

Star of the Sea College -STAR Centre: 80 Martin Street, Brighton





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APPENDIX A Swept Path Analysis



IMPACT[®] Snap Shot

Development Proposition			
Location	<u>37°53'49.1"S 144°59'47.1"E</u> 80 Martin Street, Brighton VIC 3186		
Use	STAR Centre - Science, Art & Study/Recreation Building No increase in staff or student population		
Car Parking	68 car parking spaces proposed including 2 x DDA spaces		
Bicycle Parking		12 bicycle parking spaces	
	Statutory	Controls	
Particular Provisions			
	Clause 52.06	- Car Parking	
Requirement vs Provision	No spaces required. 68	spaces provided	
Adequacy of Provision	The provision exceeds th	e requirement and is therefore deemed appropriate.	
Design	The proposed car parking layout has been assessed and determined to have satisfied the relevant design guidelines contained within the Australian Standard 2890.1:2004 and Clause 52.06 of the Planning Scheme.		
Clause 52.34 - Bicycle Facilities			
Requirement vs Provision No bicycle spaces required. 12 bicycle parking spaces provided.		ed. 12 bicycle parking spaces provided.	
Adequacy of Provision	The provision exceeds th acceptable.	e statutory requirement, and is therefore considered	
Design	Bicycle parking spaces h Scheme, Australian Stan	ave been designed in accordance with Planning dard and manufacturer requirements.	
	Traffic Con	siderations	
Traffic Generation	Between 34 - 46 trips in	any one hour.	
Traffic Impact	This level of traffic is cons perspective and will be r surrounding road netwo	sidered negligible from a traffic engineering eadily absorbed by Murphy Street and the rk.	
name inpaci	More relevant to the pro	posal is the operation of the access point.	
	outside of peak peridos	to this car park will require staff to activate the door	



using either a remote or key fob on entry, with exit possible via a detector loop installed on within the ramp.

An assessment of the likely queues and delay at the access point reveals an 85th%ile Queue of 1 vehicle (6 metres), with mean delay of 28 seconds expected.

The roller door / tilt door will be located at the bottom of the ramp allowing vehicles to prop within the site without affecting the movement of vehicles along Murphy Street.

Conclusion

- The proposed development satisfies relevant statutory requirements as they relate to the design of car parking and bicycle parking spaces.
- There are no traffic and transport grounds that should prohibit the issue of a permit.



2 Introduction

2.1 Engagement

IMPACT[®] have been engaged by PMDL-MEA on behalf of Star of the Sea College to undertake a Traffic and Transport Impact Assessment for the proposed STAR Centre building at Star of the Sea College, Brighton.

2.2 Scope of Engagement

This Traffic and Transport Impact Assessment has been prepared to accompany a town planning submission.

In preparing this assessment we have referenced the following:

- Development plans prepared PMDL-MEA (drawings TP131 & TP132 dated 22/03/2023);
- City of Bayside Planning Scheme, specifically:
 - o Clause 52.06 Car Parking
 - Clause 52.34 Bicycle Facilities
- Australian Standard AS2890.1:2004 Car Parking & AS2890.6 Parking for people with Disability.

3 Existing Conditions

3.1 Location

The main campus of Star of the Sea College is an asymmetrical parcel of land, bound to the north by Martin Street, to the west by Murphy Street, to the south by, St James Catholic Parish Primary School and residential properties to the east.

This main campus is complemented by the Kamesburgh Mansion located at 74 - 104 North Road, Brighton where Year 9 students undertake classes.

The proposed STAR Centre building is planned at the northwest corner of the main campus. The location of the proposed STAR Centre in the context of the main campus is illustrated at Figure 1.



Figure 1 Location of Subject Site



1 May 2023

3.2 Road Network

3.2.1 Martin Street

Martin Street is a local road aligned in an east-west direction. Along the site frontage, Martin Street accommodates a two-way carriageway allowing for one (1) lane of traffic in each direction, as well as a combined bicycle / parking lane on each side of the carriageway.

Short-term parking is permitted (P 2min 8:00am-9:00am, 3:00pm-4:00pm, School Days) on the south side along the site's frontage. A mix of unrestricted and 2P parking is permitted on the north side.

Its typical cross-section is illustrated in Figure 2.



Figure 2 Views of Martin Street facing east adjacent the subject site

Data from VicRoads Database reveals that Martin Street carries approximately 5,600 vehicles per day.

3.2.2 Murphy Street

Murphy Street is a local road aligned in a north-south direction. Along the site frontage, Murphy Street accommodates a two-way carriageway allowing for one (1) lane of traffic in each direction and kerbside parking on both sides of the carriageway.

A mixture of 2P and unrestricted parking is permitted along Murphy Street.

Its typical cross-section is illustrated in Figure 3.



Figure 3

Views of Murphy Street facing south adjacent the subject site



3.2.3 Exisiting Car Parking

It is understood that currently the subject site has a total of 17 car parking spaces (including one (1) DDA compliant space) specifically:

A1 Presentation Place
A2 Osbourne Close
Kine (9) car parking spaces (including a DDA compliant space)
Eight (8) car parking spaces

Impact® has been informed that all these existing car parking spaces are to be retained as part of this proposal.

The location of these car parking spaces can be seen below in Figure 4.



Figure 4 Existing Car Parking



4 Development Proposition

4.1 Use

It is proposed to demolish a number of the existing buildings on the subject site, and replace them with the STAR Centre, a purpose built three (3) storey building and associated basement level car park.

The STAR Centre is intended to be used for the purpose of science, art & study/recreation.

We understand that the STAR Centre will not induce an increase in the staff or student population at the campus.

4.2 Parking

4.2.1 Cars

Within the basement level, 68 car parking spaces are proposed including 2 x DDA compliant spaces. This car park is intended for use by staff only.

4.2.2 Bicycles

Bicycle parking for staff is to be provided within the basement.

A total of 12 bicycle spaces are planned.

4.3 Access Arrangements

4.3.1 Pedestrians

The design of the STAR Centre will bring a new pedestrian campus entry from Murphy Street, as well as enhance the existing pedestrian access from Martin Street.

4.3.2 Cyclists

Cyclists will access the bicycle parking bays either via the vehicular ramp on Murphy Street or via the lift provided within the building.

Cyclists using the lift will be able to arrive / depart from Murphy Street.

4.3.3 Vehicles

A ramped access to the basement level is planned from Murphy Street.

This access is designed as a two way ramp, and will require the existing single width crossover to Murphy Street to be modified to a double width crossover.

The access arrangements are illustrated in Figure 5.







Access Arrangements by Transport Mode



5 Statutory Controls

The relevant traffic and transportation Statutory Controls are:

Particular Provisions

- Clause 52.06 Car Parking
- Clause 52.34 Bicycle Facilities

5.1 Clause 52.06 - Car Parking

5.1.1 Purpose

The purpose of Clause 52.06 is:

- To ensure that car parking is provided in accordance with the Municipal Planning Strategy and Planning Policy Framework.
- To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.
- To support sustainable transport alternatives to the motor car.
- To promote the efficient use of car parking spaces through the consolidation of car parking facilities.
- To ensure that car parking does not adversely affect the amenity of the locality.
- To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.

5.1.2 Clause 52.06-01: Scope

Clause 52.06 applies to:

- a new use; or
- an increase in the floor area or site area of an existing use; or
- an increase to an existing use by the measure specified in Column C of Table 1 in Clause 52.06-5 for that use.

The proposal contemplates an increase in the floor area of an existing use, however, the applicable measures for Secondary Schools in relation to the assessment of car parking is employee numbers.

As noted earlier in this report, we understand that the STAR Centre will not induce an increase in the staff or student population at the campus.

Accordingly considerations relating to the provision of car parking as set out in Clause 52.06-5 are not triggered.

5.1.3 Clause 52.06-08: Requirement for a car parking plan

Plans must be prepared to the satisfaction of the responsible authority before any of the following occurs:

- a new use commences; or
- the floor area or site area of an existing use is increased; or
- an existing use is increased by the measure specified in Column C of Table 1 in Clause 52.06-5 for that use.

The plans must show, as appropriate:



- All car parking spaces that are proposed to be provided (whether on the land or on other land).
- Access lanes, driveways and associated works.
- Allocation of car parking spaces to different uses or tenancies, if applicable.
- Any landscaping and water sensitive urban design treatments.
- Finished levels, if required by the responsible authority.
- Any other matter specified in a schedule to the Parking Overlay.

Whilst the proposal does not contemplate an increase in student or staff numbers, the proposal does consider the construction of additional car parking, with these spaces planned within a basement level.

Accordingly considerations relating to the design of car parking as set out in Clause 52.06-9 are triggered.

5.1.4 Design Standard for Car Parking - Clause 52.06 - 9

We have assessed the proposed car parking design and access arrangements against the requirements of Clause 52.06-9 of the Bayside Planning Scheme. Our findings are as follows:

5.1.4.1 Design Standard 1 - Accessways

Re	quirements	Design Response	Status
Ac	cessways Must:		
1	Be at least 3 metres wide.	Accessways are at least 6.4 metres wide throughout.	Comply
2	Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Accessways are at least 6.4 metres wide at changes of direction.	Comply
3	Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	Car park is not a public car park.	N/A
4	Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.	At least 2.1 metres headroom has been provided.	Comply
5	If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Cars can exit the site in a forward direction.	Comply
6	Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	Accessway is 7 metres wide and more than 7 metres long at the site entrance.	Comply
7	Have a corner splay or area at least 50 percent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	Suitable pedestrian site splays are provided.	Comply



Re	quirements	Design Response	Status
Ac	cessways Must:		
8	If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway.	Access is not from a Transport Zone	N/A
9	If entry to the car spaces is from a road, the width of the road accessway may include the road.	No car spaces adjoin a road	N/A

5.1.4.2 Design Standard 2 - Car Parking Spaces

Requirements			Design Response	Status		
1	Car parking spaces and accessways must have the minimum dimensions in Table 2 of Clause 52.06-9.		Car parking spaces measure 2.6 metres wide and 4.9 metres long with an aisle of	Comply		
	Angle of car parkin spaces to access w	g Accessway wi	dth Car space width	Car space	6.4 metres.	
	Parallel	3.6 m	2.3 m	6.7 m		
	45°	3.5 m	2.6 m	4.9 m		
	60°	4.9 m	2.6 m	4.9 m		
	90°	6.4 m	2.6 m	4.9 m		
		5.8 m	2.8 m	4.9 m		
		5.2 m	3.0 m	4.9 m		
		4.8 m	3.2 m	4.9 m		
2	A wall, fence, of structure that of the area mark than: A column, trees space if it is wi permitted' on I A structure, wh 2.1 metres above 200 50 Rear of 900 1750 900 1750 900 1750	column, tree, f abuts a car sp ed 'clearance e or tree guarce thin the area Diagram 1 of t nich may projection ove the space.	nensions in millime	other roach into gram 1 other ect into a olumn rd if it is at least	Suitable clearance has been provided to walls and columns.	Comply
	250	LINE	Clearance requ	ired		
	Access	way	Tree or column	permitted		
3	Car spaces in metres long a 5.5 metres wia garage or car	garages or co nd 3.5 metres de for a doubl port.	irports must be a wide for a single e space measure	t least 6 space and d inside the	No garages of carports proposed	N/A



Re	quirements	Design Response	Status
4	Where parking spaces are provided in tandem (one space behind another) an additional 500mm in length must be provided between each space.	No tandem spaces proposed	N/A
5	Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	No dwellings proposed	N/A
6	Disabled car parking spaces must be designed in accordance with AS 2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm.	Disabled car parking space has been designed in accordance with AS2890.6- 2009.	Comply

5.1.4.3 Design Standard 3 - Gradients

Re	quirements	Design Response	Status
1	Accessway grades must not be steeper than 1:10 (10 per cent) within 5 metres of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.	Accessway grade is 1:10 within the first 5 metres of the frontage.	Comply
2	Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 and be designed for vehicles travelling in a forward direction.	Maximum grade proposed is 1:5	Comply
3	Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5 per cent) for a summit grade change, or greater than 1:6.7 (15 per cent) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming.	Appropriate transition sections have been provided to prevent	Comply
4	Plans must include an assessment of grade changes of greater than 1:5.6 (18 per cent) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.	vehicles scraping	Comply

5.1.5 Supplementary Design Considerations

5.1.5.1 Access Capacity

The basement carpark will be secured with a roller door / tilt door. This door will be kept open during the AM & PM peak periods to prevent queuing at site entrance. Outside of these peak periods access to this car park will require staff to activate the door using either a remote or key fob on entry, with exit possible via a detector loop installed on within the ramp.

Australian Standard AS2890.1:2004 provides guidance relating to capacity at entry points based on various access control measures.

These capacity estimates are reproduced overleaf at Table 1.



Table 1 Access Control - Capacity Values

Access Control	Capacity
Free Flow	600 vehicles / hour / lane
Card Reader	400 vehicles / hour / lane
Automatic ticket issue & boom gate	300 vehicles / hour / lane
Manually Controlled	200 - 250 vehicles / hour / lane

Based on these capacity estimates and conservatively adopting

- Lowest capacity value of 200 vehicles per hour, and

— Highest volume generation potential of 68 trips, that is 1 vehicle trip per car spaces,

An assessment of the likely queues and delay at the access point have been undertaken using standard Queue theory. This assessment reveals the following:

Capacity (per lane)			200	Vehicles / Hour
Approach Volume	(total)		68	Vehicles / Hour
Number of Lanes			1	lane(s)
Queue Distance per Vehicle			6	metres
Approach Volume	(per lane)		68	Vehicles / Hour
Utilisation Ratio 0.35			0.35	
Mean Queue (per l	ane)		0.53	vehicles
Percentile Back of Queue (per lane) Formula 85% Rounded up Distance		Formula	0.78	vehicles
	1	vehicles		
		Distance	6	metres
Mean Delay (veh)			27.5	seconds
Q Prob.	More than	1 vehicle		12%

An 85th%ile Queue of 1 vehicle is calculated, with mean delay of 28 seconds expected.

It should also be noted that this queue of 1 vehicle is a conservative assessment as the roller door / tilt door will be open during the morning and afternoon peak periods.

The roller door / tilt door will be located at the bottom of the ramp to allow for a queued vehicle to prop within the site without affecting the movement of vehicles along Murphy Street.

This outcome is confirmed in the plans provided at Appendix A.

5.1.6 Conclusion - Car Park Design

The proposed car park and accessways have been assessed and determined to have satisfied the relevant design guidelines. Accordingly, the proposal satisfies the purpose of Clause 52.06, specifically:

— To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.



5.2 Clause 52.34 - Bicycle Facilities

5.2.1 Purpose

The purpose of Clause 52.34 is to encourage cycling as a mode of transport, and provide secure, accessible and convenient bicycle parking spaces and associated shower and change facilities.

5.2.2 Scope - Provision of Bicycle Parking Facilities - Clause 52.34 - 1

Clause 52.34 applies to:

- a new use; or
- an increase in the floor area or site area of an existing use;

Where the floor area of an existing use is increased, the requirement for bicycle facilities only applies to the increased floor area of the use.

The proposal contemplates an increase in the floor area of an existing use, however, the applicable measures for Secondary Schools in relation to the assessment of bicycle facilities is employee numbers.

As noted earlier in this report, we understand that the STAR Centre will not induce an increase in the staff or student population at the campus.

Accordingly, considerations relating to the provision of bicycle facilities as set out in Clause 52.34-3 are not triggered.

Bicycle parking for staff is however planned within the basement, with a total of 12 bicycle spaces contemplated.

5.2.3 Design Requirements

Clause 52.34-4 requires that:

Bicycle spaces should:

- Provide a space for a bicycle of minimum dimensions of 1.7 metres in length, 1.2 metres in height and 0.7 metres in width at the handlebars.
- Be located to allow a bicycle to be ridden to within 30 metres of the bicycle parking space.
- Be located to provide convenient access from surrounding bicycle routes and main building entrances.
- Not interfere with reasonable access to doorways, loading areas, access covers, furniture, services and infrastructure.
- Not cause a hazard.
- Be adequately lit during periods of use.

5.2.4 Decision Guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- Whether the proposed number, location and design of bicycle facilities meets the purpose of this clause.
- The location of the proposed land use and the distance a cyclist would need to travel to reach the land.
- The users of the land and their opportunities for bicycle travel.



- Whether showers and change rooms provided on the land for users other than cyclists are available to cyclists.
- The opportunities for sharing of bicycle facilities by multiple uses, either because of variation of bicycle parking demand over time or because of efficiencies gained from the consolidation of shared bicycle facilities.
- Australian Standard AS 2890.3 2015 Parking facilities Part 3: Bicycle parking facilities.
- Any relevant bicycle parking strategy or equivalent.

5.2.5 Design Review

VERTICAL SPACES

B7 at AS2890.3:2015

Designed to guidance at Figure

The development contemplates 12 bicycle spaces, comprising 8 vertical and 4 horizontal spaces. Theses spaces have been designed as follows:



HORIZONTAL SPACES Designed to guidance at Figure B5 at AS2890.3:2015 Wall or under the figure of the set o

AS2890.3:2015 requires that a minimum 20% of bicycle spaces should be horizontal spaces.

The proposal contemplates a total of 12 bicycle spaces, with 4 provided as horizontal spaces. This equates to 30% of the provision being horizontal spaces.

5.2.5.1 Conclusion - Bicycle Parking

We can conclude that bicycle parking provided as part of this development satisfies the purpose of Clause 52.34, specifically:

— To encourage cycling as a mode of transport, and provide secure, accessible and convenient bicycle parking spaces.



6 Traffic Considerations

6.1 Traffic Generation

Staff arrival and departure patterns do not coincide with the student pick up and drop off patterns. Staff typically arrive before drop-off periods, and depart after the pick-up period.

It is also commonly observed that staff arrivals and departures do not all occur over a single peak hour, but rather are distributed over a 90 minute - 120 minute period.

The basement level car park is proposed for use by staff only, with 68 car spaces planned.

It is therefore expected that on average traffic volumes will be generated at a rate of between 1.32 trips per minute - 1.76 trips per minute.

During a normal assessment period of one hour, these rates translate to between 34 - 46 trips in any one hour.

Volume Intensity	Generation Period	Average Generation Rate	Peak Hour
69 Trips	90 Minute	1.32 trips per minute	46 Trips
00 mps	120 Minutes	1.76 trips per minute.	34 Trips

6.2 Traffic Impact

The anticipated peak hour volumes are modest and will on average equate to less than 1 vehicle trip per minute.

This volume intensity will have a negligible impact on the operation of Murphy Street or the adjacent road network.

Assessment at Section 5.1.5.1 reveals that despite adopting a conservatively high estimate of peak volumes, that the proposed access arrangements access to the basement level will function satisfactorily with an 85th percentile queue calculated as one vehicle (6 metres).

There is sufficient room at the site access to accommodate two (2) vehicles while keeping clear of the road carriageway and footpath (see attached swept paths in Appendix A).



APPENDIX A Swept Path Analysis

Design Vehicles:

- —Australian Standard B85 Vehicle
- —Australian Standard B99 Vehicle













