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Dear Brett

Modification to SSD 7662 - Traffic Statement – Site 53, Figtree Drive, Sydney Olympic Park

ptc. has been engaged by Mirvac Design to provide a traffic statement to accompany the Modification to SSD 7662 application for the proposed development at Site 53, Figtree Drive, Sydney Olympic Park.

The Modification to SSD 7662 application will seek to reduce the number of apartments from 705 (as approved for the development) to 698, with a revised apartment split as follows:

- 275 x one bedroom apartments
- 328 x two bedroom apartments
- 94 x three bedroom apartments
- 1 x four bedroom apartments

This traffic assessment outlines the effect these proposed changes could have on the parking and traffic factors of the development.

1. Revised Parking Provision Assessment

1.1 Approved Parking Provision

The approved development will provided 730 spaces for residential, visitor, retail and car share and the Modification to SSD 7662 application proposes no reduction in the car parking provision of the development.

The residential portion of the car park has been provided in accordance with SEPP 65 with an approved reduction in visitor spaces from a rate of 0.2 spaces per unit to 0.1 spaces per unit, as shown in Table 1:

Table 1 – Approved Proposed Car Parking Provision

User Type	Units		Parking Provision Rate Applied	Parking Allocation
One-bedroom unit	279	@	0.6 spaces per unit	167 (167.4)
Two-bedroom unit	334	@	1.0 spaces per unit	334
Three bedroom unit	91	@	1.67 spaces per unit	152
Four bedroom unit	1	@	1.67 spaces per unit	2 (1.67)
Combined Visitors	705	@	0.1 spaces per unit	71
Car Share				4
Provided Spaces				**730**

1.2 Modification to SSD 7662 Parking Provision

The reduction in residential units and therefore the reduction in required residential parking will provide the revised parking provision, as shown in Table 2:

Table 2 – Modification to SSD 7662 Proposed Car Parking Provision (utilising the approved provision rate)

User Type	Units		Parking Provision Rate Applied	Parking Allocation
One-bedroom unit	275	@	0.6 spaces per unit	165
Two-bedroom unit	328	@	1.0 spaces per unit	328
Three bedroom unit	94	@	1.67 spaces per unit	157 (156.98)
Four bedroom unit	1	@	1.67 spaces per unit	2 (1.67)
Combined Visitors	698	@	0.1 spaces per unit	70 (69.8)
Car Share				4
Required Spaces				**726**
Provided Spaces				**730**

The additional four spaces provided will be allocated as additional spaces for the 3 bedroom units, therefore increasing the parking provision rate applied to 1.71 spaces per unit.

The modified parking provision (with the modified provision rate) is shown in Table 3.

Table 3 – Modification to SSD 7662 Proposed Car Parking Provision (modified provision rate)

User Type	Units		Parking Provision Rate Applied	Parking Allocation
One-bedroom unit	275	@	0.6 spaces per unit	165
Two-bedroom unit	328	@	1.0 spaces per unit	328
Three bedroom unit	94	@	1.71 spaces per unit	161 (160.7)
Four bedroom unit	1	@	1.67 spaces per unit	2 (1.67)
Combined Visitors	698	@	0.1 spaces per unit	70 (69.8)
Car Share				4
Provided Spaces				**730**

2. Revised Bicycle Parking Provision Assessment

2.1 Planning Policy Requirement – Bicycle Parking

The bicycle parking requirements relating to new developments with in Olympic Park are presented in Table 4.12, in the Sydney Olympic Park Master Plan 2030.

The bicycle parking rates are presented as a minimum provision in line with the SOPA planning principle of "promoting access and travel by public transport, walking and cycling".

The masterplan specifies the following minimum bicycle parking requirements;

- Residential use
  - One bedroom units - 1 space per unit
  - Two bedroom units - 1.2 spaces per unit
  - Three bedroom units - 1.5 spaces per unit
  - Four bedroom units - 2 spaces per unit
  - Visitors - 0.25 spaces per unit
- Retail use
  - Permanent spaces – 1 space per 150m2
  - Visitor spaces - 1 space per 75m2

2.2 Approved Bicycle Parking

The approved bicycle parking provision is as shown in Table 4:

Table 4 – Bicycle Parking Provision

Use Type			Parking provision Rate	Required Spaces	Allocated Spaces
One-bedroom unit	279	@	1.0 spaces per unit	276	
Two-bedroom unit	334	@	1.2 spaces per unit	395 (394.8)	
Three bedroom unit	91	@	1.5 spaces per unit	141	995
Four bedroom unit	1	@	2 spaces per unit	2	
Visitors	705	@	0.25 spaces per unit	176 (176.25)	
Retail - permanent	1500m^2	@	1 space per 150m^2	10	10
Retail - visitors	1500m^2	@	1 space per 75m^2	20	20
Required Spaces				**1025**	
Total On-Site Parking Spaces Provided					**1025**

2.3 Modification to SSD 7662 – Bicycle Parking

The reduction in residential units and therefore the reduction in required bicycle parking will provide the revised bicycle parking provision, as shown in Table 5:

Table 5 – Modification to SSD 7662 - Bicycle Parking Provision

Use Type			Parking provision Rate	Required Spaces	Allocated Spaces
One-bedroom unit	275	@	1.0 spaces per unit	275	
Two-bedroom unit	328	@	1.2 spaces per unit	394 (393.6)	
Three bedroom unit	94	@	1.5 spaces per unit	141	987
Four bedroom unit	1	@	2 spaces per unit	2	
Visitors	698	@	0.25 spaces per unit	175 (174.5)	
Retail - permanent	1500m^2	@	1 space per 150m^2	10	10
Retail - visitors	1500m^2	@	1 space per 75m^2	20	20
Required Spaces				**1017**	
Total On-Site Parking Spaces Provided					**1017**

The proposed provision of 1017 spaces, meets the minimum required bicycle parking by the Sydney Olympic Park Masterplan 2030.

3. Revised Traffic Generation Assessment

The traffic generation for the development has been calculated on a trip per car space basis and the Modification to SSD 7662 does not seek to change the parking space provision and therefore the traffic generation assessment remains the same as the assessment for the approved development.

4. Revised Car Park Assessment

The four basement car park will serve both residential and retail components and in accordance with Table 1.1 of AS2890.1, the car park accommodates both Class 1A and Class 3 user class facilities. The development also includes provision for Service Vehicle access (Medium Rigid Vehicles) and this provision has been assessed with reference to AS2890.2.

An assessment of the principal component of the car park and the requirements of the standards are presented in the following table.

Component	Requirement	Provided	Compliance	Notes
Class 1A – Residential, domestic and employee parking				
Space Length	5.4m	5.4m	✓	
Space Width	2.4m	2.4m	✓	
Aisle Width	5.8m	5.8m (min)	✓	
Class 3 – Short term city and town centre parking				
Space Length	5.4m	5.4m	✓	
Space Width	2.6m	2.6m	✓	
Aisle Width	5.8m	5.8m (min)	✓	
Small Car Parking				
Space Length	5.0m	5.0m	✓	
Space Width	2.3m	2.3m	✓	
Aisle Width	5.8m	5.8m (min)	✓	
Accessible Parking				
Space Length	5.4m	5.4m	✓	
Space Width	2.4m	2.4m	✓	
Shared Area Dimension	2.4m x 5.4m (with bollard)	2.4m x 5.4m (with bollard	✓	
Aisle Width	5.8m	5.8m (min)	✓	
Height Clearance (including shared bay)	2.5m	2.5m	✓	
Motorcycle Parking				
Space Length	2.5m	2.5m	✓	
Space Width	1.2m	1.2m	✓	

Bicycle Parking – Horizontal Space				
Space Length	1.8m	1.8m	✓	See Note 1
Space Width	0.5m (static space) 0.4m (dynamic space)	0.4m	✓	See Note 1
Bicycle Parking – Vertical Space				
Space Length	1.2m	1.2m	✓	
Space Width	0.5m	0.5m	✓	
Ramps				
Ramp Grade	Max 1:6.5	1:7	✓	
Max. Transition	1:16 over 7.0m	1:16 over 7.0m	✓	
Driveway Width	Min. 9.0m	10.0m	✓	
Roadway Width	Min. 7.1m	7.3m	✓	
General Parking Requirements				
Aisle End Treatment	1m extension	1m (minimum)	✓	
Door opening	300mm	300mm	✓	
Typical Height Clearance	2.2m	2.2m	✓	
Miscellaneous				
Loading Docks	8.5m x 3.5m, to accommodate and MRV, access assessed by swept paths analysis. Headroom 4.0m. (See Note 2)			

Note 1: Horizontal Bicycle Spaces

The horizontal bicycle parking design has been based on the "Arc Horizontal Staggered" dynamic system.

The Arc has been designed to provide an easy lift system for riders who have trouble lifting their bikes. The system is built on a mild steel base with an aluminium arc and allows 2 bikes to be stack on top of each other. The Arc can also be staggered to accommodate bikes parked side by side.

An example of this system is shown in Figure 1.

Figure 1 - Arc Staggered System

In regards to Dynamic Bicycle Parking Devices (BPD), it is noted that Clause 3.3 states that such spaces may be able to provide a reduced effective bicycle spacing envelope width of 400mm, provided that the following conditions are met:

- Where the handlebars of parked bicycles are not in alignment. This may be achieved in several ways, such as offsetting the horizontal or vertical position of adjacent bikes by a minimum of 300mm, or allowing head to tail parking;
- Where the minimum bicycle spacing envelope width of 500mm can be created in order for cyclist to access and lock their bicycle; and
- Where the user is required to move adjacent bicycles in order to create the minimum bicycle spacing envelope of 500mm, no more than 8 bicycles shall be required to be moved by the user.

Considering that the proposed bicycle racks satisfy the conditions above, they are considered to be compliant with Australian Standards. Moreover, the proposed systems also meet the intent of the standards based on a performance assessment and are fit for use.

Note 2: Loading Dock Headroom

An assessment of refuse vehicle specifications corresponding to this length of vehicle has been undertaken as follows:

- SITA Rear Lift: Overall Length – 8.0 metres, Overall Width – 2.5 metres, Height (in operation) – 3.4 metres.
- Veolia Rear Lift 4x2: Overall Length – 8.65 metres, Overall Width – 2.2 metres, Max Height – 3.04 metres.
- ACCO 2350 G 4x2: Overall Length – 8.13 metres, Overall Width – 2.48 metres, Max Height – 3.44 metres.

Based on this assessment, the likely maximum height of a refuse vehicle would be 3.44 metres and allowing for a 300mm tolerance for headroom, the proposed 4.0 metre clearance for vehicle access is adequate.

Further to this the loading area is to be used by Medium Rigid Vehicles (MRV) servicing the retail spaces and providing removalist services for the residents.

Typical heights for vehicles undertaking these operations are as follows:

- Hino 700 Series - Length – 8.7 metres, Width – 2.49 metres, Height– 3.05 metres.
- Iveco Acco 4x2 - Length – 8.45 metres, Width – 2.18 metres, Cab Height– 2.69 metres.
- Isuzu FRD LWB - Length – 8.6 metres, Width – 2.17 metres, Cab Height– 2.59 metres.

Allowing for a typical additional body height of 1 metre, to the cab height dimension and a 300mm tolerance, the typical vehicle heights fall below the proposed 4.0 metre headroom. In addition, height bar restrictions of 4.0 metres would be provided at the entrance to the loading area access and residents and retail space occupiers would be aware of the height restrictions and would be required to limit any delivery or removalist heights as such. Therefore, the provision of a 4.0 metre headroom does not impact of the serviceability of the development, given that there are a range of vehicles with a height of less than 4.0 metres that can service the development.

A loading dock management, supplemented by a 'Drivers Code of Conduction' can also be put in place to inform all users of the loading dock of the requirements of using the facility.

5. Conclusion

In conclusion, based on the above discussion, it is considered that the reduction in units from the approved 705 to the Modification to SSD 7662 application of 698, in terms of parking and traffic provisions, should have no detrimental effect on the development or the surrounding road network.

The revised car and bicycle parking provisions met the requirements of SEPP65 and the SOPA Masterplan and the parking layout meet the requirements of AS2890.1, AS2890.2, AS2890.3 and AS2890.6 or have been assessed on a performance basis and have been deemed fit for purpose.

Therefore, from a parking and traffic perspective, **ptc**. endorse the proposed change to the approved development.

Regards

Steve Wellman

Senior Traffic and Civil Engineer