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71-73 Beddoe Avenue, Clayton **Traffic Impact Assessment Report**

6 March 2019 **Revision 02** Job no: 18ME0915

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18ME0915-20190228-LC4-Traffic Impact Assessment-02.docx LC 6/03/19

Document Control

Project Title:	71-73 Beddoe Avenue,	Clayton
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Project No: 18ME0915

Revision	Date	File name	18ME09	15-20181122-1 C4-1	Fraffic Impact Asses	sment-00 Docx
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		File name	18ME091	5-20181211-SC3-T	raffic Impact Assess	ment-01.Docx
	10/10/10	Description	Final Issue	e		
01	12/12/18			Prepared	Checked	Approved
		Initial		LC4	SC3	SC3
		Date		11/12/2018	12/12/2018	12/12/2018
		File name	18ME0915	-20190228-LC4-Tra	affic Impact Assessr	nent-02.Docx
02	06/03/2019	Description Final Issue				
02				Prepared	Checked	Approved
		Initial		LC4	SC3	SC3
		Date		06/03/2019	06/03/2019	06/03/2019
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1 Introduction and Scope

Irwinconsult has been engaged by Southlink Beddoe Pty Ltd to prepare a traffic impact assessment for a proposed student accommodation development at 71-73 Beddoe Avenue, Clayton.

The following report addresses the traffic implications of the proposal. Including the adequacy of the on-site parking provision, the suitability of the site access arrangements and the likely impacts on existing traffic conditions. In the course of preparing this report, the subject site and environs have been inspected, plans of the development reviewed, and relevant analysis undertaken.

The report concludes that there are no traffic or parking grounds which should warrant refusal of the sought Planning Permit.

2 Background

2.1 Location and Existing Conditions

The subject site is located within a Residential Growth Zone – Schedule 3 (RGZ3) under the Monash Planning Scheme. The site has frontage of approximately 36 metres to Beddoe Avenue. Further, the site is also situated within the Principal Public Transport Network (PPTN) area.

Land uses within the vicinity of the subject site are predominately residential in nature, however it is noted that Monash University (Clayton) and the John Monash Science School is located within approximately 200 metres east of the site.

The location of the site in the context of the surrounding road network is shown in Figure 1.



Figure 1 Site Location (source: Google Maps)

2.2 Road Network

2.2.1 Beddoe Avenue

Beddoe Avenue is classified as a local road managed by Monash City Council and generally runs in the northsouth direction along the site frontage, providing a connection between Woodside Avenue to the north and the Princes Highway Service Road to the south. The road has an approximate 7 metres wide carriageway, which generally provides a two lane, two-way road with restricted kerbside parking (1/2P 8:00am-6:00pm, Monday – Friday) permitted along both sides.

There are two existing crossovers to the subject site, with one crossover to each of the two existing lots.

The 50km/h default urban speed limit applies along the road.

2.3 Public Transport

The site currently has excellent access to public transport within close proximity, as summarised in Table 1.

Service	Route No.	Route Description	Nearest Stop	Distance From Site	Arrival Interval
	630	Elwood - Monash University via Gardenvale, Ormond & Huntingdale	Princes Highway/ North Road (Clayton)		10-12 mins
	631	Southland - Waverley Gardens via Clayton, Monash University		300m (4 min walk)	25-30 mins
	703	Middle Brighton - Blackburn via Bentleigh, Clayton, Monash University			15-20 mins
	733	Oakleigh - Box Hill via Clayton, Monash University, Mt Waverley			15-20 mins
	800	Dandenong - Chadstone via Princes Highway, Oakleigh			20-25 mins
	802	Dandenong - Chadstone via Mulgrave, Oakleigh Brieges Uisburge		300m (4 min walk)	30-40 mins
Bus	804	Dandenong - Chadstone via Wheelers Hill, Oakleigh (Clayton)			35-40 mins
	862	Dandenong - Chadstone via North Dandenong, Oakleigh			40-50 mins
	900	Stud Park SC (Rowville) - Caulfield via Monash University, Chadstone (SMARTBUS Service)	Monash University/ Wellington Road (Clayton)	650m (8 min walk)	10-12 mins
	601	Huntingdale - Monash University (Clayton)			4 mins
	737	Croydon - Monash University via Boronia, Knox City Shopping Centre, Glen Waverley			20-25 mins
	978	Night Bus - Elsternwick - Ormond - Huntingdale - Mulgrave - Dandenong (returns via Princes Hwy)			1 hr

Table 1 Public Transport Options

3 The Proposal

The Applicant proposes to construct a five-storey (including basement level) student accommodation comprising 86 bedrooms to accommodate 90 students (90 beds) and one ground floor retail tenancy of approximately 42m². The proposal also includes 23 on-site car parking spaces (including one accessible space) and 47 bicycle spaces within the basement car park.

Vehicular access onto the site is to be via a new crossover from Beddoe Avenue, to be located at the southern boundary of the site.

4 Parking Requirements and Provisions

4.1 Statutory Car Parking Requirements

Clause 22.10-4 of the Monash Planning Scheme states that car parking spaces should be provided at the following rates:

- Minimum 0.3 car spaces per bed for sites located within Preferred Locations.
- Minimum 0.4 car spaces per bed for sites located outside of Preferred Locations.

Clause 22.10-4 of the Monash Planning Scheme states that a Preferred Location for student accommodation should satisfy one or more of the following criteria:

- Within 1,500 metres of a tertiary educational institution.
- Within 800 metres of a Railway Station.
- Within 800 metres of a Principal, Major or a larger Neighbourhood Activity Centre.
- Within 400 metres of a bus route that provides access to a tertiary educational institution.

The subject site is located within 1,500 metres of Monash University and within 400 metres of a bus route that provides access to Monash University, satisfying two of the above criteria. The location of the subject site is therefore classified as a 'Preferred Location' and the car parking rate of 0.3 spaces per bed applies. For the proposed development of 90 student beds, this equates to a car parking requirement of 27 spaces for the student accommodation use.

As the site is situated within the PPTN, the car parking rate of 3.5 spaces per 100m² of leasable floor area, taken from Clause 52.06 of the Planning Scheme, is applicable to the retail tenancy. Given a floor area of 42m², this results in a requirement to provide one car parking space for the retail use.

Thus, the total car parking requirement for the development is 28 spaces. Since the development proposes an on-site provision of 23 car parking spaces, a dispensation from the requirement for a reduction of five car parking spaces is being sought for the student accommodation use.

Clause 22.10 states an application that seeks to provide parking at a rate less than specified above should provide evidence based on investigation of similar facilities with similar locational characteristics to justify this reduction.

Furthermore, Clause 52.06 of the Planning Scheme allows for the statutory car parking provision to be reduced (including to zero) subject to the provision of a Car Parking Demand Assessment.

The Car Parking Demand Assessment must assess the car parking demands likely to be generated by the proposal with regards to the following:

- The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.
- The variation of car parking demand likely to be generated by the proposed use over time.
- The short-stay and long-stay car parking demand likely to be generated by the proposed use.
- The availability of public transport in the locality of the land.
- The convenience of pedestrian and cyclist access to the land.
- The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.

- The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land.
- Any empirical assessment or case study.

Clause 52.06-7 of the Planning Scheme further provides decision guidelines to reduce or waive the statutory parking requirement as follows. They are also useful for consideration when a statutory rate is not nominated in the scheme for the proposed use.

- The Car Parking Demand Assessment.
- Any relevant local planning policy or incorporated plan.
- The availability of alternative car parking in the locality of the land, including:
 - Efficiencies gained from the consolidation of shared car parking spaces.
 - Public car parks intended to serve the land.
 - On street parking in non-residential zones.
 - o Streets in residential zones specifically managed for non-residential parking.
 - On street parking in residential zones in the locality of the land that is intended to be for residential use.
- The practicality of providing car parking on the site, particularly for lots of less than 300 square metres.
- Any adverse economic impact a shortfall of parking may have on the economic viability of any nearby activity centre.
- The future growth and development of any nearby activity centre.
- Any car parking deficiency associated with the existing use of the land.
- Any credit that should be allowed for car parking spaces provided on common land or by a Special Charge Scheme or cash-in-lieu payment.
- Local traffic management in the locality of the land.
- The impact of fewer car parking spaces on local amenity, including pedestrian amenity and the amenity of nearby residential areas.
- The need to create safe, functional and attractive parking areas.
- Access to or provision of alternative transport modes to and from the land.
- The equity of reducing the car parking requirement having regard to any historic contributions by existing businesses.
- The character of the surrounding area and whether reducing the car parking provision would result in a quality/positive urban design outcome.
- Any other matter specified in a schedule to the Parking Overlay.
- Any other relevant consideration.

Each of the above guidelines relevant in this instance is discussed below.

4.2 Car Parking Demand Assessment

4.2.1 Anticipated Car Ownership Rates

Vehicle ownership rates at various student accommodation facilities located proximate to Monash University Caulfield have been provided to Irwinconsult by Student Housing Australia. These rates pertain to the number of car parking spaces leased by students and were collated and provided by the operator on Thursday 4 October 2018. This was during the standard Monash University teaching period. The car parking lease rates provide a better understanding of vehicle ownership rates when compared to occupancy surveys, and are shown below in Table 2. It is noted that the sites at 903 Dandenong Road and 60 Waverley Road share a common car parking facility.

Site	Beds Leased	Car Parking Provision	Car Parking Spaces Leased	Vehicle Ownership Rate (spaces/bed)	Percent with no cars
5 Dudley Street	115 no.	12 spaces	8 leased	0.07	93%
1023 Dandenong Road	26 no.	6 spaces	0 leased	0.00	100%
949 Dandenong Road	66 no.	12 spaces	3 leased	0.05	95%
903 Dandenong Road	43 no.	21 00000	2 leased	0.02	08%
60 Waverley Road	85 no.	21 spaces			9070
141 Waverley Road	62 no.	22 spaces	2 leased	0.03	97%
313 Waverley Road	43 no.	7 spaces	3 leased	0.07	93%

 Table 2
 Vehicle Ownership Rates – Various Student Accommodation Facilities (4th October 2018)

A review of the car parking lease rates shown in Table 2 indicates that the demand for car parking spaces generated by student accommodation ranges between 0 - 0.07 spaces per bed. The proposed development is to provide car parking at approximately 0.24 spaces per bed, which is expected to satisfy the anticipated car parking demand and is considered appropriate for the development.

The provision of one car parking space for the retail use satisfies the statutory requirement.

4.2.2 Availability of Public Transport in the Locality of the Land

The subject site is situated within convenient walking distance of the Monash University Clayton campus and numerous bus services providing connections to local destinations, particularly Clayton Activity Centre and Clayton Train Station, as previously discussed. This accessibility reduces the reliance on private motor vehicle travel and ownership.

4.2.3 Summary of Car Parking Provisions

It is considered that the provision of 23 car parking spaces on-site will adequately service the anticipated demand generated, based on the following:

- Case study data from other student accommodation sites shows that the allocation of 22 spaces would be ample in servicing the car parking demand associated with the proposed student accommodation.
- The allocation of one space to the retail use is appropriate and satisfies the Planning Scheme requirements.

4.3 Bicycle Parking

Table 1 to Clause 52.34-5 specifies the statutory requirements for bicycle parking for various land uses. The statutory requirements with respect to the proposal are outlined in Table 3.

		Employees/Residents		Visitors	
Use	Inventory	Rate	Required Spaces	Rate	Required Spaces
Residential Building (other than listed)	86 no. bedrooms	In developments of four or more storeys, 1 to each 10 lodging rooms	9	In developments of four or more storeys, 1 to each 10 lodging rooms	9
Retail	42m ²	1 to each 300 sqm of leasable floor area	0	1 to each 500 sqm of leasable floor area	0
	Total f	or Employees/Residents:	9	Total for Visitors:	9

Table 3 Statutory Bicycle Parking Requirements

There is a statutory requirement to provide a minimum of 18 bicycle spaces for the development.

However, it is noted that Clause 22.10-3 of the Monash Planning Scheme recommends that for a student accommodation facility, bicycle parking spaces should be provided at a rate of one bicycle space for every two students, noting that this is not a requirement. Application of this rate equates to 45 bicycle spaces.

Development plans show an on-site provision of 47 bicycle spaces, exceeding the statutory requirement and the recommended provision set out in Clause 22.10 of the Planning Scheme.

The proposed bicycle parking spaces include 32 wall-mounted bicycle racks spaced at 500mm centres and 15 horizontal bicycle spaces spaced at 1000mm centres. The 15 bicycle parking spaces provided horizontally accounts for 32% of the total bicycle parking provision. This satisfies the dimensional requirements as well as the required provision for a minimum of 20% of bicycle parking to be provided horizontally at ground level, as per Australian Standards AS2890.3:2015.

5 Traffic Generation and Impacts

5.1 Estimated Site Generated Traffic Volume

Given the proposal is to comprise 23 car parking spaces, based on first principles it is conservatively estimated that the development will generate:

- Up to 22 vehicle movements during the AM and PM peak commuter periods when students generally leave to attend University and then later return; plus
- One vehicle movement during the AM and PM peak commuter periods when retail staff arrive in AM and then later depart during the PM.

5.2 Traffic Impacts

The level of traffic expected to be generated by the development is considered low and would have a minimal impact on the safety and operation of Beddoe Avenue and the surrounding road network. It is expected that the day to day traffic variations along Beddoe Avenue would be well above 23 vehicles per hour. Further, given the site's proximity to the Monash University Clayton campus, it is anticipated that a portion of students that own a car will still choose to walk or cycle to the university. Therefore the traffic generated by the development would have negligible impact on the surrounding road network.

6 Parking and Access Area Design

6.1 Car Park Design

It is proposed to provide 23 car parking spaces on-site with the majority of car spaces to be 2.6 metres wide by 5.25 metres length, whilst the remaining car spaces are provided 2.6 metres wide by 4.9 metres length. All car spaces are accessed via a minimum 6.4 metres wide aisle.

Swept path diagrams are provided in Appendix A which demonstrate that critical car spaces can be accessed in a satisfactory manner consistent with the Australian Standard AS 2890.1:2004, and vehicles can enter and exit the site in a forward direction.

6.2 Site Access

Access to the site is to be via a crossover to Beddoe Avenue, and located at the southern end of the eastern boundary of the site. The crossover will accommodate all turning movements with an accessway width of 5.7 metres. The location is considered satisfactory.

A ramp from ground level to basement is proposed as follows:

- A flat grade for the first 5.0 metres;
- The following 2.0 meters at a gradient of 1:8;
- The following 8.8 metres at a gradient of 1:4; and
- A 1:8 grade at the bottom section of 2.0 metres.

6.3 Compliance with 52.06-9

Clause 52.06-9 from Planning Scheme outlines the design criteria for accessways, car parking spaces, gradients and mechanical parking. The following table provides a response to each of the items raised.

Table 4	Compliance with 52.06-8

Clause 52.06-8 Design Criteria	Irwinconsult Response	
Design Standard 1 - Accessways		
 Be at least 3 metres wide 	Satisfied – Accessway measures a minimum 3 metres width.	
 Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide. 	Satisfied – All changes of direction measure at least 4.2m wide.	
 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. 	Not applicable – Private car park.	
 Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres. 	Satisfied – A height clearance of 2.2 metres along accessways is achieved.	
 If the accessway serves 4 or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction. 	Satisfied – Swept path diagrams attached in Appendix A demonstrate that vehicles can exit the site in a forward direction.	
 Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves 10 or more car parking spaces and is either more than 50 metres long or connects to a road in a Road Zone. 	Not applicable	
 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 	Satisfied – Pedestrian sight triangles at least 50 percent clear of visual obstructions are provided.	

the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than 1 lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	
 If an accessway to 4 or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway. 	Satisfied
Design Standard 2 – Car parking spaces	
 Dimensions of car parking spaces and accessways – Table 2. 	Satisfied – Majority of car spaces to be 2.6m wide by 5.25m length, whilst the remaining car spaces are provided 2.6m wide by 4.9m length. All car spaces are accessed via a minimum 6.4m wide aisle.
 Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport. 	Not Applicable – No garages or car ports provided.
 Where parking spaces are provided in tandem (one space behind the other) an additional 500 mm in length must be provided between each space. 	Not Applicable – No tandem spaces provided.
 Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover. 	Satisfied – All spaces provided undercover.
 A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1, other than: A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1. A structure, which may project into the space if it is at least 2.1 metres above the space. Diagram 1 Clearance to car parking spaces 	 Variation – A variation is sought as: Space No. 21 has a wall which slightly encroach into the clearance envelope adjacent to the car space. It is expected that this spaces would be assigned to residents and therefore users will be familiar with accessing the space.
 Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6- 2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm. 	Satisfied – Accessible parking space is in accordance with the Australian Standard AS/NZS 2890.6:2009. Swept path diagrams attached in Appendix A demonstrate vehicle access is appropriate.

Des	Design Standard 3 – Gradients					
 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. 				Satisfied		
 Ramps must have the maximum grades as outlined in Table below and be designed for vehicles travelling in a forward direction. 				Satisfied		
	Type Length Max Grade					
	Dublic	<20m	1:5			
	Public	>20m	1:6			
	Privato	<20m	1:4			
	Flivale	>20m	1:5			
 Transitions provided where grade change of 12.5% or more for summit grade change and 15% for a sag grade change. 				Satisfied		
Des	sign Standar	rd 4 – Mechanica	l Parking			
 At least 25 per cent of the mechanical car parking spaces can accommodate a vehicle clearance height of at least 1.8 metres. 			e mechanical car p e a vehicle cleara res.	Not applicable – No mechanical parking provided.		
	 Car par system valet par 	rking spaces that r are not allocated arking situation.	equire the operati to visitors unless i	on of the used in a	Not applicable – No mechanical parking provided.	

The accessways and car parking spaces are generally designed in accordance with the design criteria specified in Clause 52.06-9 of the Planning Scheme or the Australian Standard AS 2890.1:2004, and are considered appropriate for the development.

6.4 Waste Collection

It is envisaged that waste collection is to occur within the basement by a 6.35m Wastewise Mini. Swept path diagrams attached in Appendix A demonstrate that the waste collection vehicle can satisfactorily enter and exit the site in a forward direction. Refer to Irwinconsult Waste Management Plan for full details.

7 Conclusion

The proposal to construct a facility comprising 90 student accommodation beds and a 42m² ground floor retail tenancy on land located at 71-73 Beddoe Avenue, Clayton is considered satisfactory. The assessment considered the following:

- The Applicant is proposing an on-site parking provision of 23 car spaces.
- Based on case study data, the allocation of 22 car parking spaces to the 90 student beds would adequately service the anticipated demand generated by this use.
- The allocation of the remaining space to the retail use is in accordance with Planning Scheme requirements.
- The provision of 47 bicycle parking spaces exceeds minimum statutory requirements specified in Clause 52.34 and the recommendations of Clause 22.10 of the Planning Scheme.
- It is expected that the proposed development would not have a detrimental impact on the safety or operation of the adjacent road network.
- Proposed accessway and car parking spaces are generally designed in accordance with the relevant Design Standards set out within Clause 52.06-8 of the Planning Scheme or the Australian Standard AS2890.1:2004.
- Swept path diagrams attached in Appendix A demonstrate that site circulation and access to critical car parking spaces is satisfactory.

Having regard for the above, there are no traffic or parking grounds which should warrant refusal of the sought Planning Permit.

Appendix A Vehicle Swept Paths









B85
Width
Track
Lock to Lock Time
Steering Angle

1.87
1.77
6.0
34.0

:	34.

VEHICLE LEGEND

B85CAR 300mm CLEARANCE B85CAR OVERHANG B85CAR CENTRELINE

 \bigcirc

AUSTROADS B85CAR

 \square

18ME0915 SK008

AUSTROADS B85CAR INGRESS/EGRESS MANOEUVRE 01 L.C. 06.03.2019

0		5	10m
SCALE 1:250		0	@A3









B85
Width
Track
Lock to Lock Time
Steering Angle

meters

1.87
1.77
6.0
34.0

VEHICLE LEGEND

B85CAR 300mm CLEARANCE **B85CAR OVERHANG**

B85CAR CENTRELINE

 \bigcirc

AUSTROADS B85CAR

18ME0915 SK009

AUSTROADS B85CAR INGRESS/EGRESS MANOEUVRE 02 L.C. 06.03.2019

0	5	10m
SCALE 1:250)	@A3









B85	
Width	
Track	
Lock to Lock Time	
Steering Angle	

1	.87
1	.77
6	.0
3	4.0

VEHICLE LEGEND

B85CAR 300mm CLEARANCE B85CAR OVERHANG B85CAR CENTRELINE

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AUSTROADS B85CAR

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18ME0915 SK010

AUSTROADS B85CAR INGRESS/EGRESS MANOEUVRE 02 L.C. 06.03.2019

0	5	10m
SCALE	1:250	@A3









Width: 1.84Track: 1.84Lock to Lock Time: 6.0Steering Angle: 45.4

VEHICLE LEGEND

6.35m GARBAGE TRUCK 300mm CLEARANCE

6.35m GARBAGE TRUCK OVERHANG

6.35m GARBAGE TRUCK CENTRELINE



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6.35m GARWOOD MINER INGRESS/EGRESS MANOEUVRE L.C. 06.03.2019

0		Ę	5	10m
SCALE 1:250				@A3