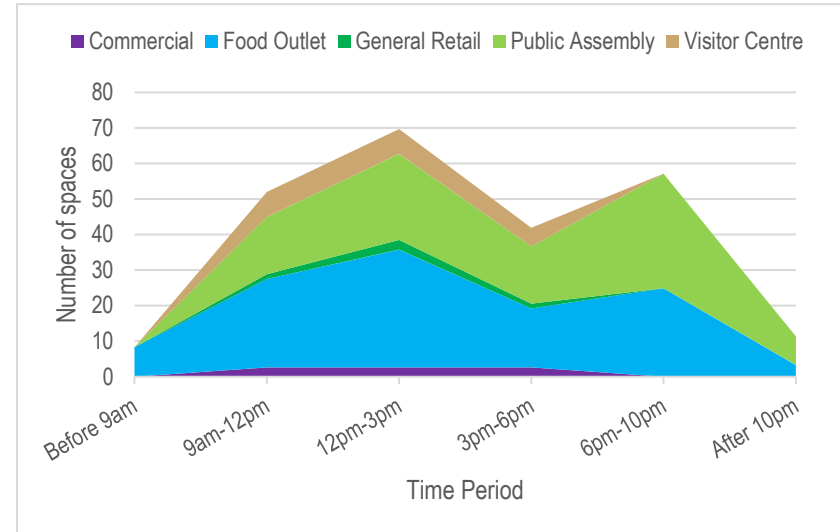


Figure 5.2: Anticipated Saturday parking demand profile



Based on the empirical assessment that considers the varying peak times for the different land uses, parking demand is expected to be peak at around 70 to 75 spaces across a typical week. Such practical demand profiles should be recognised in light of the statutory requirements detailed above which only consider each land use in isolation.

There are 195 parking spaces provided across car parks 2, 3, 5 and 6 with observed peak demands on the 2020 survey days being some 115 and 80 spaces on the weekday (when the markets were operating) and weekend, respectively. As such, the total combined demand for the existing and potential future uses would be 190 and 150 parking spaces on any weekday and weekend, respectively. With the relocation of the markets away from Middle Head, demand will be lower on Wednesdays. Overall, the empirical assessment indicates that the current precinct parking supply is capable of accommodating the additional parking demands associated with the potential land uses.

The inclusion of car parks 0 and 7, along with the reopening of a reconfigured car park 4 to the public and other potential modifications, the total parking supply increases to about 300 spaces. This indicates that overall, there would be adequate spare capacity across the precinct to accommodate peak demand days and account for seasonal variations. This also illustrates that the reopening and reconfiguration of car park 4 to the public remains important in accommodating the anticipated demand generated by the potential uses.

## 5.3. Traffic Assessment

Traffic generation estimates for the indicative land use mix have been adopted with reference to the TfNSW Guide to Traffic Generating Developments 2002 (TfNSW 2002) and Technical Direction: Updated Traffic Surveys (TDT 2013/ 04a). Reduction factors have been considered as all these activities will not necessarily peak at the same time and it is expected that food outlet and retail will be ancillary to other activities in the precinct, therefore not all trips generated by them will be new trips. Estimates of peak hour traffic volumes resulting from the proposal are set out in Table 5.3.

**Table 5.3: Traffic generation estimates**

Use	Size	Traffic generation rate (trips / hour)			Traffic generation estimates (trips / hour)		
		AM (morning)	PM (lunchtime/ afternoon)	Sat	AM	PM	Sat
Commercial	821.5sqm	2 trips per 100sqm	2 trips per 100sqm	-	16	16	0
Food Outlet	535sqm	1.5 trips per 100sqm	2.5 trips per 100sqm	2.5 trips per 100sqm	8	13	13
Retail	267.5sqm	1.23 trips per 100sqm	6.15 trips per 100sqm	8.15 trips per 100sqm	3	16	22
Public Assembly	215sqm	0.5 trips per 100sqm	2.5 trips per 100sqm	5 trips per 100sqm	1	5	11
Visitor Centre	280sqm	2 trips per 100sqm	2 trips per 100sqm	2 trips per 100sqm	6	6	6
<b>Total</b>					<b>34</b>	<b>56</b>	<b>52</b>

Table 5.3 indicates that the precinct could potentially generate around an additional 30 to 60 vehicles trips on any weekday or weekend peak. Including outdoor seating, this would increase by about five vehicle trips per hour.

Such moderate demand in a precinct that already generates activity associated with a range of recreational and leisure uses is not expected to present significant traffic related constraints. What will be important is peak activity on peak days given such prevalent seasonal variations in demand, and short-term demand based on particular weather conditions. This could result in demand profiles that exceed capacity, especially considering the potential of 10 Terminal and potential tenant and land use mix. This combination needs detailed consideration to avoid excessive congestion during these infrequent times. A range of measures such as dynamic signage on Middle Head Road, website and App information and social media posts could all play a key role in mitigating the effects of excessive demand.

The peak activities generated by the potential uses occur around lunchtime on both weekdays and weekends (11:00am to 2:00pm). The traffic surveys suggest there are peaks of 85 and 115 vehicles per hour along Middle Head Road, east of Chowder Bay Road on the weekday and Saturday, with the potential increase being 110 and 130 vehicles per hour, respectively (assuming average stays of at least one hour). The TfNSW 2002 indicates that local roads, such as Middle Head Road east of Chowder Bay Road, should have environmental capacities of 200 (desirable) and 300 (maximum) vehicles per hour. Therefore, the future potential traffic volumes are within the desirable range.



## PARKING AND TRAFFIC ASSESSMENT

Further west along Middle Head Road, the existing peak traffic volumes are 250 and 600 vehicles per hour on a weekday at Cobbittee Street and Effingham Street respectively, and 300 and 700 vehicles per hour on a Saturday. TfNSW guidelines indicate that the environmental capacity of a collector road such as Middle Head Road west of Chowder Bay Road, should be 300 (desirable) and 500 (maximum) vehicles per hour. This suggests that traffic volumes at Effingham Street are currently above these maximums on weekdays and weekends. Notwithstanding, the addition of future potential traffic at Cobbittee Street would keep the overall traffic volumes below the maximum.

Middle Head Road is a key collector road at the western end of the precinct and provides access to four sports ovals as well as Balmoral Beach. Austroads Guide to Traffic Management suggests that the typical mid-block capacity of a road is 900 vehicles per hour one-way and on this basis, the estimated traffic volumes along Middle Head Road of up to 750 vehicles per hour (two-way) remain well below the capacity (1,800 vehicles per hour, two way).

Therefore, against the current traffic volumes, the additional 50 vehicle trips generated by any reuse of the 10 Terminal buildings is expected to have minor impacts on the surrounding road network and can be supported from a traffic and transport perspective.

## 6. IMPROVEMENT OPPORTUNITIES

06

### 6.1. Preamble

The Middle Head precinct promotes sustainable travel throughout with provision of several active and public transport facilities. The new bus shelter at the bus stop is located around 200 metres or a two-minute walk from site with services providing convenient access to the surrounding local area and key destinations more broadly.

The potential 10 Terminal land uses will generate more jobs, deliver greater diversity through the variety of retail and commercial land uses, increase recreation visitation and deliver a unique experience to a broad range of visitors.

This section identifies opportunities to improve the transport accessibility to the area, including measures to encourage sustainable travel and also cater for the potential parking demand generated by the potential land uses.

### 6.2. Walking and Cycling

The Middle Head precinct is separated from nearby residential areas and has long provided a range of adequate facilities including pedestrian footpaths, walking tracks and wayfinding.

As discussed, pedestrian paths are provided on both sides of Middle Head Road via a footpath on the northern side and a walking track on the southern side. The footpath ends at a raised pedestrian crossing that links to footpaths on the southern side of Middle Head Road.

There is opportunity to better improve accessibility to a precinct that generally functions independently from surrounding areas and generates its own unique activities. The detached nature of Middle Head also makes it a destination primarily accessible by private vehicle. Providing clear linkages between the surrounding areas, access points, car parks and between key buildings throughout the precinct would improve accessibility. Improving desire lines throughout will also help divert pedestrians from trying to share the road with vehicles.

There remains opportunity to expand wayfinding to draw people in from neighbouring areas and along other scenic walking tracks. This includes tracks along Bradleys Head, Sydney National Park and Balmoral, including the Sydney Harbour Scenic Walk and Bondi to Manly Walk. This is one of a range of measures to encourage users to visit the precinct as part of other recreational activities and exercise. On demand and/ or shuttle bus services should also be considered by Harbour Trust, Council and/ or TfNSW to better connect the precinct with other key attractions in the local area such as Taronga Zoo, several wharfs on Sydney Harbour, Mosman and Balmoral.

There is also opportunity to improve cycling facilities along Middle Head Road by including shared paths where practical to address the absence of formal facilities. Such measures would significantly improve cyclist amenity and actively promote greater use by recreational cyclists. While this may prove difficult given topography and the available space, further assessment would be necessary to understand feasibility, cost-benefit analysis etc. A safe crossing point on the southern approach to the Middle Head Road/ Chowder Bay Road roundabout would also improve cyclist and pedestrian safety.

Improving these facilities would obviously better connect Middle Head with the surrounding local area, and when combined with improved public transport facilities and the inclusion of precinct end-of-trip facilities, active and public transport travel would become more attractive and viable to a range of users. Depending on the desirable catchment, local residents and workers are more likely to use these active travel modes than visitors from other more distant areas.

## IMPROVEMENT OPPORTUNITIES

Figure 6.1 identifies opportunity to expand the footpath network throughout the precinct to improve desire lines and ensure further convenient access and better connection to all former military uses. Whilst it is not mentioned in The Management Plan, this includes a footpath that continues on the northern side of Middle Head Road east of Chowder Bay Road and the completion of the missing link adjacent to HMAS Penguin. A major circuit track around the precinct is being considered with connections to and through ASOPA and 10 Terminal using existing internal streets and laneways that will provide access for people with all levels of mobility. The loop track should be at least three metres wide so that it can be used as a shared zone for recreational cycling with seating, shelter and other facilities provided along the track so users can take in the harbour views.

With the proposed activation of the 10 Terminal buildings, the forecourt between the buildings presents an opportunity for outdoor seating, intermittent market stalls and community use generally. The potential pedestrian links with marked pedestrian crossing areas along Middle Head Road east of Chowder Bay Road would also further promote use and offer safety. It is noted that the need for any such formal crossings would not meet any such warrants assessment, as required under normal public road assessments.

Figure 6.1: Potential precinct pedestrian network



Base source: Nearmap

## IMPROVEMENT OPPORTUNITIES

To also encourage more cycling to and within the precinct, there is opportunity to improve end of trip facilities such as a range of bicycle racks and secure bicycle parking to cater for the various user groups (recreational and commuting). Highly visible wayfinding signs should be provided around the precinct to guide cyclists to the end of trip facilities. In this regard, reference has been made to DCP 2012 which provides bicycle parking rates for different development types. Adopting the rate of one space per 200 square metres results in a requirement of about 10 bicycle spaces. DCP 2012 also suggests providing bicycle parking at a rate of 3-5 per cent of staff and visitor demand, which should be considered should staff and visitor numbers be above 200 people.

### 6.3. Public Transport

The precinct is supported by a single bus route with the nearest bus stop within 200 metres or a two-minute walk from 10 Terminal.

As discussed, the 244 bus service was replaced in December 2020 with the 111 bus service, which now operates between South Mosman Wharf and Middle Head at 30 to 40 minute intervals across the day. Patrons will be able to interchange to the 100 loop bus service on Military Road that links Taronga Zoo to the City with services every 5 to 10 minutes across the day, reducing to 20 minutes after around 9pm. The increased frequency of the 100 bus service will enhance connections with Taronga Zoo, with almost walk up services that will encourage more single direction coastal walks between the two destinations.

By initiating more visitor activities and incentives to travel to the precinct, additional bus services will need to be considered when demand warrants. This is essential to maximising sustainable travel modes to the precinct. With potentially greater visitation and employment opportunities generated by the reuse of the 10 Terminal buildings, a business case could be made to double the frequency of the 111 bus service to every 15 minutes during peak periods on weekdays and/ or weekends.

### 6.4. Vehicle Access

Middle Head Road is the single road link serving the precinct, with no opportunity (nor desire) to increase capacity given the geographical nature of Middle Head. There is also no real need to increase vehicle accessibility to the precinct, with the main focus on improving sustainable travel modes.

As discussed, visitation and demand for parking is heavily influenced by weather and seasons with the only constants being the existing commercial and retail tenancies in the precinct that will always generate similar demand. Sporting events and game days generally occur year round and in all weather conditions. Enhancing and promoting walking, cycling and bus accessibility will be crucial to limiting the number of private vehicle trips generated by future activation of the precinct. Retaining acceptable car parking for an 85<sup>th</sup> percentile day to ensure that demand does not spill into the surrounding residential areas will be critical.

To further reinforce high pedestrian activity and low speed environment along Middle Head Road east of Chowder Bay Road, threshold treatments are recommended in the form of raised pavement treatments at the western end (close to Chowder Bay Road) and at key pedestrian crossing locations.



### 6.5. Green Travel Plan

The location of the site, in terms of its proximity to sustainable transport is a key consideration for development in the precinct. A Green Travel Plan (GTP) should be prepared to put in place measures to raise awareness and further influence the travel patterns of people travelling to/ from the site with a view to encouraging modal shift away from cars.

A GTP is a package of measures aimed at promoting sustainable travel and reducing reliance on the private car. It is not designed to be 'anti-car' however will encourage and support people's aspirations for carrying out their daily business in a more sustainable way. Travel plans can provide measures to:

- restrict car use (disincentives or 'sticks')
- encourage or support sustainable travel, reduce the need to travel or make travelling more efficient (incentives or 'carrots').

Likewise, a Travel Access Guide (TAG) should be developed to provide information to staff and visitors on how to travel to the site using sustainable transport modes such as walking and public transport. The information is presented visually in the format of a map (or app) showing the site location and nearby transport modes highlighting available pedestrian and cycle routes.

### 6.6. Sustainable Travel Measures

The following measures and initiatives should be considered for implementation to encourage more sustainable travel modes by both workers and visitors:

#### Walking

Opportunities
Identify employees living near the precinct and any interests in walking to work
Produce a map showing safe walking routes to and from the precinct with times, not distances, to nearby bus stops and other destinations
Increase wayfinding around the precinct to key facilities and to nearby bus stops and other destinations
Provide lockers for keeping a change of clothes
Provide showers and changing room facilities
Open up short cuts for pedestrian access across the site
Upgrade or provide new footpaths to meet staff and visitor needs
Provide more safe crossing points

## IMPROVEMENT OPPORTUNITIES

### Cycling

Opportunities
Provide secure bicycle parking for staff in an easily accessible location
Provide pool bicycles for employees to get around the precinct
Provide bicycle parking in the form of loops and racks for visitors across the precinct
Ensure bicycle parking is clearly visible or provide signage to direct people to cycle bays
Provide showers and changing rooms
Upgrade or provide new bicycle tracks/ routes
Produce a map showing more leisurely bicycle routes to the site

### Public Transport

Opportunities
Provide live boards across the precinct to inform staff and visitors of the next bus services
Place information on the work intranet with links to appropriate external websites
Provide subsidies for workers that travel by public transport, including free opal cards or discounts
Provide an on demand and/ or shuttle bus services that links visitors to other attractions in the Mosman area, such as Taronga Zoo Wharf and Mosman local centre

### Car Parking

Opportunities
Identify priority users of car park e.g. people with disabilities and carpoolers
Introduce or increase charges for car parking and use money raised for TravelSmart initiatives
Introduce an exclusion zone restricting car parking permits for staff living near the precinct
Provide sustainable transport allowances for staff who surrender car parking permits
Review policy on the provision of parking permits for new staff
Provide drop off/ pick up zones for private vehicle, Uber like services, taxis, shuttle services and buses/ coaches for organised groups
Provide dynamic signage, website and App information and social media posts to notify the public when parking is nearing capacity

## 7. SUMMARY

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## SUMMARY

Stantec has completed a Transport Access Management Plan for the purpose of identifying any opportunities to improve transport access to and facilities within the Middle Head Precinct, with consideration to the potential redevelopment of the 10 Terminal building in order to generate employment and increase visitation to the precinct as a destination. In summary, the following conclusions and recommendations are made:

- Peak parking demand in 2020 occurred between 10:00am to 2:00pm with up to 70 per cent of the analysed car parking occupied (car parks 2, 3, 5, 6) leaving 47 vacant spaces on weekdays (when the markets were operating). Saturday peak demand occurred between 11:00am to 2:00pm with up to 40 per cent of the study area occupied and 114 spaces vacant. The higher weekday demand can be attributed to the markets and commercial/ office uses that do not generate weekend activity.
- Parking demand and visitation to the precinct is heavily influenced by weather conditions and the surveys reflect this trend as the surveyed Wednesday was clear and sunny compared to the surveyed Saturday which was cloudy and cool. Therefore, the survey days are likely to represent low to moderate demand compared to a clear and warm day.
- The traffic counts indicate a clear decline in traffic volumes further east along Middle Head Road, towards the precinct. The average peak periods occurred around the middle of the day for both arriving and departing vehicles indicating general lunchtime demand.
- The potential reuse of the 10 Terminal buildings could generate 2,119 square metres of gross floor area, including 215 square metres of public assembly area. It is intended to help restore and attract visitation across the week as well as enhance employment opportunities. The potential uses include commercial, retail, food outlets, visitor centre and public assembly for cultural activities.
- The precinct generally promotes sustainable travel, however there are opportunities to improve accessibility by providing clear linkages between the surrounding areas, access points, car parks and between key buildings throughout the precinct. The reuse of the 10 Terminal buildings will attract interest to the precinct, therefore an expanded network of walking and cycling paths/ tracks and wayfinding will encourage more sustainable travel modes.
- There remains opportunity to improve cycling facilities including bicycle parking and end of trip facilities that would further encourage new and local visitors to the precinct.
- Harbour Trust are encouraged to develop and utilise a Green Travel Plan to actively promote increased use of sustainable transport modes for both workers and visitors that come to the precinct, with a range of measures and initiatives identified for consideration.
- A business case could be made for greater bus frequency for the precinct once 10 Terminal is redeveloped and employment and visitation demand increases. Similarly, an on demand/ shuttle bus service could also be considered to link visitors with other attractions in the Mosman area such as Taronga Zoo Wharf and Mosman local centre.
- Mosman DCP 2012 and TfNSW Guide 2002 have been referenced to understand the statutory parking requirements generated by the potential uses. When all potential land uses are incorporated, the parking demand equates to between 110 and 150 vehicles.
- Given that the various activities and land uses will have different peak times across the day, an empirical assessment was also completed to understand the actual peak demand that considers the various demand profiles and complimentary uses on typical weekdays and Saturdays. The assessment indicates that parking demand is expected to be up to 75 spaces, significantly less than the statutory requirement.

## SUMMARY

- With the inclusion of car parks 0 and 7 along with the reopening (and reconfiguration) of car park 4, there would be adequate spare capacity across the precinct to accommodate peak demand days and also account for seasonal variations following the redevelopment of 10 Terminal.
- The traffic generating characteristics of the potential land uses is around 30 to 60 vehicles trips in any weekday and weekend peak hour.
- The additional traffic will not affect the environmental capacity of Middle Head Road east of Chowder Bay Road with the anticipated volumes being within the desirable range for a local road.
- West of the precinct, Middle Head Road functions as a collector road with anticipated volumes expected to be below the maximum environmental capacity at Cobbittee Street but above the capacity at Effingham Street with or without the redevelopment of 10 Terminal given the four sports ovals and Balmoral Beach access provided along the road.
- When considering the typical mid-block capacity of a road is 900 vehicles per hour one-way (1,800 two-way), the expected traffic volumes along Middle Head Road of up to 750 vehicles per hour two-way is well below the capacity.
- Given the seasonal variation in demand, dynamic signage, website and App information and social media posts could be used to notify the public when parking is nearing capacity.
- Nonetheless, against the current traffic volumes, the additional traffic generated by any reuse of the 10 Terminal buildings is expected to have minor impacts on the surrounding road network and can be supported from a traffic and transport perspective.



# A. TRAFFIC AND PARKING SURVEYS



