



Proposed Mixed Use Development Site 53, 2 Figtree Drive, Sydney Olympic Park Transport and Traffic Impact Assessment

Client // Mirvac Projects Pty Ltd
Office // NSW
Reference // 151505000
Date // 06/08/15

Proposed Mixed Use Development
Site 53, 2 Figtree Drive, Sydney Olympic Park
Transport and Traffic Impact Assessment

Issue: A 06/08/15

Client: Mirvac Projects Pty Ltd
Reference: 151505000
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	06/08/15	Final	Santi Botross/ Michael Lee	Michael Lee	Ken Hollyoak	

Table of Contents

1. Introduction	1
2. Existing Conditions	3
2.1 Site Description	3
2.2 Road Network	4
2.3 Public Transport	4
2.4 Pedestrian Infrastructure	5
2.5 Cycle Infrastructure	5
3. Development Proposal	7
3.1 Development Description	7
3.2 Proposed Vehicle Access Arrangements	7
3.3 Proposed Loading Area	11
3.4 Temporary Road Arrangement	12
4. Traffic Impact Assessment	13
4.1 Traffic Generation Rates	13
4.2 Existing Use Traffic Generation	13
4.3 Proposed Development Traffic Generation	14
4.4 Traffic Impacts	14
4.5 Special Events	16
5. Parking Assessment	19
5.1 Car Parking Provisions	19
5.2 SEPP 65	21
5.3 Accessible Car Parking Spaces	22
5.4 Bicycle Parking Provision	22
5.5 Motorcycle Parking Provision	23
5.6 Car Share Parking Spaces	23
5.7 Internal Car Park Arrangement	24
6. Transport Assessment	25
6.1 Residential Trips	25
6.2 Retail Trips	25
6.3 Transport Impacts	26
7. Green Travel Plan	28
7.1 Introduction	28
7.2 What is a Green Travel Plan?	28
7.3 Key Objectives	28
7.4 Site Specific Measures	29

7.5	Travel Access Guide	30
7.6	Summary	30
8.	Summary and Conclusion	31

Appendices

- A: Architectural Basement Car Park Layout Plans
- B: BG&E Civil Plans of Proposed Access Road
- C: Swept Path Diagrams
- D: Examples of TAG

Figures

Figure 2.1:	Subject Site and Its Environs	3
Figure 2.2:	Sydney Olympic Park Bicycle Network	6
Figure 3.1:	SOP Masterplan 2030 Town Centre Precinct	8
Figure 3.2:	SOP Masterplan 2030 Street Hierarchy	9
Figure 3.3:	SOP Masterplan 2030 Preferred Vehicle Access Points	10
Figure 4.1:	SOP Masterplan 2030 Vehicle Access Strategy	15
Figure 4.2:	Sydney Olympic Park Event Access Plan	17
Figure 6.1:	Public Transport Potential Upgrades	27

Tables

Table 1.1:	Secretary's Environmental Assessment Requirements	1
Table 2.1:	Public Transport Provision	5
Table 4.1:	Estimated Development Traffic	14
Table 5.1:	SOP Masterplan 2030 Car Parking Requirements	19
Table 5.2:	RMS <i>Guide to Traffic Generating Developments</i> Car Parking Requirements	21
Table 5.3:	Bicycle Parking Requirements	22
Table 6.1:	Estimated Public Transport and Pedestrian Trips	26

1. Introduction

A State Significant Development (SSD) application is being prepared for lodgement with the Department of Planning and Environment (DoPE) for a mixed use development at Site 53, 2 Figtree Drive, Sydney Olympic Park.

The proposed development would accommodate 422 residential apartments plus approximately 1,500m² of retail uses. The proposed development would include four buildings ranging in height from five to 15 storeys.

This report has been prepared by GTA Consultants on behalf of Mirvac Projects Pty Ltd to accompany the SSD application. The report presents the findings of an assessment of the traffic and transport implications arising from the proposed development and describes the measures to be implemented to mitigate and minimise any identified impacts.

DoPE has issued the Secretary's Environmental Assessment Requirements (SEARs) on 20 May 2015 (SSD 7033) for the preparation of an Environmental Impact Statement for the proposed development. The issues raised in the SEARs have been considered during the preparation of this transport assessment report. Table 1.1 summarises the relevant issues (related to transport and traffic) together with descriptions how the issues have been addressed.

Table 1.1: Secretary's Environmental Assessment Requirements

Issues	How Addressed	Report Section
Detail existing pedestrian and cycle movements within the vicinity of the site and determine the adequacy of the proposal to meet the likely increase in public transport, pedestrian and cycle demands.	<p>The existing pedestrian and cycle networks are described in Section 2.3, Section 2.4 and Section 2.5 respectively.</p> <p>The proposed development is expected to generate only a moderate level of public transport, pedestrian and cycle trips. It is expected existing infrastructure would have adequate capacity to accompany these moderate travel demands.</p>	<p>See Section 2.</p> <p>See Section 6.</p>
Identify measures, for residents, employees and visitors, to promote travel choices that support the achievement of State Plan targets, such as implementing a location-specific sustainable travel plan and provision of end of trip facilities.	<p>It is expected that any approval of the proposed development will include a consent condition for a green travel plan to promote environmentally sustainable travel methods to and from the site. As such, this report has provided a framework for a future green travel plan to be prepared prior to the occupation of the development. The framework outlines some site specific measures that would assist with realising aspirational modal share targets outlined in the SOP Masterplan 2030.</p>	See Section 7.
Provide details of the total daily and peak hour trips generated by the proposed development, including accurate details of the current and future daily vehicle movements and assess the impacts of the traffic generated on the local road network, including intersection capacity and any potential need for upgrading or road works (if required).	<p>The existing use on the site would be expected to generate at least 74 vehicles per hour (vph). The proposed development is expected to generate approximately 111 vph (i.e. the net additional development traffic is 37 vph). Nearby intersections would be upgraded as part of the overall road network and intersection improvements to be developed by the Sydney Olympic Park Authority to accommodate the future redevelopment of the Sydney Olympic Park precinct including Site 53 (the subject site).</p>	See Section 4.

Issues	How Addressed	Report Section
Detail the proposed access, bicycle and car parking provisions associated with the proposed development, including compliance with the relevant parking codes and Australian Standards, and propose measures to mitigate any associated impacts on public transport, pedestrian, cycle and traffic networks.	It is proposed to provide a new vehicular driveway to serve the proposed development on a new access road off Figtree Drive consistent with the SOP Masterplan 2030. Bicycle and car parking provisions have been provided in compliance with SOP Masterplan 2030. These are proposed to be designed in compliance with the design requirements set out in the relevant Australian Standard.	See Section 3.2. See Section 5.
Demonstrate the provision and sufficient arrangement of on-site bicycle and car parking having regard to the availability of public transport and parking controls of Master Plan 2030.	The SOP Masterplan 2030 permits the proposed development to have a maximum of 654 car parking spaces. It is proposed to provide a total of 501 car parking spaces to serve the proposed development (for both residential and retail uses). In relation to bicycle parking provision, the SOP Masterplan 2030 requires the development to have a minimum of 604 bicycle parking spaces. It is proposed that the development complies with this requirement	See Section 5.
Adequately address the impact of major events in the precinct as it relates to the proposed development within the Town Centre (SOP Major Event Impact Assessment Guidelines).	From a traffic perspective, the proposed development is not expected to create any adverse traffic and transport issues with the Sydney Olympic Park town centre operating in major event mode.	Section 4.5.
Demonstrate that the proposed development and future operation can work (provide acceptable amenity) in major event mode. This will require clear understanding of the major event operating mode and implications (management and mitigation measures to address potential noise impacts associated with operation) for the development.	From a traffic perspective, the proposed development is not expected to create any adverse traffic and transport issues with the Sydney Olympic Park town centre operating in major event mode.	Section 4.5.
Assess traffic impacts during construction detailing management and mitigation measures.	This is addressed in the Construction Traffic Management Plan prepared by GTA Consultants (Ref: 150723rep-15S1505100-2 Figtree Drive, SOP CTMP).	N/A

The remainder of the report is set out as follows:

- Chapter 2 discusses the existing road network conditions surrounding the site
- Chapter 3 describes the proposed development
- Chapter 4 examines the traffic impacts arising from the proposed development
- Chapter 5 assesses the parking demand
- Chapter 6 provides estimates for public transport and pedestrian trips
- Chapter 7 provides a framework for the preparation of a green travel plan, and
- Chapter 8 presents the conclusions of the investigation.

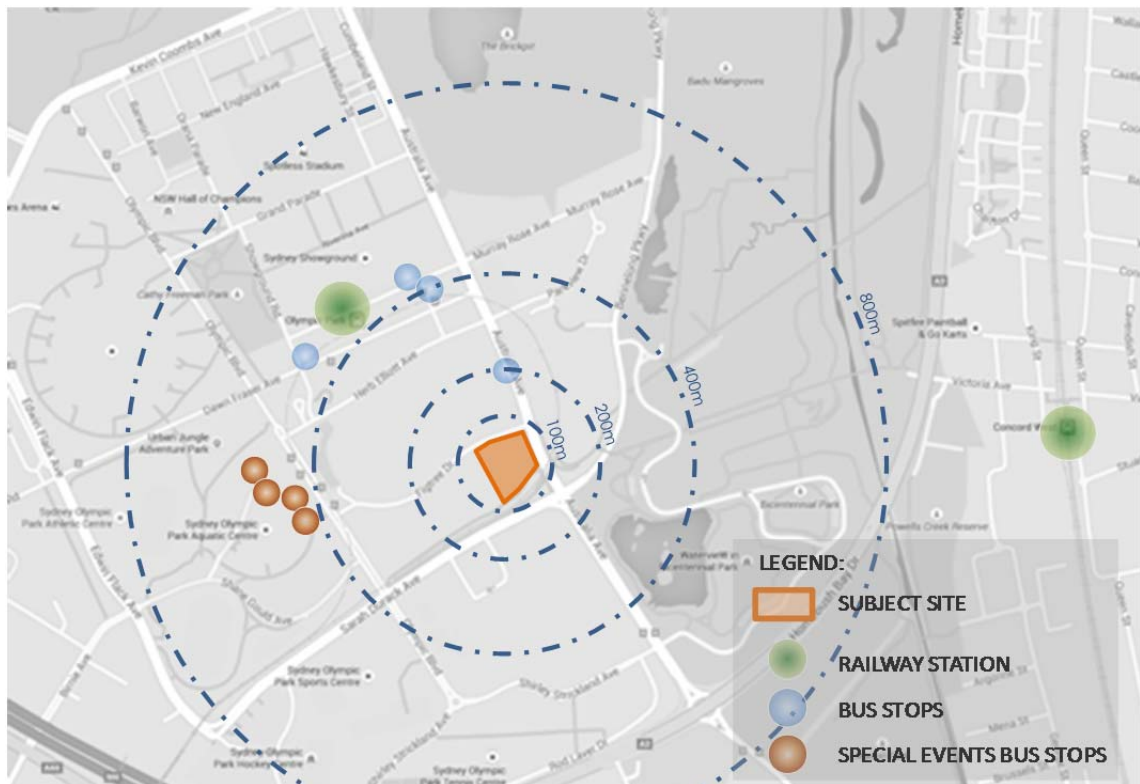
2. Existing Conditions

2.1 Site Description

The development site is located at 2 Figtree Drive (at the corner with Australia Avenue), Sydney Olympic Park and is within the local government area of Auburn City Council. The site is 1.23ha in size and is currently occupied by two three-storey commercial buildings and an open car park. The existing buildings on the site have been vacated for some time now.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs



Basemap Source: Google Maps

The site is bounded by Australia Avenue to the east, Olympic Boulevard to the west, the Olympic Park railway line and Sarah Durack Avenue to the south, existing commercial development to the west and Figtree Drive to the north.

The subject site is Site 53 of the Central Precinct slated for future mixed use redevelopment under the Sydney Olympic Park Masterplan 2030. At present, there are a number of sites surrounding the subject site undergoing planning, construction or have been recently completed as part of these major developments.

The site is located within 500m walking distance to the Olympic Park Railway Station, which offers frequent services to Lidcombe Station (every 10 minutes during weekday and weekend peak periods). Train services between Lidcombe Station and Central Station run on average every 5-10 minutes during weekday peaks.

The buildings which currently occupy the site have a combined gross floor area (GFA) of approximately 4,612m². Between the two buildings, there are approximately 120 car parking spaces provided within the open car park. The surrounding land uses comprise low, medium and high density residential, a commercial business park, light industrial, sporting grounds and arenas, and recreational parklands. The Homebush Direct Factory Outlet (DFO) retail precinct is also located nearby.

2.2 Road Network

The subject site is generally surrounded by local streets including Australia Avenue, Olympic Boulevard and Sarah Durack Avenue.

Australia Avenue is a local road with a north-south alignment that runs along the eastern boundary of the site. Australia Avenue is a median-separated two-way road with a sign-posted speed limit of 60km/hr. Australia Avenue generally has two traffic lanes in each direction. At signalised intersections, additional right turn lanes are provided. Kerbside parking along Australia Avenue is prohibited. An on-road cycleway is available on either side.

The nearby intersection of Australia Avenue with Figtree Drive operates under priority control where traffic on Australia Avenue has the right of way. It is noted all turning movements are permitted at this intersection.

Within the vicinity of the subject site, Olympic Boulevard is a local road and is configured as a four lane, two-way road with a 40km/hr speed limit. Towards its northern end, Olympic Boulevard has one traffic lane in each direction. Kerbside parking with two hour parking restriction is permitted on the west side while bus bays are located along the east.

The intersection at Figtree Drive and Olympic Boulevard operates under priority control with traffic on Olympic Boulevard having priority over Figtree Drive traffic. Due to the median along Olympic Blvd, vehicular movements are restricted to the left-in/ left-out at the Figtree Drive intersection.

Sarah Durack Avenue is a local road located to the south of the subject site. It is configured as a two-lane, two-way road separated by a median with a 60 km/hr speed limit. There is an on-street cycleway facility within the road shoulder on both sides of the road. Sarah Durack Avenue provides access to a number of sporting centres and off-road parking facilities to the south.

2.2.1 Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- Australia Avenue-Sarah Durack Avenue (signalised)
- Australia Avenue-Figtree Drive (unsignalised)
- Figtree Drive-Olympic Boulevard (unsignalised)
- Sarah Durack Avenue-Olympic Boulevard (signalised)
- Australia Avenue-Herb Elliott Avenue-Parkview Drive (signalised).

2.3 Public Transport

Olympic Park Railway Station is located 500m north of the site and is within a six minute walk. The station is serviced by the T7 Olympic Park Line, which acts as a shuttle-service between Lidcombe and Olympic Park stations. The train journey between Lidcombe and Olympic Park is approximately six minutes.

Concord West Railway Station is located nearby to the site providing additional train services to those at the Olympic Park Railway Station. It can be accessed via a fully formed levelled pathway that extends over parklands and pedestrian tunnel beneath Homebush Bay Drive. It is approximately an 18 minute walk between the site and Concord West Station. Concord West Station is serviced by the T1 Northern Line, with trains running every 15 minutes between Central and Concord West. Concord West Railway Station provides direct train services to Strathfield Railway Station which interchanges with other train services on other lines within the rail network as well as additional bus services.

In the vicinity of the site, bus stops are located on Australia Avenue and Olympic Boulevard. A review of the public transport available in the vicinity of the site is summarised in Table 2.1.

Table 2.1: Public Transport Provision

Service	Route #	Route Description	Typical Services		
			AM Peak Period (6:30am-9:30am)	PM Peak Period (4:00pm-7:00pm)	Saturday (11am-2pm)
Train	T7	Lidcombe to Olympic Park	Every 10 mins	Every 10 mins	Every 10 mins
	T1	Northern Line	Every 15 mins	Every 15 mins	Every 30 mins
Bus	450	Burwood to Hurstville via Strathfield, Belfield, Lakemba, Roselands & Beverly Hills	Every 15 mins	Every 15 mins	-
	525	Burwood to Parramatta	Every 10-15 mins	Every 10-15 mins	Every 30 mins
	526	Burwood to Sydney Olympic Park Wharf	Every 30 mins	Every 30 mins	Every 60 mins
	533	Chatswood /North Ryde to Olympic Park	Every 15 mins	Every 15 mins	-
	X25	Strathfield Station - Olympic Park Station	Every 15 mins	Every 10 mins	-
	401	Lidcombe to Sydney Olympic Park	Every 20 mins	Every 20 mins	Every 40 mins

Source: www.transportnsw.info

2.4 Pedestrian Infrastructure

Pedestrian footpaths are located on both sides along all streets surrounding the site. Footpaths along Figtree Drive, Australia Avenue and Olympic Boulevard vary in width; they are 1.2m, 3m and 7.5m respectively. Street lighting is provided along all of the mentioned routes.

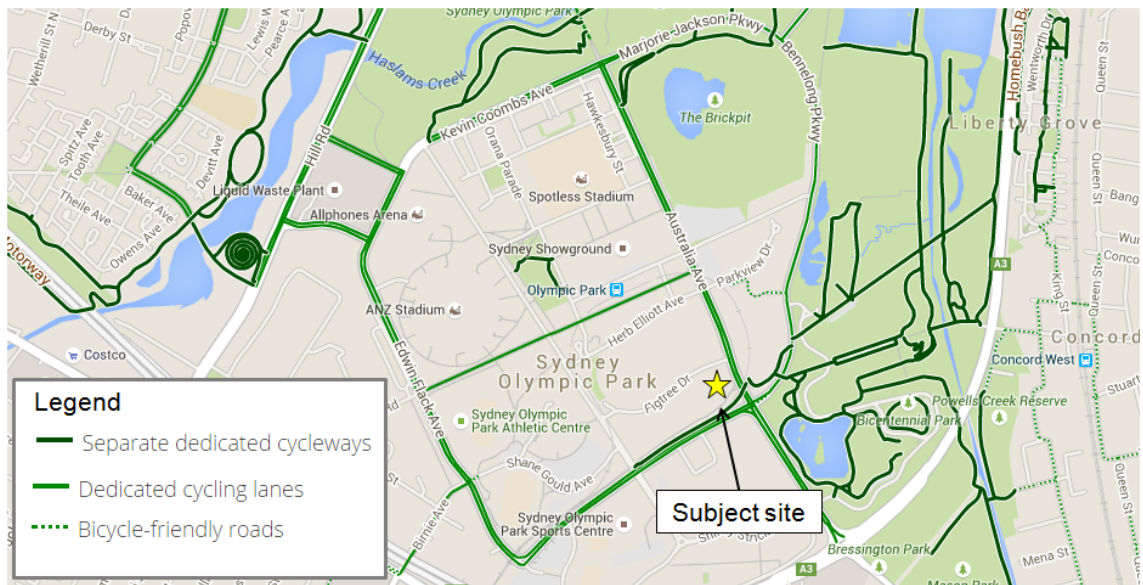
Marked foot crossings are provided at all signalised intersections within the area, excluding the southern leg of the Australia Avenue-Sarah Durack Avenue signalised intersection. Kerb ramps are also provided at all crossing points in vicinity of the site.

2.5 Cycle Infrastructure

Sydney Olympic Park has over 35 kilometres of cycleways which form part of various scenic bike circuits. These tracks are utilised by recreational riders as well as experienced cyclists. In addition to these routes, on-road cycleways are located along Australia Avenue, Sarah Durack Avenue and Dawn Fraser Avenue.

The bicycle network in the locality of the site is shown in Figure 2.2.

Figure 2.2: Sydney Olympic Park Bicycle Network



Source: www.sydneycycleways.net

3. Development Proposal

3.1 Development Description

The SSD application will seek approval for a proposed mixed-use development accommodating 422 residential apartments plus 1,500m² of retail use. The proposed development would comprise four new buildings ranging in height from five storeys to 15 storeys.

The proposed residential use comprises:

- 158 x 1-bedroom apartments
- 220 x 2-bedroom apartments
- 44 x 3-bedroom apartments.

The above apartment mix includes 43 adaptable apartments.

The retail use is proposed to be provided as a single tenancy to suit a small scale local shop. The nature of the proposed retail use on site is generally a low scale shop serving the local community for supply of general provisions. As such, it is expected that the majority of custom for the proposed retail would be from walk-ins from residents living and workers working in nearby developments including the subject proposed development.

In discussions between Mirvac the proponent of the proposed development and Sydney Olympic Park Authority (SOPA) the landowner and planning approval consent authority, it was agreed that it would be acceptable for the proposed retail use on the site to be provided with 30 car parking spaces. The retail lot and its associated 30 car spaces will be constructed by Mirvac and handed back to SOPA under a commercial agreement.

A combined basement car park is proposed beneath the buildings to serve the proposed residential and retail uses. The proposed car park would have three levels of basement parking. The upper level (Level 00) would occupy approximately three quarters of the site. The proposed retail use would occupy the remaining quarter of the site at the upper level. The loading areas would also be located on the upper level of the basement car park. Basement Level B1 occupies almost the entire site, while Basement Level B2 reduces in its footprint to exclude the north-eastern part of the site.

The proposed development includes 501 car parking spaces (including 48 accessible car parking spaces). It is also proposed to provide 25 motorcycle parking spaces and 604 bicycle parking spaces (including 116 visitor bicycle parking spaces).

Architectural plans of the basement car parking areas and ground level are contained in Appendix A.

3.2 Proposed Vehicle Access Arrangements

A new access road is proposed to be provided on western boundary of the subject site (Site 53) consistent with the SOP Masterplan 2030. The new access road is shown in Figure 3.1, Figure 3.2 and Figure 3.3 which have been extracted from the SOP Masterplan 2030.

The northern end of the new access road would form a new T-intersection with Figtree Drive operating under priority control. The southern end would terminate in a cul-de-sac which would provide access to the subject site as well as the adjacent (future development) site to the west of the subject site. Driveways to the respective developments would be provided near the cul-de-

sac and as such when the adjacent site is developed the cul-de-sac would be converted to operate as a single lane roundabout.

The position of the driveway to the subject proposed development is located further south along the new access road than that indicatively shown in Figure 3.3. Locating the driveway further south would maximise its separation away from the new intersection formed by the new access road at Figtree Drive. This would have the benefits of preventing disruptions to the traffic flows on Figtree Drive and Australia Avenue to ensure the efficient operation of the nearby external road intersections.

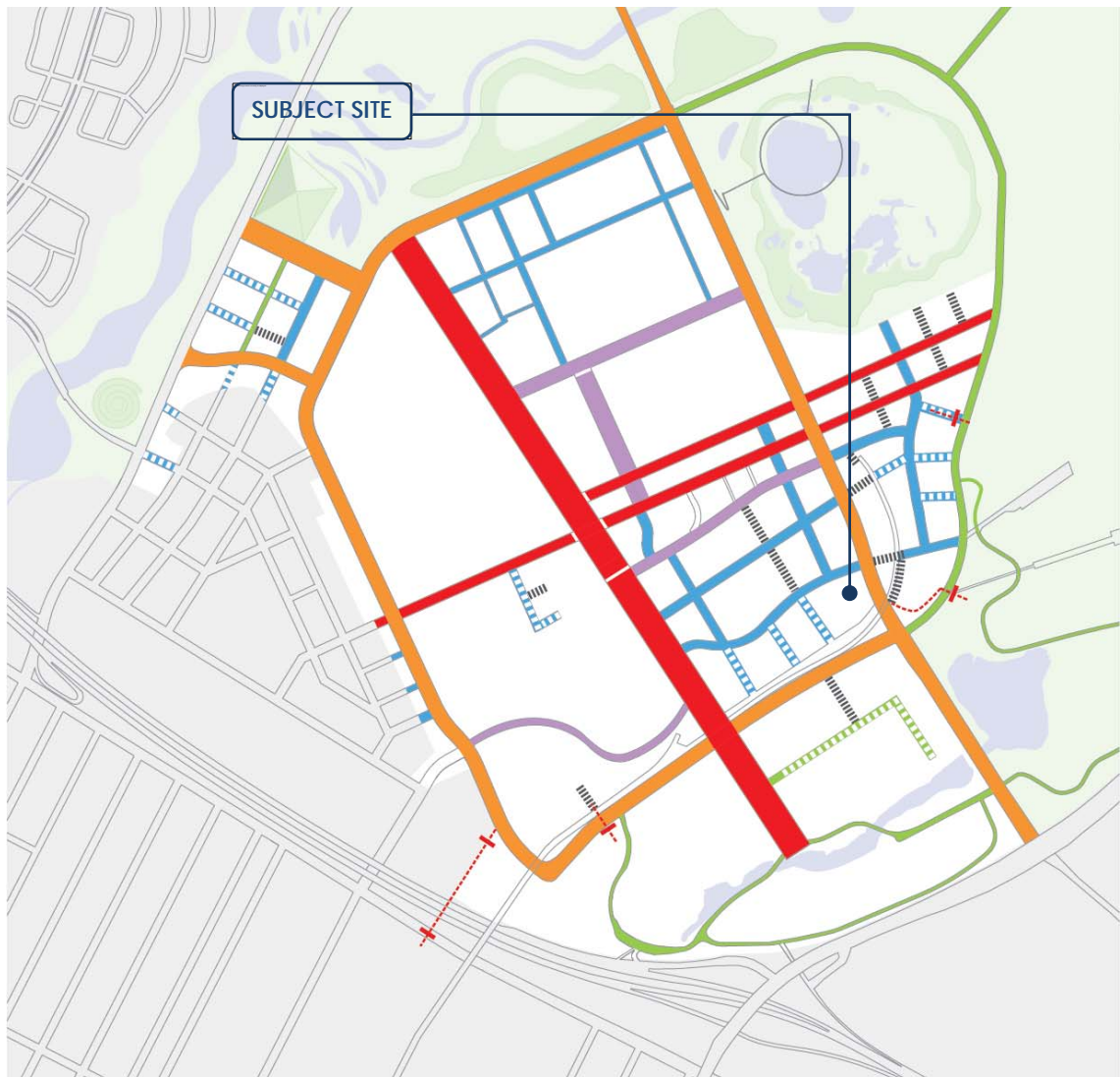
Refer to accompanying civil drawings prepared by consultants BG&E for further details on the new access road, which are contained in Appendix B.

Figure 3.1: SOP Masterplan 2030 Town Centre Precinct






Source: Sydney Olympic Park Masterplan 2030

Figure 3.2: SOP Masterplan 2030 Street Hierarchy



Key

- | | | | |
|---|---|---|----------------------------------|
|  | ICF Funded Civic Streets |  | ICF Funded Local Streets |
|  | ICF Funded Perimeter Avenues and Connecting Streets |  | Potential Pedestrian Connections |
|  | ICF Funded Park Edge Streets |  | Development Funded Streets |
|  | ICF Funded Town Streets |  | Through-Site Links |

Source: Sydney Olympic Park Masterplan 2030

Figure 3.3: SOP Masterplan 2030 Preferred Vehicle Access Points



Source: Sydney Olympic Park Masterplan 2030

The proposed access road will ultimately be a four lane road with two traffic lanes and two parking lanes. The road will be constructed by Mirvac and the future developer on the western side of the road, with each constructing 50 per cent of the road. Consequently, in relation to the subject site, Mirvac is only required to build a two lane road which will both be traffic lanes (one north/one south). When the adjacent developer constructs their half of the road, the final configuration of four lanes (two traffic lanes with two parking lanes) will be provided. For this reason, both the carriageway and the future parking lane will be built with a width of 3.0m to facilitate interim use, rather than a 3.0m carriageway and a 2.3m wide parallel parking lane.

The proposed vehicle access from this access road will be shared between general vehicles (car traffic) and service vehicles. It would be used by residential tenants and visitors as well as retail customers/staff. Service vehicles including waste collection vehicles and removalist trucks would also share the same driveway.

The benefit of this arrangement is that the number of driveways is reduced to one, thereby minimising the number of potential vehicle/pedestrian conflict points. The provision of a single driveway maximises the pedestrian area along the site's frontages.

Inside the site, car traffic is required to peel off to the left to gain access into the basement car park while service vehicles continue along the internal road way to gain access to the loading dock and garbage collection area.

In accordance with Australian Standard design requirements for vehicle driveways, a sight triangle is proposed at the driveway near the property boundary. This is to provide driver's visibility to pedestrians walking along the new access road so to maintain pedestrian safety. The sight triangle will be provided in compliance with Australian Standard requirements i.e. 2.5m by 2.0m.

Other elements of the proposed vehicle access are proposed to design to comply with design requirements set out in the Australian Standard for car parking and commercial vehicle facilities, namely AS2890.1:2004 and AS2890.2:2002.

Relevant swept path diagrams for an Australian Standard B99 vehicle (5.2m long car) are contained in Appendix C.

3.3 Proposed Loading Area

It is proposed to provide an on-site loading facility to be shared between the residential and retail uses.

The loading facility is proposed to be located on the upper level (Level 00) of the basement car park which is accessed directly from the new access street. The loading dock would have two loading bays. One loading bay has been designed to accommodate Auburn City Council's 8.5m long waste collection vehicle. This loading bay would also be used for removalist trucks as well as delivery of bulky items for residential tenants (e.g. white goods and furniture). The second bay has been designed to accommodate an Australian Standard 6.4m long small rigid vehicle which would be predominantly used by the retail component of the proposed development.

The architect has advised that the minimum vertical clearance would be approximately 4.0m., which is consistent with SOPA's design brief for the retail lot. It is noted that a vertical clearance of 4.0m does not accord numerically with headroom requirements stipulated in the Australian Standard. However, given that the largest truck that will service the site is an 8.5m long waste collection vehicle, it is considered that a vertical clearance of 4.0m would still be practical. It is noted that many contemporary developments within Sydney City LGA have vertical clearance less than 4.0m and have no issues with large trucks coming on to the sites.

As such, the proposed loading area is considered to be acceptable.

The loading bay has been designed to accommodate the swept path requirements of a Council's 8.5m long waste collection vehicle. The loading bay can accommodate a second service vehicle (up to an Australian Standard 6.4m long small rigid vehicle) if required.

Relevant swept path diagrams of the relevant service vehicles accessing the loading area are contained in Appendix C.

3.4 Temporary Road Arrangement

As stated above, the proposed access road will ultimately be a four lane road with two traffic lanes and two parking lanes. The road will be constructed by Mirvac and the future developer on the western side of the road, with each constructing 50 per cent of the road. Consequently, in relation to the subject site, Mirvac is only obligated to build a two lane road which will both be traffic lanes (one north/one south). When the adjacent developer constructs their half of the road, the final configuration of four lanes (two traffic lanes/two parking lanes) will be provided.

Details of the proposed access road have been prepared by BG&E and their plans are included at Appendix B.

4. Traffic Impact Assessment

4.1 Traffic Generation Rates

Potential development traffic arising from the proposed development has been estimated based on RMS' Guide to Traffic Generating Developments including RMS Technical Direction TDT 2013/04 (update issued May 2013).

For high density residential developments, the updated (May 2013) RMS' guidelines suggest a peak traffic generation rate of 0.19 vehicle trips per peak hour per apartment.

In relation to development traffic arising from the proposed retail use, it is expected that proposed retail use would generate negligible traffic as the type of retail proposed for this development is expected to only service the local area. Any development traffic arising from the retail uses would be predominantly related to shop owners and staff arriving and departing which would be likely to occur outside of the peak periods.

However, for traffic analytical purposes this traffic assessment assumes the followings in relation to retail traffic generation.

The previous 2002 RMS' guidelines suggest a retail traffic generation rate of 4.6 trips per 100m² of floor area for retail shops (the May 2013 update did not provide any update for traffic generation rates for retail developments similar to that proposed). Using the suggested parking provision rate in the previous 2002 RMS guidelines (at 4.5 car parking spaces per 100m²), the retail trip rate would equate to approximately 1.02 trips per peak hour per car space provided.

For commercial/office use, the updated RMS guidelines suggest a peak traffic generation rate of 1.6 trips per 100m² of floor area.

In summary, the relevant peak traffic generation rates are as follows:

- residential use – 0.19 trips per peak hour per apartment
- retail use (shops) – 4.6 trips per peak hour per 100m² or
– 1.02 trips per peak hour per car space provided
- commercial use – 1.6 trips per peak hour per 100m².

The above traffic generation rates relate to peak hour periods. Daily traffic would typically be approximately 7-10 times the peak hour traffic depending on the land use type.

4.2 Existing Use Traffic Generation

As indicated previously, the site is currently occupied by two commercial buildings. The existing buildings are currently unoccupied. As such, a traffic generation survey of the existing use would not provide an accurate estimate of the traffic generation of the site. As such, traffic generation of the site has been estimated using two methods as discussed below.

The existing commercial buildings have been estimated to have a total floor area of approximately 4,612m². Using traffic generation rate of 1.6 vehicle trips per 100m² as suggested in the RMS' guidelines for commercial developments, the existing use is expected to generate approximately 74 vehicles per hour (vph).

Alternatively, the site has approximately 120 car parking spaces to serve the commercial use on the site. RMS' guidelines suggest a traffic generation of 0.8 trips per peak hour per car parking

space for commercial developments. On this basis, the existing use is expected to generate approximately 96 vph.

Therefore, the existing development would generate at least 74 vph during the peak periods. The daily traffic generation would be approximately 500 vehicles per day (vpd).

4.3 Proposed Development Traffic Generation

The proposed development comprises 422 residential apartments and approximately 1,500m² of retail floor area. The traffic generation potential of the proposed development has been estimated on this basis. The estimated development traffic arising from the proposed development is presented Table 4.1.

Table 4.1: Estimated Development Traffic

Proposed Uses	Apartment/Car Spaces Provided	Traffic Generation Rates	Estimated Trips
Residential Use	422	0.19 trips per hour per apartment	80
Retail Use	30 [§]	1.02 trips per hour per car space	31
Total Trips	-	-	111

§ See Section 5.

The proposed development has been conservatively estimated to generate a total of 111 vph during the busiest peak period. The daily development traffic would be in the order of 1,100 vpd.

The existing use is expected to generate at least 74 vph, therefore the net additional traffic is 37 vph or approximately 400 vpd.

It is noted that the existing use on the site, being a commercial development, would have peak direction in the inbound traffic in the morning peak period and outbound traffic in the evening peak period. The proposed development being a residential development would be the reverse of this i.e. peak direction is outbound in the morning peak period and inbound in the evening peak period. However, it is not expected that the reverse of the peak direction in the respective peak periods would create any issues for reasons that will be explained later in Section 4.4.

4.4 Traffic Impacts

The Sydney Olympic Park Authority has developed 11 key planning principles focused on creating a high quality town centre and to support the identified land uses. These 11 key planning principles are outlined in the SOP Masterplan 2030. One of these 11 key principles is the Access and Transport principle which provides a strategy for transport, traffic and access for the wider town centre at Sydney Olympic Park including the subject site.

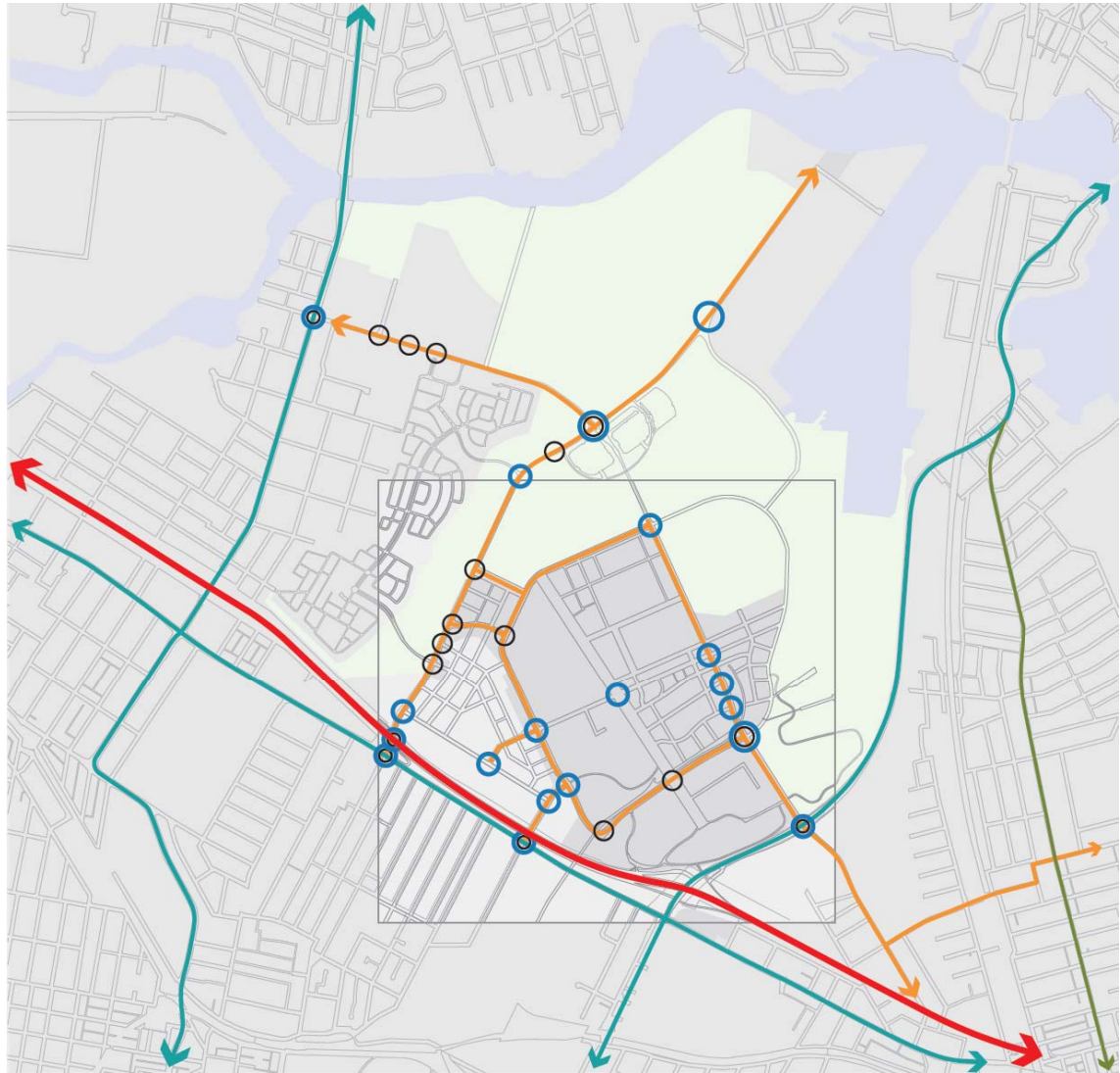
The transport and access strategy has been developed to accommodate:

- the normal day-to-day operation of local road infrastructures
- traffic demand from new commercial; and
- residential uses envisaged in the SOP Masterplan 2030; and
- the traffic and transport demand arising from events held at Sydney Olympic Park.








Figure 4.1 contains a figure extracted from the SOP Masterplan 2030 illustrating the future road network and road infrastructures required to support the future development within Sydney

Olympic Park. This relies on expanding the existing street network and improving connections to major arterial roads including new ramps on the M4 Motorway.

Figure 4.1: SOP Masterplan 2030 Vehicle Access Strategy



Key

- | | |
|---|---|
|  Motorway |  Intersection to be Upgraded |
|  Arterial |  Existing Signalled Intersection |
|  Subarterial |  Local |
|  Collector | |

Source: Sydney Olympic Park Masterplan 2030

The vehicle access strategy described in the SOP Masterplan 2030 includes the intersection upgrades of a number of intersections along Australia Avenue near the subject site (Site 53). At this stage, the details of these upgrades are not known. However, it is understood that Sydney Olympic Park Authority is in the process of conducting a comprehensive transport, traffic and access study examining the transport and traffic needs to accommodate the anticipated future developments envisaged in SOP Masterplan 2030. It is expected that this study will inform the

needs and form of intersection upgrades and any other required transport improvements in the area.

Notwithstanding the above, the SOP Masterplan 2030 notes that the Australia Avenue-Figtree Drive intersection and a number of other local intersections would be upgraded to provide additional traffic capacity by installing traffic signals and lane reconfiguration. In addition, the existing intersections at Sarah Durack Avenue and Underwood Road with Australia Avenue would also be expanded with additional traffic lanes to provide additional traffic capacity.

As indicated above, the subject proposed development is expected to generate an additional 37 vph. The level of additional development traffic is considered to be relatively moderate. It is expected that future upgrade works would be developed to accommodate traffic demand arising from the subject site and other nearby future developments maintaining existing intersection level of service or better.

Separately, it is noted that the proposed development would have the peak traffic directions in reverse to the existing use development traffic. Any road upgrades would need to take this into account.

Traffic impacts therefore would be manageable in the future.

4.5 Special Events

4.5.1 Special Event Traffic Conditions

The wider Sydney Olympic Park site hosts events of various scale and duration throughout the year – these include the annual Royal Easter Show, various major and other stadium events, swimming and tennis championship competitions, arts and culture events and exhibitions. The Sydney Olympic Park town centre has been designed to cater for up to 250,000 event patrons in addition to the day-to-day residents living and workers working within the town centre.

During special events, access to the Sydney Olympic Park would be restricted with other changes to the traffic and parking conditions including the re-routing of some regular schedule bus services. The extent of these changes will largely depend on the scale and nature of the event. Figure 4.2 shows a map from the SOP Masterplan 2030 indicating which roads would be closed and the required changes in traffic conditions.

Figure 4.2: Sydney Olympic Park Event Access Plan



Key

	Forced Exit Following Major Events		Major Stadium Event Closures		Coach Parking
	Event Venue		Major Stadium/Other Stadium/Royal Easter Show/Minor Event Extension Area		Event Car Parking/Station
	Royal Easter Show		Periodic Closure for Athletics Centre/Warm Up Track Events		Closures for Egress of Major Stadium Events
	Major Stadium/Other Stadium/Royal Easter Show Event Closure				
	Major Stadium/Other Stadium/Royal Easter Show/Minor Event Closure				

Source: Sydney Olympic Park Masterplan 2030

Upcoming events and related impacts are typically communicated via the website and by the combined use of variable message signs (VMS) and static signs.

It is noted that special event driving directions to the wider Sydney Olympic Park site would direct visitors to avoid Homebush Bay Drive, largely as a result of weekday congestion and constraints associated with the Australia Avenue-Underwood Road roundabout. Vehicle access to and from

the north and west (via Holker Street, Hill Street and Birnie Avenue) also ensure convenient access to designated car parking areas.

4.5.2 Traffic Impacts to Special Events

It is noted that the SOP Masterplan 2030 requires permanent vehicle access to developments be located away from the affected streets.

Vehicle access to the subject proposed development is proposed to be located on a new access road (which is envisaged under SOP Masterplan 2030) off Figtree Drive. This is consistent with SOP Masterplan 2030 requiring "*permanent vehicle access points need to be located away from the affected streets*".

In addition, the Event Access Plan (see Figure 4.2 above) does not indicate that Figtree Drive and Australia Avenue would be closed during an event. In addition, the subject site does not rely on access from the major roads within the town centre. During special events the site could be accessed as follows:

- from/to north – using Holker Street via Bennelong Parkway or Homebush Bay Drive via Australia Avenue
- from/to east – using Homebush Bay Drive/Underwood Road via Australia Avenue
- from/to south – using Homebush Bay Drive via Australia Avenue, and
- from/to west – using Birnie Avenue via Sarah Durack Avenue.

It is noted that Australia Avenue and Sarah Durack Avenue form part of the major event loop road. It is not expected that this would create any traffic impacts as the proposed development would generate a relatively moderately low level of development traffic. In addition, visitors visiting tenants living in the proposed development would tend to schedule their visits to be outside of the special event period to avoid the changed in traffic conditions of a special event, or would attend the event with the tenants they are visiting. As such, these visitors and tenants would be part of the 250,000 special event attendees that the town centre has been designed to cater for. That is, they would not generate additional traffic demand.

In cases where additional street closures are required (in addition to those shown in Figure 4.2) affecting the above routes to the subject site, residents and visitors requiring access to the site would need to provide identification as agreed with Sydney Olympic Park Authority. Typically, this could include residents providing their driver's license to confirm their residential address and visitors could be provided with a permit and/or park their vehicles at a nearby paid public car park.

In addition, the eastern side of Australia Avenue between Murray Rose Avenue and Sarah Durack Avenue in some special events would be reserved for coach parking.

As noted above, residential visitors to the subject development would tend to avoid the area during a special event. If they decided to come during a special event, they would most likely wanting to attend the special events and be part of the 250,000 special event attendees that the town centre has been designed to cater for. As such, they would not generate additional parking demand.

Under the above scenario, from a traffic perspective the proposed development is unlikely to create any adverse traffic and parking impacts during a special event.

5. Parking Assessment

5.1 Car Parking Provisions

The SOP Masterplan 2030 is the development control plan for all new developments within the Sydney Olympic Park. It provides detailed planning and design principles for the future redevelopment of sites within the Sydney Olympic Park site. As such, on-site parking requirement for the proposed development has been assessed against the SOP Masterplan 2030.

Section 4 of the SOP Masterplan, *General Controls and Guidelines*, stipulates maximum parking provision rates for a number of different land uses. Table 5.1 presents the relevant maximum parking provision rates from SOP Masterplan 2030 and an assessment of the car parking requirements as well as the proposed parking provision for each of the proposed use.

Table 5.1: SOP Masterplan 2030 Car Parking Requirements

Unit Type	No. of Units/ GFA	Masterplan 2030 Maximum Permissible Parking		Proposed Parking Provision
		Provision Rates	Maximum Permissible Parking	
Residential Use				
- 1-bedroom	158	1.0 space per dwelling	158	457
- 2-bedroom	220	1.2 spaces per dwelling	264	
- 3-bedroom	44	1.5 spaces per dwelling	66	
- Subtotal (residential tenants only)	422	-	488	
- Visitors	-	0.25 spaces per dwelling	106	14 [§]
Non-Residential Use				
- Retail (shop)	1,500m ²	4 spaces per 100m ²	60	30 [§]
Total Permissible			654	501

§ - It is proposed to provide a total of 44 car parking spaces to be shared between retail use and the residential visitors. This includes two car share spaces.

The SOP Masterplan 2030 permits a maximum of 488 car parking spaces to be provided for the residential use plus a maximum of 106 car parking spaces for the residential visitors. In addition, SOP Masterplan 2030 permits a maximum of 60 car parking spaces to be provided for the retail use. In total, a maximum of 654 car parking spaces is permissible under the provision of the SOP Masterplan 2030.

It is proposed to provide 457 car parking spaces to be allocated to the residential tenants. This proposed provision for the residential tenants is less than the maximum permissible parking provision, therefore the proposed parking is satisfactory.

Separately, it is proposed to provide a total of 44 car parking spaces (including two car share spaces) on the upper basement car parking level (Level 00) to be shared between the retail use and residential visitors. This is also considered to be acceptable for reasons discussed below.

It is noted that the masterplan stipulates visitor parking to be provided at a rate of 0.25 spaces per one dwelling. This is considered to be excessively high given that the site is well serviced by public transport services and that the subject site is surrounded by numerous public car parking stations (available 24/7) that otherwise would not be well used during non-event days.

Separately, the proposed development includes parking spaces to serve the proposed retail use on the site. It would be logical to make these retail parking spaces available for use by visitors to

residential tenants living on the site. The nature of the proposed retail use on site is generally a low scale shop serving the local community for supply of general provision. This usage is not expected to require or utilise the full parking provision as it is anticipated that the majority of custom would be from walk in pedestrians from the surrounding developments including workers working in nearby commercial developments.

In relation to visitor car parking provisions in residential developments at elsewhere, it is noted that for similar developments located in similar locations, the requirement can be significantly less. For example, within the Rhodes Peninsula, the City of Canada Bay requires a minimum provision rate of one space per 20 dwellings to a maximum provision of one space per 10 dwellings. Similarly, the City of Sydney specified a visitor parking provision rate of one space per 10 dwellings. In addition, it is noted that Hurstville City Council did not object to a recent proposal to reduce their DCP specified visitor parking rate of one space per four dwellings to one space per six dwellings.

In addition, the proposed reduction in visitor parking for the proposed development would encourage travel using more sustainable travel modes such as public transport. As indicated previously the subject site is very well serviced by public transport (including ferry services at Wentworth Point). As such, the reduced proposed parking is not expected to create any traffic and parking related issues.

In addition, reducing parking for visitors would not only be consistent with various State Government policies of reducing travel by private vehicles and encouraging other non-car travel modes, it would also be consistent with the stated planning principles contained with the Sydney Olympic Park Masterplan 2030.

The relevant planning principles articulated in the SOP Masterplan 2030 include:

- *limiting the provision of parking spaces for new developments to encourage public transport use*
- *continuing the operation of high quality major event public transport services to sustain existing high public transport mode shares, and*
- *spreading the commuter peak hours and promoting public and shared private commuter transport as alternatives to private motor cars.*

The SOP Masterplan 2030 continues to state that parking effectiveness may be improved by:

- *ensuring dedicated major event car and coach parking areas are utilised during non-event periods*
- *managing parking provision to promote alternative forms of transport*
- *managing car parks for complementary uses, for example, office parking during the day and event parking at night*
- *creating more convenient and accessible parking for daily use, particularly to serve the Showground and Central Precincts*
- *managing and redistributing existing public car parking supply to more effectively meet new land use requirements.*

By limiting the number of parking spaces for residential visitors, it would encourage greater use of public transport for accessing the site thus ensuring the continuing viability of the existing and future public transport network.

Restricting provision of car parking spaces for residential visitors will also ensure increased patronage of public car parks located within Sydney Olympic Park, which are not typically in demand during non-event periods.

In addition, the SOP Masterplan 2030 also aspires to achieve a bicycle/pedestrian mode share split of 10 per cent. This aspirational goal is reflected in the required bicycle parking provisions for residential visitors of 0.25 bicycle parking spaces per dwelling. It is noted that the City of Sydney requires only 0.1 bicycle parking spaces per dwelling for residential visitors.

As such, the proposed reduction in visitor car parking would assist with achieving the SOP Masterplan 2030 aspired bicycle/pedestrian modal split for of 10 per cent.

Overall, it is considered the proposed car parking provision for the proposed development would not create any adverse parking impacts.

5.2 SEPP 65

In addition, it is noted that the recent SEPP 65 amendment states that a development application cannot be refused on car parking grounds "if the car parking for the building will be equal to, or greater than, the recommended minimum amount of car parking specified in Part 3J of the *Apartment Design Guide*".

Part 3J of the Apartment Design Guide states:

"For development... on sites that are within 800 metres of a railway station... the minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less".

In this regards, the subject is located within 800m walking distance to the Olympic Park Railway Station. Table 5.2 provides an assessment of parking requirements using parking provisional for residents and visitors set out in the *Guide to Traffic Generating Developments*.

Table 5.2: RMS Guide to Traffic Generating Developments Car Parking Requirements

Unit Type	No. of Units/ GFA	RMS Minimum Car Parking Requirements	
		Provision Rates	Required Parking
Residential Use			
- 1-bedroom	158	0.6 space per dwelling	95
- 2-bedroom	220	0.9 spaces per dwelling	198
- 3-bedroom	44	1.4 spaces per dwelling	62
- Subtotal (residential tenants only)	422	-	355
- Visitors	-	0.2 spaces per dwelling	84
Total Requirement			439

From Table 5.2, it can be the RMS guidelines require a minimum of 439 car parking spaces to be provided. In the previous section, the local prescribed parking requirement was determined to be 594 car parking spaces. Therefore, Part 3J of the Apartment Design Guide recommended minimum parking provision is 439 car parking spaces.

As indicated in the previous section of this report, it is proposed to provide 471 car parking spaces for the use by residential tenants and visitors. In addition, the proposed 30 retail parking spaces would also be shared with the residential visitors.

From the above, the proposed parking provision for the proposed development complies with SEPP 65 parking requirements.

5.3 Accessible Car Parking Spaces

As indicated previously, it is proposed to provide a total of 501 car parking spaces to serve the proposed development. This proposed car parking provision includes 48 accessible car parking spaces and is made up as follow:

- 43 accessible car parking spaces for the 43 proposed adaptable apartments, and
- five accessible car parking spaces for use by residential visitors and retail customers.

The proposed five accessible spaces represent more than 10 per cent of the total car parking provision for the residential visitor and retail customers.

From the above, the proposed provision of accessible car parking spaces is satisfactory.

5.4 Bicycle Parking Provision

SOP Masterplan 2030 also stipulates bicycle parking provision rates for different land uses. These are presented in Table 5.3.

Table 5.3: Bicycle Parking Requirements

Unit Type	No. of Units/ GFA	Masterplan 2030 Minimum Permissible Parking	
		Provision Rates	Required Parking
Residential Use			
- 1-bedroom	158	1.0 space per dwelling	158
- 2-bedroom	220	1.2 spaces per dwelling	264
- 3-bedroom	44	1.5 spaces per dwelling	66
- Subtotal (tenants only)	422	-	488
- Visitors	-	0.25 spaces per dwelling	106
Non-Residential Use			
- Retail (supermarket)	1,500m ²	1 spaces per 150m ²	10
Total Requirement			604

The SOP Master 2030 requires the following bicycle parking provision:

- residential tenants – 488 bicycle parking spaces
- residential visitors – 106 bicycle parking spaces
- retail use – 10 bicycle parking spaces.

It is proposed to provide 488 bicycle parking spaces for residential tenants and 116 bicycle parking spaces for visitors including retail use. The bicycle parking spaces are proposed to be provided in compliance with Australian Standard AS2890.3:1993 as follow:

- residential tenants – Class 2 bicycle racks located within a lockable communal area where the bicycle racks are 1.2m centre to centre (or 0.9m off walls/obstructions) and 1.7m long with an aisle width of 1.5m, and
- residential/retail visitors – Class 3 bicycle racks at 1.2m centre to centre (or 0.9m off walls/obstructions) and 1.7m long with an aisle width of 1.5m.

5.5 Motorcycle Parking Provision

The SOP Masterplan 2030 does not have any specific requirement for the provision of motorcycle parking spaces. However, parking for motorcycles is typically provided at a rate equivalent to five per cent of the car parking provision. In this case, a total of 25 motorcycle parking spaces would be required.

It is proposed to provide 25 motorcycle parking spaces. It is proposed to provide the motorcycle parking spaces in compliant with the Australian Standard i.e. 2.5m long by 1.2m wide.

For efficiency reasons, the motorcycle spaces will be located in residual areas of the car park.

5.6 Car Share Parking Spaces

Car share is a concept by which members join a car ownership club, choose a rate plan and pay an annual fee. The fees cover fuel, insurance, maintenance, and cleaning. The vehicles are mostly sedans, but also include SUVs and station wagons. Each vehicle has a home location, referred to as a "pod", either in a parking lot or on a street, typically in a highly-populated urban neighbourhood. Members reserve a car by web or telephone and use a key card to access the vehicle.

Similarly located councils (i.e. City of Canada Bay Council) have reported that "*each share car replaces between 8 and 23 private car parking spaces, depending on the location of the development*". Consequently, provision of car share in the site should be able to reduce both the parking demand for the site and the traffic generated by it.

There are numerous examples in Sydney, and elsewhere in Australia, where one of the main operators, GoGet, has provided car share cars to reduce the environmental impact of the development (<http://www.goget.com.au/developer-partners/>) some of which are listed below:

- Central Park Sydney, Chippendale NSW – 2,100 apartments with 2,000 car parking spaces with approximately 70 GoGet on-site pods
- Trio Apartments, Camperdown NSW – 397 apartments with 355 parking spaces and approximately 10 GoGet on-site pods
- Belvedere Apartments, North Sydney NSW – 195 apartments with 140 parking spaces and three GoGet on-site pods.

Clearly, the subject site would be an ideal location for the introduction of similar car share spaces.

The SOP Masterplan 2030 does not have any specific requirement for the provision of car share parking spaces.

However, it is proposed to provide two dedicated car parking spaces to a commercially operated car sharing scheme. These spaces would be located within the shared retail/residential visitor car park. Alternatively, the car share spaces could be located on Figtree Drive which would be subject to approval from SOPA and/or Auburn City Council.

This would provide positive benefits in terms of encourage more sustainable travel modes.

5.7 Internal Car Park Arrangement

As indicated previously, a combined three-level basement car park is proposed to serve the proposed development. The basement car park would be accessed from a new access road off Figtree Drive.

The upper basement car park level (Level 00) would comprise of two distinct parking areas – one for residential tenants and one for the combined retail/residential visitor car park. The residential tenant parking spaces would be segregated and secured from the retail/residential visitor car park by way of a permeable shutter gate operated by remote control.

On this level, the retail/residential visitor car park would comprise of three north-south parking aisles with the most eastern aisle being approximately half the length of the other two. The middle aisle would connect to the entry ramp from the external street.

The residential car parking spaces on the upper basement level would be located along a single east-west parking aisle adjacent to Figtree Drive. Access from the external street to the residential car park would be via the middle aisle inside the retail/residential visitor car park.

On Basement Level B1, the car parking aisles are generally aligned in a north-south direction, except for the parking aisles located beneath the retail area which are aligned in an east-west direction. Basement Level B1 contains only residential parking spaces.

On Basement Level B2 which only occupies the western half of the site contains parking aisles aligned in the north-south direction. Basement Level B2 also contains only residential parking spaces.

Each basement level would be formed as two split levels with a difference in level of 0.9m between the northern and southern halves of the car park. A 1.0m upstand is proposed along the interface between the two split levels.

Floor to floor ramps would be located on the north western corner of the site. These have been designed with a maximum grade of 1:4 with 3.0m long transitions of 1:8 at either end. Swept path analysis (see Appendix C) demonstrates that Australian Standard B99 vehicles can circulate on the ramp without encroaching into structures/obstructions. Two B99 vehicles can use the ramps simultaneously without overlapping each other.

All residential tenant and visitor parking spaces are designed to have minimum dimensions of 2.4m wide by 5.4m long with a 5.8m wide aisle. Retail car parking spaces are designed to have dimensions of 2.7m wide by 5.4m long with a 6.2m wide aisle. All accessible parking spaces are proposed to be provided to comply with the design requirements set out in either AS2890.6 (which requires 2.4m wide parking spaces with a 2.4m wide shared area).

The proposed car parking areas and associated elements are proposed to be designed in accordance with the relevant Australian Standard for car parking facilities, namely AS2890.1:2004, AS2890.2:2002, AS2890.3:1993 and AS2890.6:2009.

6. Transport Assessment

6.1 Residential Trips

Roads and Maritime Services has released a Technical Direction TDT2013/04 providing an updated trip generation and parking requirement rates for various land uses to replace the suggested rates in their Guide to Traffic Generating Developments.

In relation to high density residential developments similar to the proposed development, the Technical Direction indicates that the average person trip rate in the Sydney metropolitan area in the morning peak period was 0.66 person trips per hour per unit.

Therefore, the residential component of the development accommodating 422 apartments would generate approximately 280 person trips per peak hour.

The Bureau of Transport Statistics indicates that based on 2011 Journey to Work (JTW) data the mode shares for employed residents living in Chatswood and St Leonards¹ are as follows:

- Vehicle driver/passenger – 45%
- Train – 33%
- Bus – 7%
- Walk – 13%
- Other – 2%.

Therefore, from the above the residential use would generate approximately 92 train trips per hour and 20 bus trips per hour. In addition, there would be approximately 36 pedestrian trips per hour.

It is noted that the above mode shares for public transport are generally consistent with the modal split aspirations contained in the SOP Masterplan 2030 (40 per cent to public transport mode share split for journey to work trips and 10 per cent for walk/cycle trips).

6.2 Retail Trips

In relation to retail use, the RMS Technical Direction only provides trip rates for major shopping centres. The retail component of the proposed development is envisaged to be occupied by a low scale local shop serving the local community. This type of retail is unlikely to generate trips (vehicle or otherwise) at the scale of a major shopping centre.

As such, the proposed retail use would generate predominantly pedestrian trips i.e. residents and workers from nearby developments walking to the store. There would be negligible trips by public transport for accessing the retail use, in particular during the peak periods.

It is estimated that the proposed retail use could generate up to 50 pedestrian trips per hour.

¹ In the 2011 census, Sydney Olympic Park had a population of approximately 4,400 residents generating approximately 2,300 "journey to work" trips. This is considered to be a relatively small sample size and may not provide an accurate representation of future travel patterns in the area. This contrasts greatly to Chatswood and St Leonards where the 2011 combined population was approximately 35,700 residents generating 17,200 "journey to work" trips. In addition, current travel patterns at these two suburbs are similarly to those aspired by the sites within the Sydney Olympic Park.

6.3 Transport Impacts

The expected public transport and pedestrian trips are presented in Table 6.1.

Table 6.1: Estimated Public Transport and Pedestrian Trips

Land Uses	Train	Bus	Pedestrian	Total
Residential	92	20	36	148
Retail	0	0	50	50
Total	92	20	86	198

In summary, the proposed development would generate approximately 92 train trips per peak hour, approximately 20 bus trips per peak hour and 86 pedestrian trips per hour. It is noted these are two way trips.

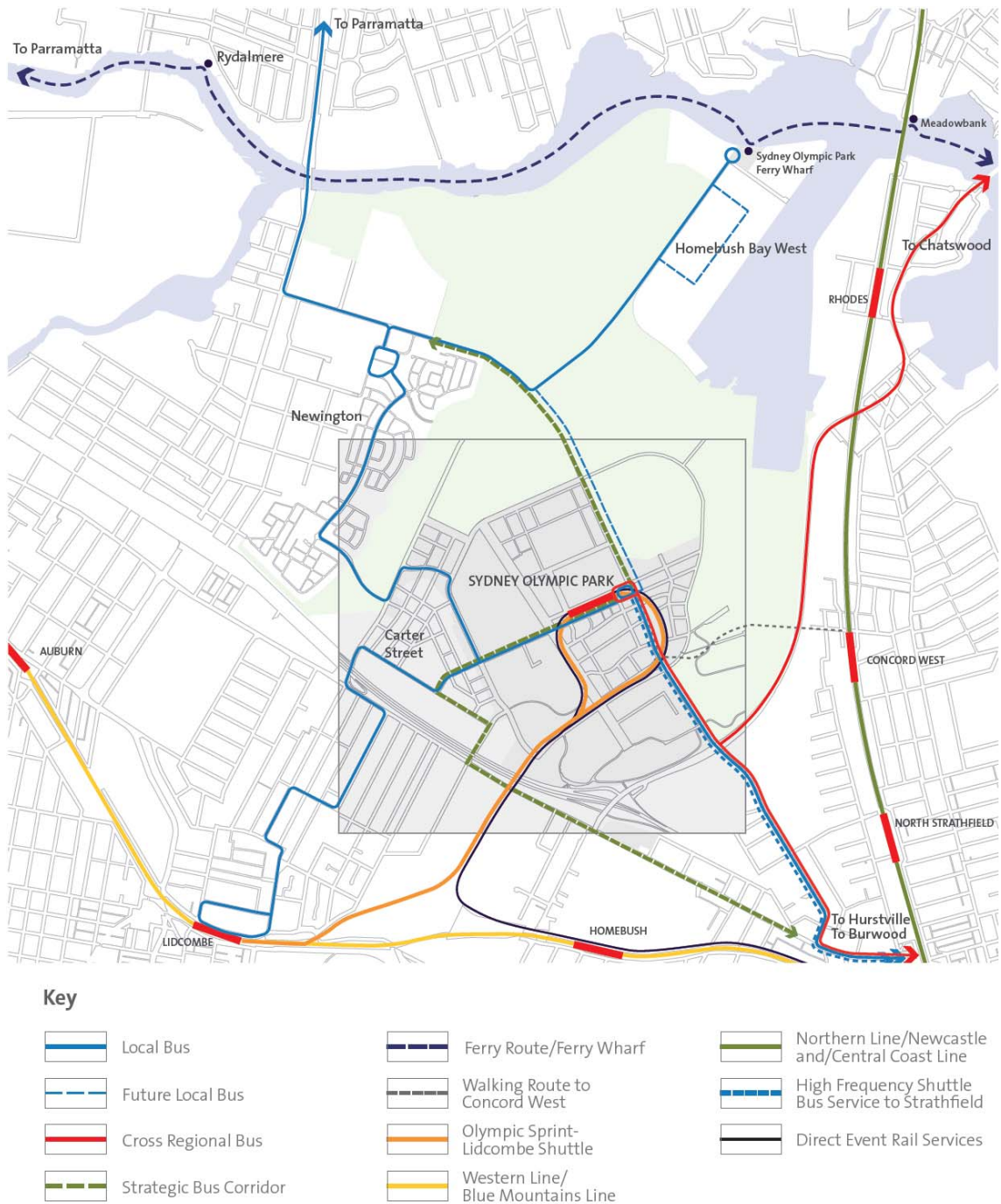
It is expected existing infrastructure would have adequate capacity to accompany this moderate demands in public transport, pedestrian trips.

The SOP Masterplan 2030 outlines, in part, the following potential improvements to public transport:

- increasing the frequency of bus, rail and ferry services
- establishing Strategic Bus Corridor 13 between Parramatta and Burwood that travels via Sydney Olympic Park and the adjacent suburbs of Carter Street and Newington
- establishing bus service corridors on the key axes of Dawn Fraser Avenue and Australia Avenue
- providing bus priority on routes into Sydney Olympic Park, and
- improving transport information and marketing programs.

The above and other potential upgrades are presented in a figure contained in SOP Masterplan 2030 and is reproduced as Figure 6.1 in this report.

Figure 6.1: Public Transport Potential Upgrades



Source: Sydney Olympic Park Masterplan 2030

In addition, the SOP Masterplan 2030 also notes that pedestrian and cycling networks would also be improved. These include provision of cycleways and on-road cycle lanes within Sydney Olympic Park including those along Australia Avenue and Sarah Durack Avenue in the vicinity of the site, as well as a shared pedestrian and cycle path along Olympic Boulevard.

In the light of the above, in the future it is not expected that the proposed development would generate any noticeable negative impacts on the public transport system or the pedestrian network.

7. Green Travel Plan

7.1 Introduction

It is expected that any approval of the proposed development would include a consent conditions requiring a green travel plan to be prepared to promote sustainable travel. As such, a green travel plan applicable to residential tenants living on the site would be prepared prior to the occupation of the development. The section below provides a framework for the implementation of such a travel plan.

Transport is a necessary part of life, but it has economic, public health and environmental consequences. The transport sector is one of the fastest growing emissions sectors in Australia, and therefore is one of the key opportunities for reducing greenhouse gases. As well as delivering better environmental outcomes, providing a range of travel choices with a focus on walking, cycling and public transport will have major public health benefits and will ensure a strong and prosperous community.

The physical infrastructure being provided as part of the development is only part of the solution. A green travel plan will ensure that the transport infrastructure, services and policies both within and external to the site are tailored to the users and co-ordinated to achieve the most sustainable outcome possible.

7.2 What is a Green Travel Plan?

A green travel plan 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', but will encourage and support people's aspirations for carrying out their daily business in a more sustainable way. Travel plans can provide both:

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

The travel plan would promote the use of transport, other than the private car, provide choice for travel to and from the site (for both residential tenants and employees living and working on the site), which is more sustainable and environmentally friendly.

Indeed, there are a range of "non-car" transport options that are available at the site which have been described in this report.

7.3 Key Objectives

The aim of the green travel plan is to bring about better transport arrangements for residents living on the site. The key objectives of the Travel Plan are:

- to encourage walking
- to encourage cycling
- to encourage the use of public transport
- to reduce the use of the car, in particular single car occupancy
- where it is necessary to use the car, encourage more efficient use.

It is the intention therefore that the travel plan will deliver the following benefits:

- enable higher mode share targets to be achieved
- contribute to greenhouse gas emission reductions and carbon footprint minimisation
- contribute to healthy living for all
- contribute to social equity and reduction in social exclusion
- improve knowledge and contribute to learning.

Green travel plans are historically the most common type of travel plan in the UK and the USA as regular journeys such as the daily commute to work tend to be the easiest to influence.

It is difficult at this stage without knowing the demographic profile of occupants to prepare a detailed green travel plan. It would be reasonable for a condition to be imposed on a development consent which would ask the developer to design and implement a plan prior to occupation of the site and Mirvac (and any future owners of the buildings) will commit to providing such a travel plan.

7.4 Site Specific Measures

As stated earlier, it is difficult to be specific about the measures that might be introduced until the demographics of the occupants are fully understood.

However, it is likely that the travel plan at this site could include the following measures:

- compliance with the stringent parking controls applicable to the site
- creation of street networks and associated cycle ways, footpaths and links to encourage cycling and walking
- provision of a travel access guide (an example of such a TAG provided by Mirvac at Harold Park is contained in Appendix D) – this would be given to every new occupant of the dwellings and employees (this information will need to be updated prior to occupation to ensure that the most up to date information is available to new residents/staff)
- public transport information boards to make residents/staff and visitors more aware of the alternative transport options available (the format of such information boards would be based upon the travel access guide)
- in accordance with NBN requirements, all properties will be provided with high quality telecommunication points which will provide residents with the opportunity to work from home thus reducing the need to travel
- provision of bicycle parking spaces both for residents/staff and for visitors to the site, and
- car share operators making available marketing materials for car share scheme during the occupancy of building.

All of these measures would need to be in place from 'Day One' as people will establish habits of a lifetime from day one.

It is noted that SOP Masterplan 2030 aspires to have a target for non-car mode share of 40 per cent for journey top work trips. The masterplan also aspires to have a bicycle/pedestrian mode share split of 10 per cent. In addition, the masterplan would limit the provision of on-site parking for future developments to encourage greater use of public transport and reduce reliance on private vehicle use in particular for trips less than 5km. The above travel plan measures would assist with realising the above aspirational mode share splits and sustainable transport objectives.

This framework for a travel plan would form the basis of the formal document to be developed prior to the occupation of the finished buildings. Future building owners will also make a commitment in how the plan will be practically managed.

7.5 Travel Access Guide

A travel access guide (TAG) provides information to residents 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 showing the site location and nearby transport nodes highlighting available pedestrian and cycle routes. The information is usually presented as a brochure to be included in a welcome pack or on the back of company stationery and business cards.

7.6 Summary

Future building owners/managers should be required to develop and utilise a travel plan to increase the use of sustainable transport by the tenants living in the development. Although it is difficult to predict what measures might be achievable until the building is occupied, the above measures provide a framework for the development and implementation of a future travel plan for the site.

It is considered that it is appropriate that any development consent is conditioned to ensure that a travel plan is implemented prior to occupation of the development.

8. Summary and Conclusion

This report examines the traffic and transport implications of a proposed mixed use development at Site 53, 2 Figtree Drive, Sydney Olympic Park. The subject site is part of the Central Precinct under the Sydney Olympic Park Masterplan 2030.

The proposed development comprises four new buildings accommodating 422 residential apartments with approximately 1,500m² of retail floor areas. The retail use would comprise a single retail tenancy accommodating a low scale shop serving the local community and would generate walk-in customers from residents living and workers working in nearby developments including the subject proposed development.

The proposed development would be served by a three-level car park with vehicular driveway directly off a new access street from Figtree Drive.

The salient findings are:

- The subject site is located within walking distances to existing public transport services and other amenities and services.
- The site is well serviced by public transport.
- The existing use on the site has been estimated to generate at least 74 vph.
- The proposed development is expected to generate approximately 111 vph using traffic generation rates provided by RMS. As such, the net additional traffic is 37 vph.
- A new access road is proposed to be located on the western side of the site and would connect to Figtree Drive consistent with the SOP Masterplan 2030.
- Vehicle access to the proposed development would be located on this new access road.
- Intersections in the vicinity of the subject site would be upgraded, by other, to accommodate future traffic arising from the redevelopment of Sydney Olympic Park site, including Site 53, as envisaged in SOP Masterplan 2030.
- From a traffic perspective, the proposed development is not expected to create any adverse traffic and transport issues with the Sydney Olympic Park town centre operating in major event mode.
- An assessment of parking requirement against the SOP Masterplan 2030, the proposed development is permitted to provide a maximum of 654 car parking spaces. It is proposed to provide 501 car parking spaces. The proposed parking is therefore satisfactory.
- It is noted that the proposed parking provision also complies with SEPP 65 parking requirements.
- The proposed development is required to provide 604 bicycle parking spaces. It is proposed to comply with this requirement.
- The design of car and bicycle parking spaces and loading bays are proposed to comply with design requirements set out in the relevant Australian Standard.
- The proposed development would generate approximately 92 train trips per peak hour, approximately 20 bus trips per peak hour and 86 pedestrian trips per hour. These would be accommodated by existing infrastructures.
- A green travel plan would be prepared and implemented before the occupation of the development. The green travel plan would include site specific measures to achieve mode share splits aspired in SOP Masterplan 2030.

Overall, it is concluded that the traffic and transport aspects of the proposed development would be satisfactory.

Appendix A

Architectural Basement Car Park Layout Plans

ISSUE	DATE	FOR
A	27/05/2015	Coordination Issue
B	26/06/2015	Coordination Issue
C	16/07/2015	Coordination Issue

CONSULTANT

URBIS
TEL 02 8233 7621
CONSULTANT

BG&E
TEL 02 9770 3300
CONSULTANT

JHA
TEL 02 9437 1000
CONSULTANT

STEENSEN VARMING
TEL 02 9967 2200
PROJECT MANAGER

MIRVAC DESIGN
TEL 2 9080 8785
CLIENT

MIRVAC
CLIENT NUMBER

MIRVAC
PROJECT

2 FIG TREE DRIVE
SYDNEY OLYMPIC PARK
BVN PROJECT NUMBER

S1502006
DRAWING KEY

PROJECT NORTH TRUE NORTH

SCALE @ A1
1:200 DO NOT SCALE

DRAWING

**LEVEL 00
BVN SKETCH
06/08/2015**



R - PARKING SCHEDULE

Type	Quantity
LEVEL 00	
2400 x 5400mm	56
2400 x 5400mm Disabled	9
2700 x 5400mm	37
2700 x 5400mm Car Sharing	2
2700 x 5400mm Disabled	5
Motorcycle 1200 x 2500	5
LEVEL B1	
2300 x 5000mm SMALL	2
2400 x 5400mm	153
2400 x 5400mm Tandem	4
2400 x 5400mm Disabled	22
2400 x 5400mm	24
2700 x 5400mm Disabled	4
Motorcycle 1200 x 2500	10
LEVEL B2	
2300 x 5000mm SMALL	2
2400 x 5400mm	145
2400 x 5400mm Tandem	4
2400 x 5400mm Disabled	6
2700 x 5400mm	25
2700 x 5400mm Disabled	2
Motorcycle 1200 x 2500	10