URBIS

CLAUSE 4.6 VARIATION REQUEST

Car Parking

17-21 Lachlan Ave and 163 Herring Road, Macquarie Park

Prepared for

LACHLAN AVENUE DEVELOPMENT PTY LTD

28 June 2023

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1. INTRODUCTION

This Clause 4.6 Variation Request (**this request**) has been prepared on behalf of Lachlan Avenue Development Pty Ltd (**the applicant**) and accompanies a development application (**DA**) for the demolition of the existing buildings and the construction of a part 10, part 13 and part 15 storey development for student accommodation at 17-21 Lachlan Avenue and 163 Herring Road, Macquarie Park (**the site**).

This request seeks an exception from the minimum car parking provision under clause 68(2)(e)(i) of the *State Environmental Planning Policy (Housing) 2021* (**Housing SEPP**). This variation request is made pursuant to clause 4.6 of the *Ryde Local Environmental Plan 2014* (**RLEP 2014**).

This report should be read in conjunction with the Statement of Environmental Effects (**SEE**) prepared by Urbis Pty Ltd (dated December 2022) and accompanying design and technical documentation.

The following sections of the report include:

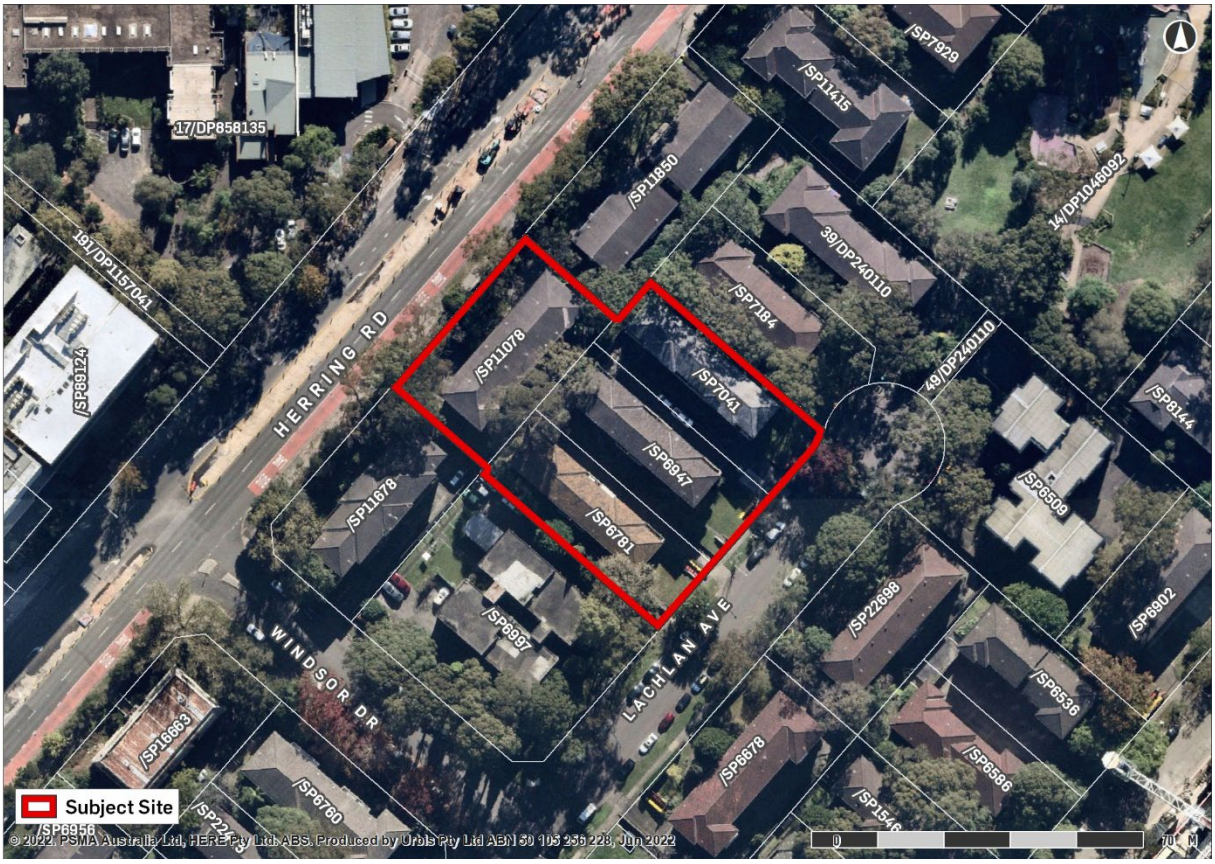
- **Section 2:** description of the site and its local context, including key features relevant to the proposed variation.
- **Section 3:** brief overview of the proposed development as outlined in further detail within the SEE and accompanying drawings.
- **Section 4:** identification of the development standard, which is proposed to be varied, including the extent of the contravention.
- **Section 5:** outline of the relevant assessment framework for the variation in accordance with clause 4.6 of the RLEP 2014.
- **Section 6:** detailed assessment and justification of the proposed variation in accordance with the relevant guidelines and relevant planning principles and judgements issued by the Land and Environment Court.
- **Section 7:** summary and conclusion.

2. SITE CONTEXT

2.1. SITE DESCRIPTION

The site is located at 17-21 Lachlan Avenue and 163 Herring Road, Macquarie Park and is legally described as SP6781, SP6947, SP7041 and SP11078 (refer **Figure 1**). The site is in a highly prominent and strategic location and the proposal seeks to complement existing new high-rise developments recently constructed within Macquarie Park and planned future development of adjoining land.

Figure 1 Aerial image of the site location



Source: Urbis (2022)

Key characteristics of the site include:

- The site has a total site area of approximately 3,901.6m^2 and is subject to a level change of approximately 6m from north to south.
- The site has frontages to Herring Road (37.7m) to the north and Lachlan Avenue (50.5m) to the south. The eastern and western boundaries of the site adjoin residential developments.
- The site is currently occupied by four existing four-storey residential strata buildings, with car parking spaces on the ground level. Vehicular access to the site is currently available from both Herring Road and Lachlan Avenue.
- Existing trees surround the boundaries of the site and there are two mature trees towards the centre of the site.

Photographs of existing development within the site is provided at **Figure** 2.

Figure 2 Site photographs

Picture 1 Development at 17 Lachlan Avenue

Picture 2 Development at 19 Lachlan Avenue

Picture 3 Development at 21 Lachlan Avenue

Picture 4 Development at 163 Herring Road

Source: Urbis (2022)

2.2. LOCAL CONTEXT

Macquarie Park is undergoing a significant transformation into a high-density urban centre. This change has been driven by the expansion of Macquarie University, construction of the M2 Motorway and more recently significant State Government investment in the Sydney Metro project which was completed in 2019.

The State Government's declaration of two priority precincts known as Macquarie University Station (Herring Road) and North Ryde Station highlights the strategic intent for new housing opportunities on the edges of the existing commercial core, to take advantage of the improved public transport connections between Macquarie Park and other metropolitan centres throughout Sydney. This is further demonstrated in the *Greater Sydney Region Plan* and *Northern District Plan,* which identify Macquarie Park as the western gateway of the Eastern Economic Corridor.

Residential development in Macquarie Park has traditionally been characterised by 3-4 storey walk-up residential buildings. However, the character of the immediate context is changing and is anticipated to further change dramatically over time. This is reflected in the high-density mixed-use character proposed by the Macquarie University Station Precinct, which aims to provide a new mixed use 'academic core' at Macquarie University, create opportunities for renewal within an 800m radius of the Macquarie University Station and deliver up to 5,800 new homes by 2031 in high-rise urban forms.

3. PROPOSED DEVELOPMENT

This request has been prepared to accompany a DA for the demolition of the existing buildings and the construction of a purpose-built student accommodation (**PBSA**) development at 17-21 Lachlan Avenue and 163 Herring Road, Macquarie Park.

A summary of the key features of the proposal is provided below:

- Demolition of the existing buildings and structures within the site.
- Construction of a part 10, part 13 and part 15 storey development comprising 17,164m^2 gross floor area with a mix of land use activities including:
  - Basement: 45 car parking spaces, 19 electric bicycle parking spaces, 146 bicycle parking spaces, waste management facilities and ancillary services and facilities.
  - Lower levels: building entries to Lachlan Avenue and Herring Road, 874m^2 of communal area including lounges, cinema and communal laundry and 93.5m^2 office space.
  - Upper levels: student accommodation providing a total of 732 beds, including studios, 4-bed and 5-bed cluster units, internal communal spaces and additional external communal areas on Level 10.
- Landscaped courtyards at the ground plane and rooftop terraces at Level 10, including a swimming pool.
- Public domain improvements to Lachlan Avenue and Herring Road frontages, including footpath upgrades and new street trees.
- Removal of five trees within the site and four street trees along Lachlan Avenue.

A numerical overview of the proposal is provided in the following table.

Table 1 Numerical overview of proposed development

Parameter	**Proposed**
Total site area	3,901.6m^2
Total gross floor area (**GFA**)	17,163m^2
Total floor space ratio (**FSR**)	4.4:1
Height (storeys and maximum in height)	Part 13 (Herring Road) and part 15 (Lachlan Avenue) 45m with minor non-compliances of up to 48m.
Deep soil	DCP compliant: 604m^2 (15.48%) Total deep soil: 1,625m^2 (41.65%)
Communal open space areas (external)	2,084m^2

4. EXTENT OF CONTRAVENTION

This section of the report identifies the development standard, which is proposed to be varied, including the extent of the contravention. A detailed justification for the proposed variation is provided in **Section 6** of this report.

4.1. MINIMUM CAR PARKING REQUIREMENT

Clause 68 of the Housing SEPP stipulates non-discretionary development standards that, if complied with, prevent the consent authority from requiring more onerous standards for the matters. This request specifically seeks an exception from the strict application of clause 68(2)(e)(i) which states:

> *(2) The following are non-discretionary development standards in relation to development for the purposes of co-living housing—*
>
> *…*
>
> *(e) unless a relevant planning instrument specifies a lower number—*
>
> *(i) for development on land in an accessible area—0.2 parking spaces for each private room*

An "accessible area" is defined in the Housing SEPP Dictionary as land within:

> *(a) 800m walking distance of a public entrance to—*
> *(i) a railway station, or*
>
> *(ii) a wharf from which a Sydney Ferries ferry service operates, or*
>
> *(b) 400m walking distance of—*
> *(i) a public entrance to a light rail station, or*
>
> *(ii) for a light rail station with no entrance—a platform of the light rail station, or*
>
> *(c) 400m walking distance of a bus stop used by a regular bus service, within the meaning of the Passenger Transport Act 1990, that has at least 1 bus per hour servicing the bus stop between—*
> *(i) 6am and 9pm each day from Monday to Friday, both days inclusive, and*
>
> *(ii) 8am and 6pm on each Saturday and Sunday.*

The site is within 220m from the Macquarie University Metro Station and is therefore within a defined accessible area. Given the proposal includes 732 private rooms, the development requires a total of 147 on-site car parking spaces.

A "relevant planning instrument" is defined in the Housing SEPP Dictionary as meaning *"an environmental planning instrument, other than this Policy, or a development control plan, if any, that applies to the land on which the development will be carried out".*

The *Ryde Development Control Plan 2014* (**RDCP 2014**) does not specify car parking rates for 'co-living' or 'student accommodation' and on this basis, the provision of 147 car parking spaces as required by the Housing SEPP is maintained.

4.2. PROPOSED VARIATION TO DEVELOPMENT STANDARD

As detailed in **Table 2**, the proposal provides a total of 45 car parking spaces and therefore results in a shortfall of 102 spaces compared to the requirement under clause 68(2)(e)(i) of the Housing SEPP.

Table 2 Car parking breakdown

Car Parking Component	**Proposal**
No. of student rooms	732 rooms
Car parking spaces required	147 spaces
Car parking spaces provided	45 spaces
Shortfall	102 spaces

This request seeks to vary the number of car parking spaces required for the proposed development under the Housing SEPP.

5. RELEVANT ASSESSMENT FRAMEWORK

Clause 4.6 of the RLEP 2014 includes provisions that allow for exceptions to development standards in certain circumstances. The objectives of clause 4.6 of the RLEP 2014 are:

(a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,

(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.

Clause 4.6 provides flexibility in the application of planning provisions by allowing the consent authority to approve a DA that does not comply with certain development standards, where it can be shown that flexibility in the particular circumstances of the case would achieve better outcomes for and from the development.

In determining whether to grant consent for development that contravenes a development standard, clause 4.6(3) requires that the consent authority consider a written request from the applicant that seeks to justify the contravention of the development by demonstrating:

(a) that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, and

(b) that there are sufficient environmental planning grounds to justify contravening the development standard.

Clause 4.6(4)(a) requires the consent authority to be satisfied that the applicant's written request adequately addresses each of the matters listed in clause 4.6(3). The consent authority should also be satisfied that that the proposed development will be in the public interest because it is consistent with the objectives of the standard and the objectives for development within the zone in which it is proposed to be carried out.

Clause 4.6(4)(b) requires the concurrence of the Secretary to have been obtained. In deciding whether to grant concurrence, subclause (5) requires that the Secretary consider:

(a) whether contravention of the development standard raises any matter of significance for State or regional environmental planning, and

(b) the public benefit of maintaining the development standard, and

(c) any other matters required to be taken into consideration by the Secretary before granting concurrence.

The concurrence of the Secretary can be assumed to have been granted for the purpose of this variation request in accordance with the Department of Planning Circular PS 18–003 'Variations to development standards', dated 21 February 2018. This circular is a notice under section 64(1) of the *Environmental Planning and Assessment Regulation 2021* and provides for assumed concurrence. A consent granted by a consent authority that has assumed concurrence is as valid and effective as if concurrence had been given.

The Secretary can be assumed to have given concurrence if the matter is determined by an independent hearing and assessment panel or a Sydney district or regional planning panel in accordance with the Planning Circular. The subject DA will be determined by the Sydney North Planning Panel.

This request demonstrates that compliance with the development standard prescribed under clause 68(2)(e)(i) is unreasonable and unnecessary, that there are sufficient environmental planning grounds to justify the requested variation and that the approval of the variation is in the public interest because it is consistent with the development standard and zone objectives.

In accordance with clause 4.6(3), the applicant requests that the minimum car parking requirement be varied as a technical non-compliance.

6. ASSESSMENT OF CLAUSE 4.6 VARIATION

The following sections of the report provide a comprehensive assessment of the request to vary the development standards relating to the minimum car parking requirements in accordance with Clause 68(2)(e)(i) of the Housing SEPP.

Detailed consideration has been given to the following matters within this assessment:

- *Varying development standards: A Gui*de, prepared by the Department of Planning and Infrastructure dated August 2011.
- Relevant planning principles and judgements issued by the Land and Environment Court.

The following sections of the report provide detailed responses to the key questions required to be addressed within the above documents and clause 4.6 of the RLEP 2014.

6.1. IS THE PLANNING CONTROL A DEVELOPMENT STANDARD THAT CAN BE VARIED? – CLAUSE 4.6(2)

The minimum car parking requirement prescribed by clause 68(2)(e)(i) of the Housing SEPP is a development standard capable of being varied under clause 4.6(2) of the RLEP 2014.

The proposed variation is not excluded from the operation of clause 4.6(2) as it does not comprise any of the matters listed within clause 4.6(6) or clause 4.6(8) of the RLEP 2014.

6.2. IS COMPLIANCE WITH THE DEVELOPMENT STANDARD UNREASONABLE OR UNNECESSARY IN THE CIRCUMSTANCES OF THE CASE? – CLAUSE 4.6(3)(A)

Historically, the most common way to establish a development standard was unreasonable or unnecessary was by satisfying the first method set out in Wehbe v Pittwater Council [2007] NSWLEC 827. This method requires the objectives of the standard are achieved despite the non-compliance with the standard.

This was recently re-affirmed by the Chief Judge in Initial Action Pty Ltd v Woollahra Municipal Council [2018] NSWLEC 118 at [16]-[17]. Similarly, in Randwick City Council v Micaul Holdings Pty Ltd [2016] NSWLEC 7 at [34] the Chief Judge held that "establishing that the development would not cause environmental harm and is consistent with the objectives of the development standards is an established means of demonstrating that compliance with the development standard is unreasonable or unnecessary".

This Request addresses the first method outlined in Wehbe v Pittwater Council [2007] NSWLEC 827. This method alone is sufficient to satisfy the 'unreasonable and unnecessary' requirement.

An applicant does not need to establish all of the tests. It may be sufficient to establish only one way, although if more ways are applicable, an applicant can demonstrate that compliance is unreasonable or unnecessary in more than one way.

- ***The objectives of the standard are achieved notwithstanding non-compliance with the standard*** (the first method in Wehbe v Pittwater Council [2007] NSWLEC 827 [42]-[43])

The Housing SEPP does not include specific objectives for the non-discretionary development standard outlining the required car parking requirement. Having regard to the principles of the Housing SEPP, it can be assumed however, that the underlying objectives or intent of the standard are:

- To ensure that adequate car parking is provided on site to satisfy the parking demands of co-living housing.
- Promote alternate forms of transport to *"make good use of existing and planned infrastructure and services".*

The underlying intent of the development standard as outlined above, is addressed in the following sub-sections.

Parking Demands of Co-Living Housing

It is important to note the intent of the Housing SEPP is to facilitate the increased supply and diversity of affordable rental and social housing in NSW. Whilst by default the proposed PBSA development is considered co-living housing and therefore subject to the provisions under the Housing SEPP, the profile of student residents anticipated to be living at the site is very different to the profile of residents anticipated to live in co-living housing operated privately or by a social housing provider. Accordingly, the demand for resident and visitor on site car parking associated with PBSA in metropolitan locations may vary.

Consistent with PBSA industry experience, there will be no dedicated private car parking for residents within the development, with parking provided in the form of car share spaces. Most PBSA facilities in Sydney, including those not within close proximity to high-frequency train services, do not provide car parking for residents due to a lack of need or demand from international students that mostly utilise these facilities. This has been widely accepted by various consent authorities including the regional planning panels, City of Sydney, Randwick City Council, Willoughby City Council and DPE.

A recent Property Council of Australia (**PCA**) report dated November 2022 (titled *The Unsung Hero Underpinning Australia's Largest Service Export, Purpose Built Student Accommodation*) found that on average 43 per cent of student residents at PBSA were overseas students of Non-English speaking background (noting 21 per cent were listed in the 'other countries' category, likely resulting in a higher true number) and only 26 per cent of residents where domestic students. All international students would need to purchase a car in Australia and go through the subsequent registration and license transfer process. This is a significant barrier to car ownership likely resulting in these residents not owning a car, resulting in a limited market for PBSA with car parking.

The limited need for on-site parking to service PBSA is further detailed in the PCA's *Student Accommodation Council Fact Sheet: Car Parking in PBSA* provided at **Appendix A**. Having regard to this fact sheet, the proposed variation to the parking requirement is justified due to the following:

- Students typically rely on public transportation, bikes or walking to and from campus and their accommodation.
- The proposal encourages sustainable form of transport through increased use of public transport facilities located within walking distance from the site.
- As highlighted above, international students who live in PBSA typically have less interest in car ownership.
- The reduction in car parking allows the proposal to achieve lower carbon emissions.
- Maintaining and building under-utilised car parking is expensive and will be reflected on the residents in increased rental prices, therefore making the development unaffordable for students. The reduction in car parking will keep the cost for residents down and allow for steady supply of housing for students that meets their budgetary needs.

Recognising the limited demand for resident parking and high level of green travel accessibility to employment, amenities, services and education by non-car modes, the proposal provides the following parking within the development:

- 45 vehicle parking spaces which are to be allocated as follows:
  - 19 electric vehicle car share spaces for residents only
  - 2 car spaces for staff
  - 18 car spaces for visitors
  - 5 disabled spaces
  - A car space designated for the site shuttle service
- 146 bicycle spaces are provided for residents and 12 bicycle spaces for visitors.
- 19 shared electric bicycle spaces
- 3 motorcycle parking spaces

As acknowledged by Ryde Council in the Request for Information (**RFI**) dated 4 April 2023, based on a first principles approach, one car share space is widely recognised in the industry as the equivalent of eight resident spaces. The proposal includes 19 car share spaces for residents only and therefore equates to 152 resident parking spaces. A further 25 car spaces (including five disabled spaces) are proposed for staff and visitors to the site and one space for the site shuttle service. This represents a surplus of 31 spaces above the 147 car parking spaces required by clause 68(2)(e)(i) of the Housing SEPP.

To understand the likely demand for on-site visitor parking, a Human Movement Data (**HMD**) Analysis was prepared by Urbis to investigate the method of travel for visitors to different PBSA developments across Sydney in a pre- and post-COVID-19 context. This research and supporting summary document are provided at **Appendix B**. The research confirms that visitor car parking demands associated with PBSA is extremely low and that the proposed allocation of eight parking spaces for visitors is likely to be significantly higher than required at virtually all times of the day. The allocation of 18 parking spaces within the basement for visitors greatly exceeds the expected demand from visitors and on this basis, it is likely to be heavily under-utilised.

Promoting Alternate Forms of Transport

As shown in **Figure 3**, the site is within 400m of the Macquarie University Metro Station (4 minute walk), Macquarie Shopping Centre and bus interchange (6 minute walk) and within 800m of the Macquarie Park CBD (8 minute walk) and Macquarie University Campus Central (11 minute walk). All of these destinations are well connected by existing pedestrian infrastructure. The metro services allow for extensive access across Sydney, whilst the bus routes from the Macquarie Centre and Herring Road connect to the Sydney CBD, Parramatta, Ryde, Gladesville, The Hills region, St Ives, Mona Vale and Chatswood.

Figure 3 Local walking connections to site

Source: Urbis (2022)

The Macquarie Centre is a major retail centre that will meet the daily retail needs of residents including groceries, banking and medical services. The Macquarie Centre is only 360m walk from the site. There is also an abundance of social and recreational destinations that are accessible by walking or public transport.

Having regard to the above, the proposal intends to capitalise on existing infrastructure and encourage the use of alternate forms of transport as outlined in the Green Travel Plan (refer **Appendix C**). Key initiatives include:

- Developing a Transport Access Guide (TAG) for residents where they are given information on the available travel options.
- Providing the TAG to visitors by making it available on the Website.
- Displaying signage in a public area to remind residents of parking restrictions.
- Providing high-quality bicycle parking.
- Providing electric vehicle sharing schemes (car and bicycle) for residents.
- The Operational Management Plan states that as part of the lease agreement residents cannot bring a car or apply for a Council-issued parking permit.

In summary, despite the non-compliance with the car parking requirement, the purpose of the standard can still be achieved as the proposal will adequately meet the parking demands for this type of co-living housing and will promote sustainable forms of transport.

- **The underlying object or purpose would be undermined, if compliance was required with the consequence that compliance is unreasonable** (the third method in Wehbe v Pittwater Council [2007] NSWLEC 827 [42]-[43] as applied in Linfield Developments Pty Ltd v Cumberland Council [2019] NSWLEC 131 at [24])

Not relied upon.

- **The burden placed on the community (by requiring strict compliance with the standard) would be disproportionate to the (non-existent or inconsequential) adverse consequences attributable to the proposed non-compliant development** (cf Botany Bay City Council v Saab Corp [2011] NSWCA 308 at [15]).

No relied upon.

6.3. ARE THERE SUFFICIENT ENVIRONMENTAL PLANNING GROUNDS TO JUSTIFY CONTRAVENING THE DEVELOPMENT STANDARD? – CLAUSE 4.6(3)(B)

The Land & Environment Court judgment in Initial Action Pty Ltd v Woollahra Council [2018] NSWLEC 2018, assists in considering the sufficient environmental planning grounds. Preston J observed:

> *"…in order for there to be 'sufficient' environmental planning grounds to justify a written request under clause 4.6, the focus must be on the aspect or element of the development that contravenes the development standard and the environmental planning grounds advanced in the written request must justify contravening the development standard, not simply promote the benefits of carrying out the development as a whole; and*
>
> *…there is no basis in Clause 4.6 to establish a test that the non-compliant development should have a neutral or beneficial effect relative to a compliant development"*

There are sufficient environmental planning grounds to justify contravening the development standard, given the following:

- Ryde Council holds a policy position to minimise traffic impacts in Macquarie Park. *Part 4.5 Macquarie Park Corridor* of the RDCP 2014 includes the following objectives for sustainable travel in Macquarie Park.

- *"minimise rates of private vehicle use for commuters and business (particularly lone driver) trips and achieve a transport modal shift target of 40% public transport/60% private transport use for the journey to work in particular.*
- *To support public transport, car-sharing, car-pooling, walking, taxi, and bicycle users by enhancing amenities and infrastructure. 4. To more effectively manage the use of private vehicle trips and parking within the area.*
- *Reduce congestion and the cumulative impacts of vehicle emissions upon air quality."*

The reduced provision of on-site parking within the development strongly supports these objectives given:

- Students using public or active transport for their journey to work is well supported by existing green travel network. As outlined in the Green Travel Plan (refer **Appendix C**), 81% of students living on or near the Macquarie University Campus use a green travel option to commute to work based on the 2016 data from the Australian Bureau of Statistics (ABS).

  In addition, the top employment locations for students living in Macquarie Park are very well serviced by existing public transport. Based on the 2016 ABS data, the vast majority of local students work within the Macquarie Park – Marsfield statistical area (SA2), reflective of the high mode share of walking to work. The following two highest destinations (Sydney – Haymarket – The Rocks and Chatswood (East) – Artarmon) are areas that are very well connected by public transport to Macquarie Park. During peak periods, the Macquarie University Metro Station has services every 4 minutes in both directions to these locations.
- Reducing the dependence on private vehicle trips and the subsequent need for parking by providing no resident parking and taking advantage of the existing green travel network.
- Having no resident vehicle trips generated by the proposed development will result in a negligible impact on vehicle emissions and air quality.

- While there may be some demand for resident vehicle trips, these are anticipated to be limited due to the high level of green travel accessibility to employment, amenities, services and education by non-car modes. The limited demand for vehicle trips can be catered for by the 19 car share vehicles and 19 electric bike share spaces provided in the basement of the development.
- As outlined in the Council Assessment Report for the approved development at 23-25 Lachlan Avenue (LDA2021/0138), the Herring Road / Waterloo Road intersection is already approaching capacity:

  "The additional vehicle trips generated by the proposed development is expected to exacerbate the poor traffic conditions along Herring Road and Waterloo Road during weekday peak periods in the future, which will require infrastructure improvements within the surrounding road network to ameliorate future traffic impacts associated with the subject development and surrounding land uses. However, as the proposed development is not the sole contributor to traffic along Herring Road and Waterloo Road and there are no plans within Council's planning controls/studies detailing specific infrastructure improvements at the affected intersections, it is understood that there is no mechanism to impose on the applicant for the design and implementation of a viable solution (in part or in whole) to address traffic issues at the affected intersections."

  As indicated in the assessment report for the adjacent site, traffic on the surrounding local roads will significantly increase with the existing approved developments in the surrounding area, resulting in adverse impacts on the surrounding roads and intersections, especially along Waterloo and Herring Roads. The proposed development will result in limited vehicle trip generation, with trips only generated by car share usage, staff and visitors. This will result in a negligible traffic impact on the surrounding roads as there will be a limited number of trips and they will likely occur outside of the peak period.
- Strict compliance with the car parking standard would prejudice the development's ability to achieve the objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as outlined below:
  - The provision of 147 car parking spaces as recommended by the Housing SEPP would require a significant amount of basement floor space, where there is no demonstrated demand for such parking.
  - It will adversely impact the financial viability of the development and therefore the orderly and economic use and development of the land. Increased parking would require additional basement

excavation, which the Applicant (in consultation with the quantity surveyors) has estimated would contribute a further $10 million in construction costs).

  - The increased basement footprint would significantly reduce the available area for deep soil (currently proposed at 41.6%) and potentially intercept groundwater, which does not foster good design and amenity of the built environment.
  - The cost of the additional car parking would need to be passed onto residents and would therefore impact on the delivery of affordable housing for tertiary students.
  - The excessive on-site parking would not promote alternate green modes of travel, including walking, cycling and public transport.
  - It will constrain the ability to develop the site for PBSA, which in turn frees up demand for conventional housing stock in the Macquarie Park area, improving housing affordability.

- The development is consistent with the objectives of the MU1 Mixed Use Zone as set out in **Section 6.5**.

In conclusion, the proposal offers a positive planning benefit through the provision of green travel options and reduced car dependency, and there are sufficient environmental planning grounds to justify the non-compliance of the development standard.

6.4. HAS THE WRITTEN REQUEST ADEQUATELY ADDRESSED THE MATTERS IN SUB-CLAUSE (3)? – CLAUSE 4.6(4)(A)(I)

Clause 4.6(4)(a)(i) states that development consent must not be granted for development that contravenes a development standard unless the consent authority is satisfied that the applicant's written request has adequately addressed the matters required to be demonstrated by subclause (3).

Each of the sub-clause (3) matters are comprehensively addressed in this written request, including detailed consideration of whether compliance with a development standard is unreasonable or unnecessary in the circumstances of the case. The written request also provides sufficient environmental planning grounds, including matters specific to the proposal and the site, to justify the proposed variation to the development standard.

6.5. IS THE PROPOSED DEVELOPMENT IN THE PUBLIC INTEREST? – CLAUSE 4.6(4)(B)(II)

Clause 4.6(4)(a)(ii) states development consent must not be granted for development that contravenes a development standard unless the consent authority is satisfied the proposal will be in the public interest because it is consistent with the objectives of the development standard and the objectives for the zone.

The consistency of the development with the intended objectives of the development standard is demonstrated in **6.2** above. The proposal is also consistent with the land use objectives that apply to the site under the RLEP 2014. The site is located within the MU1 Mixed Use zone. The proposed development is consistent with the relevant land use zone objectives as outlined in **Table 3.**

Table 3 Assessment of compliance with land use zone objectives

Objective	Assessment
To encourage a diversity of business, retail, office and light industrial land uses that generate employment opportunities.	While the proposal does not involve business, retail, office or light industrial uses, the future residents will be within walking distance of such uses. As such, the proposal will offer housing close to shops, services and employment opportunities.
To ensure that new development provides diverse and active street frontages to attract pedestrian traffic and to contribute to vibrant, diverse and functional streets and public spaces.	All car parking is located within the basement of the development to maximise opportunities for active street frontages.

Objective	Assessment
	Given the highly accessible nature of the site, the proposal does not provide any dedicated car parking spaces for the residents and therefore promotes and encourages public transport patronage, walking and cycling. These alternate forms of transport will attract pedestrian traffic around the site.
To minimise conflict between land uses within this zone and land uses within adjoining zones.	The proposed development comprises student accommodation that is compatible with the surrounding residential and educational uses in the surrounding area. The proposal is suitably located near public transport, including the Macquarie University Metro Station and the bus interchange at Macquarie Shopping Centre. The reduced provision of car parking within the site will not impact on surrounding residential properties and the availability of on-street parking in Lachlan Avenue. As highlighted previously, the research undertaken by Urbis confirms the PBSA industry experience where demand for resident and visitor on site car parking in metropolitan locations is negligible.
To encourage business, retail, community and other non-residential land uses on the ground floor of buildings.	The street level entries include communal spaces and the main office area (to Lachlan Avenue), which will active the street frontages and facilitate passive surveillance of the adjoining streetscapes.
To ensure employment and educational activities within the Macquarie University campus are integrated with other businesses and activities.	The proposal provides student accommodation within a highly accessible location to support Macquarie University and other local businesses. While the proposal will not deliver business activities, the future residents will benefit from the site's proximity to employment and educational activities in the immediate area.
To promote strong links between Macquarie University and research institutions and businesses within the Macquarie Park corridor.	The proposal involves high-quality accommodation for tertiary students that is integrated with the surrounding educational and research activities, retail and business services and public transport. The proposal is therefore consistent with this objective and will deliver a compatible complementary land use within the Macquarie Park corridor.

6.6. HAS THE CONCURRENCE OF THE PLANNING SECRETARY BEEN OBTAINED? – CLAUSE 4.6(4)(B) AND CLAUSE 4.6(5)

The Secretary can be assumed to have concurred to the variation under Department of Planning Circular PS 18–003 'Variations to development standards', dated 21 February 2018. This circular is a notice under 64(1) of the *Environmental Planning and Assessment Regulation 2021*.

The Secretary can be assumed to have given concurrence as the matter will be determined by an independent hearing and assessment panel or a Sydney district or regional planning panel in accordance with the Planning Circular.

The matters for consideration under clause 4.6(5) are considered below.

- **Clause 4.6(5)(a) – does contravention of the development standard raise any matter of significance for State or regional environmental planning?**

The proposed non-compliance with the minimum car parking requirement will not raise any matter of significance for State or regional environmental planning. It has been demonstrated that the proposed variation is appropriate based on the specific circumstances of the case and would be unlikely to result in an unacceptable precedent for the assessment of other development proposals.

- **Clause 4.6(5)(b) - is there a public benefit of maintaining the planning control standard?**

The proposed development satisfies the intent of the minimum car parking standard and the land use zone objectives despite the technical non-compliance. Strict compliance with the car parking standard would prejudice the development's ability to achieve the following public and environmental benefits:

- The increased basement footprint would significantly reduce the available area for deep soil (currently proposed at 41.6%) and intercept groundwater, which does not foster good design and amenity of the built environment.
- The excessive parking required by the Housing SEPP would not promote alternate green modes of travel, including walking, cycling and public transport.
- It will constrain the ability to develop the site for PBSA, which in turn frees up demand for conventional housing stock in the Macquarie Park area, improving housing affordability.
- The reduced vehicle trips generated by the proposed development would result in a negligible impact on vehicle emissions and air quality.

Having regard to the above, there is no material impact or benefit associated with strict adherence to the development standard and there is no compelling reason or public benefit derived from maintenance of the standard.

- **Clause 4.6(5)(c) – are there any other matters required to be taken into consideration by the Secretary before granting concurrence?**

Concurrence can be assumed, however, there are no known additional matters that need to be considered within the assessment of the clause 4.6 variation request prior to granting concurrence, should it be required.

7. CONCLUSION

It is reasonable and appropriate to vary the non-discretionary car parking standard to the extent proposed for the reasons detailed within this submission and as summarised below:

- The proposal is consistent with clause 4.6(3) as strict compliance with the car parking development standard is unreasonable and unnecessary in the circumstances of the case. The proposal achieves the intended purpose of the development standard as provided in clause 68(2)(e)(i) of the Housing SEPP and is consistent with the objectives for development within the MU1 Mixed Use zone despite non-compliance.
- There are sufficient environmental planning grounds to justify contravening the development standard. As demonstrated by the proposal, the demand for resident and visitor on site car parking associated with PBSA in metropolitan locations is negligible.
- The reduced provision of car parking within the site will not result in any material impacts on neighbouring properties or the public realm.

For the reasons outlined above, the clause 4.6 request is well-founded. The development standard is unnecessary and unreasonable in the circumstances, and there are sufficient environmental planning grounds that warrant contravention of the standard. In the circumstances of this case, flexibility in the application of the car parking development standard should be applied.

8. DISCLAIMER

This report is dated June 2023 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd **(Urbis)** opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of LACHLAN AVENUE DEVELOPMENT PTY LTD **(Instructing Party)** for the purpose of Clause 4.6 Request **(Purpose)** and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

In preparing this report, Urbis may rely on or refer to documents in a language other than English, which Urbis may arrange to be translated. Urbis is not responsible for the accuracy or completeness of such translations and disclaims any liability for any statement or opinion made in this report being inaccurate or incomplete arising from such translations.

Whilst Urbis has made all reasonable inquiries it believes necessary in preparing this report, it is not responsible for determining the completeness or accuracy of information provided to it. Urbis (including its officers and personnel) is not liable for any errors or omissions, including in information provided by the Instructing Party or another person or upon which Urbis relies, provided that such errors or omissions are not made by Urbis recklessly or in bad faith.

This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A STUDENT ACCOMMODATION COUNCIL FACT SHEET: CAR PARKING IN PBSA

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Creating for Generations

Student Accommodation Council Fact Sheet: Car Parking in PBSA

Purpose of this fact sheet

Student Accommodation is a relatively new asset class in Australia that only reached scale around 2015. For this reason, purpose-built student accommodation (PBSA) developments often inhabit a grey-area outside of the existing planning definitions used by local governments across Australia – they are often captured under the same planning guidelines as traditional residential developments, residential commercial developments or boarding houses, depending on the jurisdiction.

This has led to a misunderstanding across local government about how the buildings operate and how best to apply car parking ratios against PBSA development applications - which can have major implications for developers on the viability of their buildings.

This fact sheet is to assist council planners understand how PBSA as an asset class operates, who lives in PBSA, and how these two factors intersect and influence the use of car parks within PBSA developments.

Who is the Student Accommodation Council

The Student Accommodation Council is the peak industry group representing purpose-built student accommodation (PBSA), a unique asset class owned and operated by the private sector and currently providing over 76,500 beds to students across Australia in over 200 buildings.

The ten founding members of the SAC account for the majority of PBSA beds in Australia. These members are Scape, Journal Student Living, GSA and Yugo, Iglu, UniLodge, Campus Living Villages, Student One, Wee Hur and Y-Suites, Cedar Pacific and Pamoja Capital, Centurion and Dwell. This gives us a unique insight into how the bulk of the market operates and develops new stock and gives us unprecedented access to data about the residents who live in our buildings.

Current figures produced by the SAC have shown that eighty per cent of all the PBSA beds owned by our members are home to international students – making the sector a significant stakeholder in providing safe, custom housing and community for international students in Australia.

As an advocacy body, we remain committed to growing the amount of PBSA beds in Australia. Under-supply of this building type, coupled with Australia's housing crisis due to a lack of supply at all ends of the residential spectrum, is now impacting the ability for students to find accommodation close to where they study. As at April 2023, there was no availability

in PBSA buildings for semester one in any capital city, with the exception of Melbourne which is tracking occupancy levels around 90 per cent.

What is purpose-built student accommodation

Purpose-built student accommodation provides a customized and fit-for-purpose accommodation option for domestic and international students studying in Australian cities.

While the sector has long been established in overseas markets like the UK and the US, it is still relatively new in Australia and in its growth phase. As a result of this, it is not well understood by many in the wider Australian community, although for many international students it is the first port-of-call when organizing to move to Australia for study.

The purpose-built nature of PBSA is how the sector differentiates itself from other housing offerings in the market for Australian students, like home-stays or private rentals. It is available only to students enrolled to study in an educational institution, and is designed and serviced around the specific needs of a young and mobile resident population.

The physical layout of the buildings are designed as mixed-use –incorporating retail outlets, communal spaces, gyms, study areas, amenities, and multiple accommodation formats. PBSA buildings are in proximity to both universities and education precincts and are usually located close to public transport options. The walkability and connectivity of PBSA buildings is a key selling point for students looking to live in this form of accommodation.

PBSA is well-suited to students who are new to university and want a mid-term accommodation option. PBSA is an all-inclusive and fully-furnished accommodation option, which makes it well suited to house new university students –particularly those coming from overseas or interstate. It is also built around the model that most students only stay a few semesters or years, and at most the full duration of their studies.

In a study produced for the Student Accommodation Council, all 76,500 beds across Australia were broken down by key demographics. This piece of work found that the number one resident cohort living in Australian PBSA buildings are female first-year students from Asia who stay for (on average) twelve months[1].

Car parking ratios for PBSA developments

There are three key reasons why student accommodation has less need for car parking requirements than other types of residential developments.

These three key reasons are below and fleshed out further in this paper:

1. Limited need for cars: Students typically rely on public transportation, bikes, or walking to and from campus and their accommodation, as well as the surrounding area. Many universities also offer free shuttle services or discounted public transportation passes to students, further reducing the need for cars. The international students who live in PBSA buildings typically have less interest or experience in car ownership than the average Australian living in a private residential home.

[1] Accenture report: "The Unsung Hero Underpinning Australia's Largest Service Export" (Nov 2022) *Student Accommodation Council*

2. Sustainability: Encouraging alternative forms of transportation can help reduce the environmental impact of student accommodation developments. By reducing car usage, the development can lower emissions and energy consumption. This also appeals to the student resident who is more environmentally conscious than previous generations, and expects their accommodation provider to ensure their building is developed in accordance with ESG principals.
3. Cost savings: Maintaining and building under-utilized parking facilities is expensive, and those costs are likely to be passed on to residents in the form of higher rent. By eliminating the need for parking, student accommodation developments can keep costs down for residents and ensure a steady supply of housing for students that meets their budgetary needs, thus keeping them out of competing in the private rental market where they are more likely to require a car.

1. Limited Need for Cars

The demographic makeup of residents who live in PBSA buildings is heavily weighted towards international students, who make up over 80 per cent of our members' buildings. The largest cohort of residents are in their first year of university and are often newly arrived in Australia. Because of these two key factors, car ownership in PBSA buildings in comparison to other development types is minimal to the point of being non-existant.

Put simply, international students who choose to live in PBSA do so in part because of the walkable amenity and transport connectivity of PBSA buildings – they do not want to move to a new country and have to buy a car upon arrival.

The resident makeup of PBSA is also highly mobile, with many only enrolling for one or two semesters before they move to another housing type or return to their home country, making car ownership an expensive and short-term proposition. International students who live in PBSA often come from home countries where car ownership is rare and unnecessary (e.g. Singapore) and have no desire to own a car and bear the associated expenses for their short time studying in Australia.

In fact, the most popular on site transport modes associated with PBSA developments are shared e-bikes, which are utilized by the residents on a short term basis. Even then, councils that impose bike parking requirements on PBSA assets tend to over-estimate the amount of bikes that will be stored on site. Again, most residents will not buy their own bike while staying at a PBSA, but will utilize shared facilities via a user-pays system.

Ratios for carparking that tie developers to standards originally developed for residential developments or boarding houses are outdated and show a misunderstanding about who lives in purpose-built student accommodation and how residents utilize public transport and proximity to education institutions.

In fact, PBSA developments can reduce the street parking demand in some areas, especially if the development is located near public transportation or within walking distance of universities and other amenities, as student residents are less likely to own cars or rely on on-street parking than traditional residential tenants or office workers.

Often, it is the car-centric university campuses that drive traffic into educational precincts, with PBSA developments in close proximity to campus actually reducing the need for extra car parking on university land.

Across the membership of the Student Accommodation Council there are member companies with thousands of beds across multiple assets that do not have a single car park associated with their developments. Not all of these assets are located in central CBDs, but all are either walking distance from a major tertiary institution or from well-connected transport linkages.

2. Sustainability

Residents in student accommodation in Australia care increasingly about sustainability in the buildings where they live. An ethos amongst the PBSA sector that aims to reduce the environmental footprint of developments through materials, centrally managed power systems and a focus on alternative modes of transport is highly valued by PBSA residents.

In fact, the sustainability of a building is one of the key factors for many students in deciding to live in PBSA. For this reason, many developers view alternative transport modes like e-bikes, walkable locations and well linked public transport options not as a 'nice to have' but as a necessity.

Across the Student Accommodation Council membership, there are a number of developments that were built in accordance with local government car parking requirements, that now have unused car parks sitting dormant within their buildings. While operators have, where possible, tried to re-purpose these spaces, the environmental costs of unused car parks in student accommodation developments can be significant.

Unused car parks can contribute to increased stormwater runoff, generate a 'heat island effect' and the production and transportation of materials required for building car parks results in unnecessary carbon emissions. When car parks are left unused, these emissions can be seen as unnecessary and contribute to the overall carbon footprint of the development.

Cost savings

Requiring car parks in purpose-built student accommodation (PBSA) developments can drive up the rental costs for residents in several ways, including:

1. Construction and maintenance costs: Building and maintaining car parks can be expensive. These costs may be passed onto renters through higher rental prices or additional fees. Given the housing crisis currently facing people looking to rent in Australia, anything that increases the costs for student residents should be addressed at the development stage.
2. Reduced housing density: Car parks take up space that could otherwise be used for additional housing units. If the development includes fewer units due to the need for car parks, the cost of each unit may be higher. This can impact the viability of much-needed PBSA projects and reduce the amount of new beds for students that ultimately come to the market.

Arbitrarily applying car parking requirements onto developments that are in walking distance to education institutions or are located on key transport corridors, only decreases the viability of PBSA projects and increases the risk that the high cost of developing car parks will be passed on to the end user – the students.

Conclusion

Purpose-built student accommodation developments provide much needed housing choice for students, reduces pressure on the broader residential rental market and provides an ongoing economic uplift to the communities in which they are located.

This asset type and the residents who live in them are upwardly mobile, diverse, environmentally aware and budget conscious in a way we do not see in other residential accommodation types. Their desire, capacity and interest in owning vehicles is minimal – and yet PBSA developments continue to be held to the same parking ratios as traditional residential apartments and other development types.

Local government and planners need to assess development applications from PBSA developers under a different lens – one that understands the student resident, their reliance on walking and public transport, and the lack of cultural affinity with car ownership. While an Australian family living in an apartment may well require a car, a single international student living in PBSA will simply not have the same need for a vehicle.

The reduction or elimination of car parking requirements for PBSA developments at the beginning of the DA process will ultimately expedite the development of these critical assets and allow more beds to come online at a time of critical housing need.

Yours sincerely

Torie Brown | Executive Director

Student Accommodation Council

APPENDIX B HUMAN MOVEMENT DATA ANALYSIS

PARKING PROFILE DEVELOPMENT METHOD – 17-21 LACHLAN AVENUE, MACQUARIE PARK

Method for Determining Parking Demand

1. Review absolute samples and assign to various modes of arrival.
2. Determine the proportion of visitors from the sample based on the common location of devices.
3. Identify car trips and profile car demand of visitors for each of the sample sites by dwell time. Add in dummy values between the first and last device ping in the car park to reflect car park occupancy.
4. Scale the car parking demand in the profiles to per-day demand.
5. Scale the per-day car parking profile to the number of beds at the particular sample site.
6. Repeat steps 1 to 5 for each of the three sample sites and average the three per-day parking profiles together. This average is the ratio of visitors parked cars bed at the three sample sites for each hour.
7. Factor up the parking profile based on the number of beds at the proposed development and the proportion of devices in the NEAR dataset (data provider not an acronym) against the population.
8. Round up the average parking demand during each hour and identify the peak period. The peak period identified was 1 PM. An example of the calculation process to determine just the peak hour is shown on the right.

Data insights

Given the nature of the development and target market of residents (largely international students), it is likely that residents within the development will socialise with other residents of the building or those within the immediate area. Based on experience with similar PBSA developments, visitors commuting by private vehicle is expected to be limited and infrequent. **Table 1** identifies the proportion of our sample against the number of beds at the sample sites and the number of identified visitors. **Table 2** shows the factor values used to scale up the proportions to be appropriate to Lachlan Avenue.

Factoring Method

The private vehicle visitors are apportioned up based on the dwell times and then averaged together. These are then factored first based on the beds at the sample sites and the days of data collection to achieve a per-day figure. These values are then factored up based on the number of beds at the proposed development and the devices as a proportion of the population. This determined the values in the final demand profile.

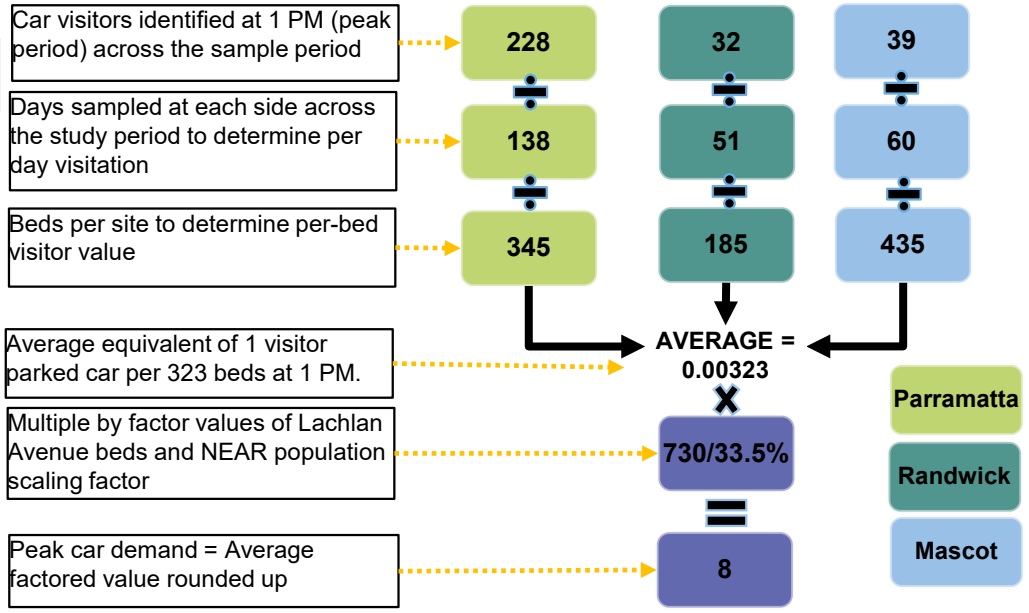
Table 1 – Data Collected Across Sample Period (not daily values)

	Post Covid (April 2022 – April 2023)				Pre-Covid (January 2019 – December 2019)			
Sample site	Number of Residents (based on beds)	Devices with Common Evening Location at site	Visitors (all modes)	Visitors (Private Vehicle)	Number of Residents (based on beds)	Devices with Common Evening Location at site	Visitors (all modes)	Visitors (Private Vehicle)
Mascot	435	212	1159	310				
Parramatta	345	220	1048	329	345	183	750	337
Randwick	185	77	1204	420	185	91	388	112

Table 2 – Factor Values

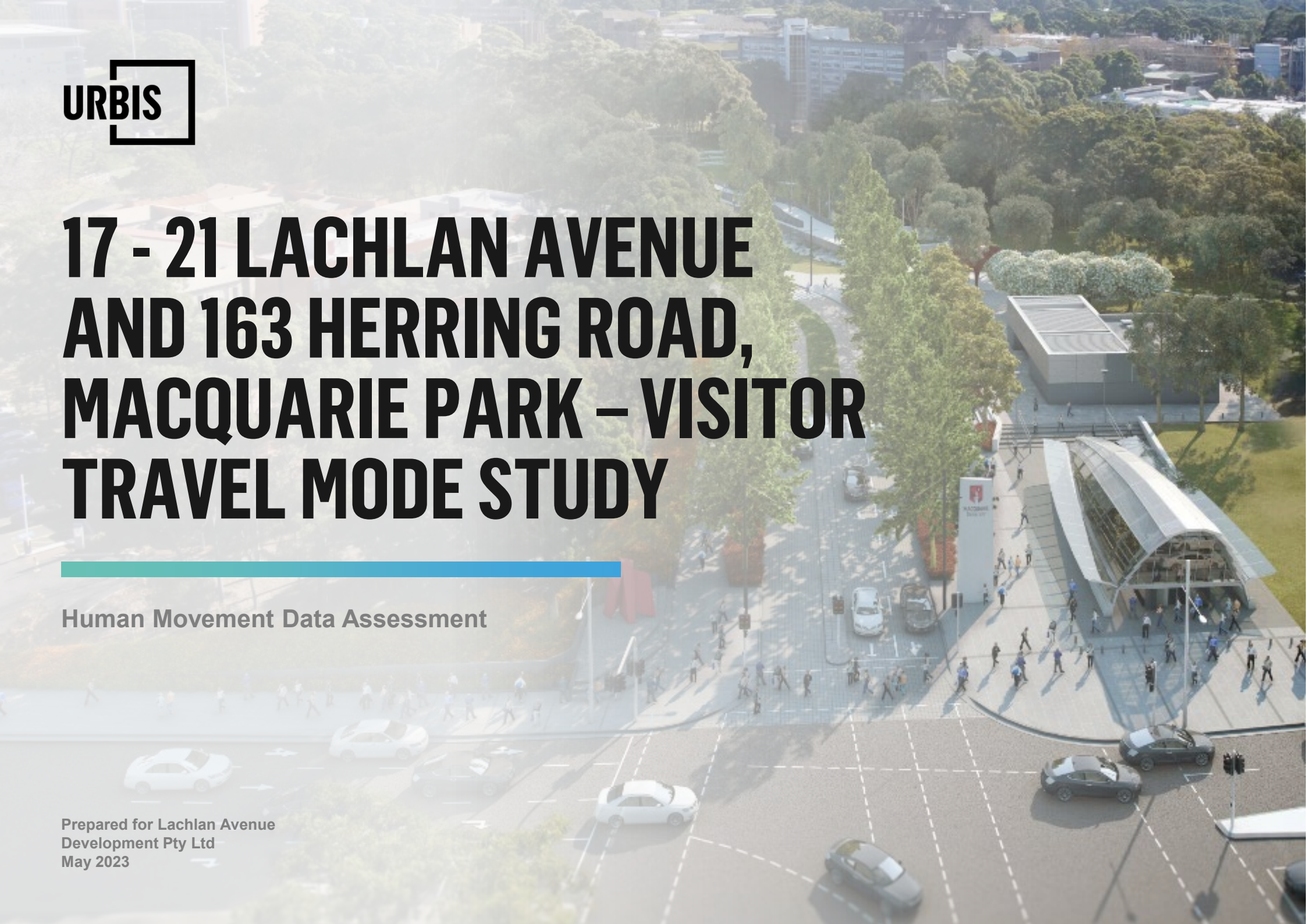
	Factor Values
Number of beds at Lachlan Avenue	730
Devices as a proportion of the population	33.5%

Peak Hour Calculation



URBIS

17 - 21 LACHLAN AVENUE AND 163 HERRING ROAD, MACQUARIE PARK – VISITOR TRAVEL MODE STUDY



Human Movement Data Assessment

Prepared for Lachlan Avenue Development Pty Ltd
May 2023

COVID-19 AND THE POTENTIAL IMPACT ON DATA INFORMATION

The data and information that informs and supports our opinions, estimates, surveys, forecasts, projections, conclusion, judgments, assumptions and recommendations contained in this report (Report Content) are predominantly generated over long periods, and is reflective of the circumstances applying in the past. Significant economic, health and other local and world events can, however, take a period of time for the market to absorb and to be reflected in such data and information. In many instances a change in market thinking and actual market conditions as at the date of this report may not be reflected in the data and information used to support the Report Content.

The recent international outbreak of the Novel Coronavirus (COVID-19), which the World Health Organisation declared a global health emergency in January 2020 and pandemic on 11 March 2020, has and continues to cause considerable business uncertainty which in turn materially impacts market conditions and the Australian and world economies more broadly.

The uncertainty has and is continuing to impact the Australian real estate market and business operations. The full extent of the impact on the real estate market and more broadly on the Australian economy and how long that impact will last is not known and it is not possible to accurately and definitively predict. Some business sectors, such as the retail, hotel and tourism sectors, have reported material impacts on trading performance. For example, Shopping Centre operators are reporting material reductions in foot traffic numbers, particularly in centres that ordinarily experience a high proportion of international visitors.

The data and information that informs and supports the Report Content is current as at the date of this report and (unless otherwise specifically stated in the Report) does not necessarily reflect the full impact of the COVID-19 Outbreak on the Australian economy, the asset(s) and any associated business operations to which the report relates. It is not possible to ascertain with certainty at this time how the market and the Australian economy more broadly will respond to this unprecedented event and the various programs and initiatives governments have adopted in attempting to address its impact. It is possible that the market conditions applying to the asset(s) and any associated business operations to which the report relates and the business sector to which they belong has been, and may be further, materially impacted by the COVID-19 Outbreak within a short space of time and that it will have a longer lasting impact than we have assumed. Clearly, the COVID-19 Outbreak is an important risk factor you must carefully consider when relying on the report and the Report Content.

Where we have sought to address the impact of the COVID-19 Outbreak in the Report, we have had to make estimates, assumptions, conclusions and judgements that (unless otherwise specifically stated in the Report) are not directly supported by available and reliable data and information. Any Report Content addressing the impact of the COVID-19 Outbreak on the asset(s) and any associated business operations to which the report relates or the Australian economy more broadly is (unless otherwise specifically stated in the Report) unsupported by specific and reliable data and information and must not be relied on.

To the maximum extent permitted by law, Urbis (its officers, employees and agents) expressly disclaim all liability and responsibility, whether direct or indirect, to any person (including the Instructing Party) in respect of any loss suffered or incurred as a result of the COVID-19 Outbreak materially impacting the Report Content, but only to the extent that such impact is not reflected in the data and information used to support the Report Content.

This report is dated **18 May 2023** and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd's (Urbis) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of **Lachlan Avenue Development Pty Ltd** (Instructing Party) for the purpose of a **Human Movement Data Study** (Purpose) and not for any other purpose or use. Urbis expressly disclaims any liability to the Instructing Party who relies or purports to rely on this report for any purpose other than the Purpose and to any party other than the Instructing Party who relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events including wars, civil unrest, economic disruption, financial market disruption, business cycles, industrial disputes, labour difficulties, political action and changes of government or law, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or made in relation to or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

Urbis has made all reasonable inquiries that it believes is necessary in preparing this report but it cannot be certain that all information material to the preparation of this report has been provided to it as there may be information that is not publicly available at the time of its inquiry.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the belief on reasonable grounds that such statements and opinions are correct and not misleading bearing in mind the necessary limitations noted in the previous paragraphs. Further, no responsibility is accepted by Urbis or any of its officers or employees for any errors, including errors in data which is either supplied by the Instructing Party, supplied by a third party to Urbis, or which Urbis is required to estimate, or omissions howsoever arising in the preparation of this report, provided that this will not absolve Urbis from liability arising from an opinion expressed recklessly or in bad faith.

Urbis staff responsible for this report were:

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Project code	P0036953
Report number	1

Urbis acknowledges the important contribution that Aboriginal and Torres Strait Islander people make in creating a strong and vibrant Australian society.

We acknowledge, in each of our offices, the Traditional Owners on whose land we stand.

CONTENTS

EXECUTIVE SUMMARY

This report has been prepared by Urbis, on behalf of Lachlan Avenue Development Pty Ltd, in relation to the proposed student accommodation facility consisting of 732 beds located at 17-21 Lachlan Avenue and 162 Herring Road, Macquarie Park. The purpose of this study is to identify the anticipated visitor parking demand at the proposed development. For benchmarking purposes, this study has analysed three existing similar student accommodation sites in Sydney, these being Western Sydney University Parramatta Village, University of New South Wales Cowper Street Apartments in Randwick and Iglu Mascot.

Mobile device-based Human Movement Data (HMD) was used to determine the anticipated peak parking demand for visitors driving to each of these three sites in a pre and post COVID context. The peak parking demand for each of these three sites where averaged together and then factored up to be reflective of a 730 bed student accommodation site. A peak visitor parking demand of eight was identified, resulting in the need for eight visitor parking spaces at the proposed development.

A HIGH PORTION OF VISITOR TRIPS TO THE SAMPLE SITE USE NON CAR OR TAXI / RIDESHARE MODES

8

THE NUMBER OF VISITOR CAR PARKING SPACES REQUIRED AT 17-21 LACHLAN AVENUE

These results show that Council's requirement for visitor parking spaces is excessive and is not required. Providing fewer visitor car parking spaces also provides an incentive for visitors who intend to access the site to use a green travel mode such as the nearby Sydney Metro, accessible from Macquarie Park Station, less than 250 metres from the site or by walking, cycling or using the extensive local shared path network, or one of many bus routes that stop at the Macquarie Park Interchange less than 400 metres from the site.

01

INTRODUCTION & BACKGROUND

INTRODUCTION

Lachlan Avenue Development Pty Ltd ('the applicant') has proposed a 732-bed student accommodation facility at 17 - 21 Lachlan Avenue and 163 Herring Road in Macquarie Park ('the site'). The target market is for students attending Macquarie University which is located within a short walk of the site.

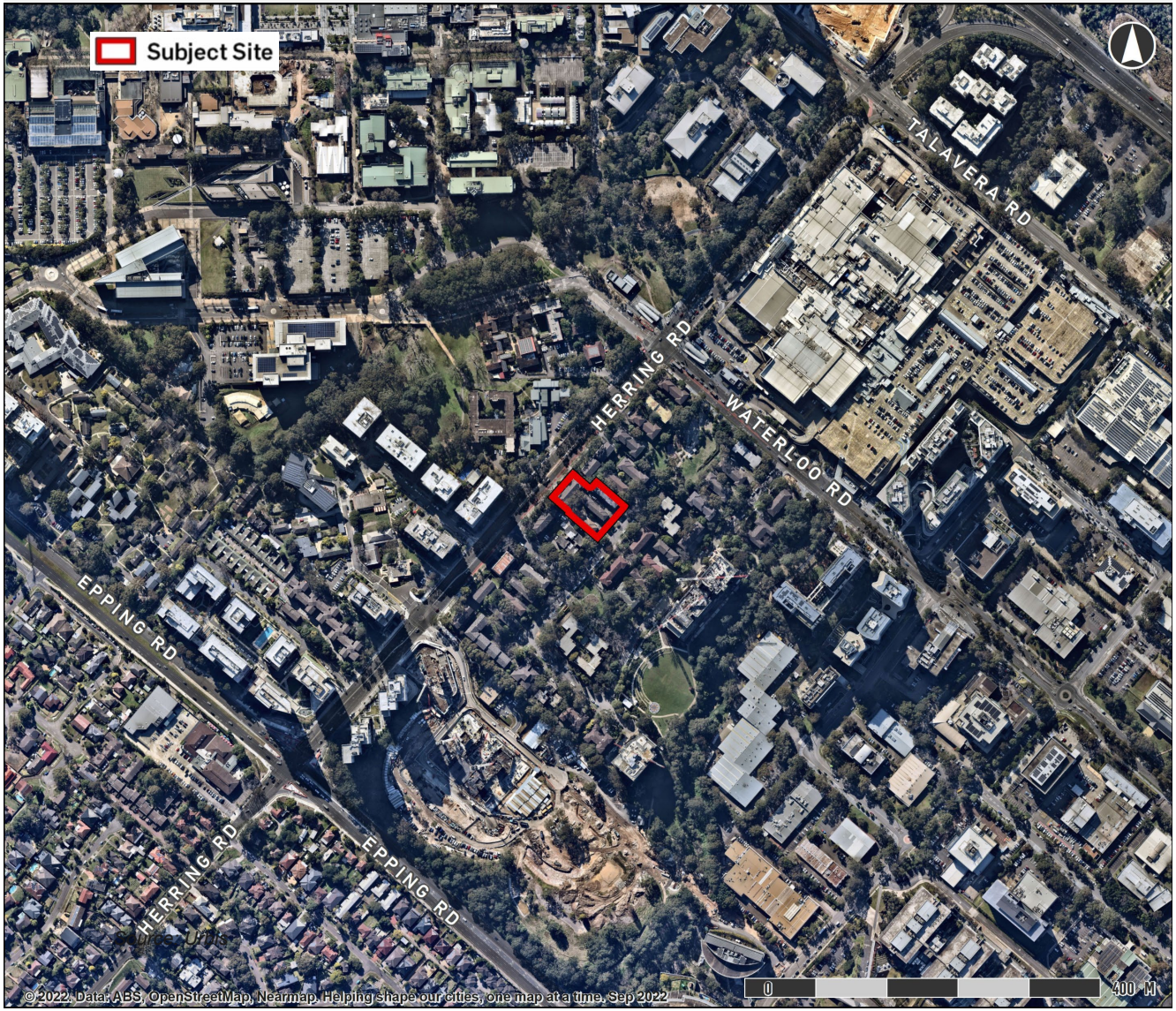
There is limited on-street car parking and commercial car parking available within the site locality.

All on-street parking within at least a one-kilometre walk of the site is time-restricted. Residents of the proposed development will not be eligible for the resident parking scheme.

The City of Ryde is seeking to expand the visitor parking provision that is currently proposed within the development, arguing that it does not meet the requirements to support the operations of the facility.

Using Human Movement Data, this report looks to examine the visitor parking demand at three comparable student accommodation facilities in Sydney.

Figure 1: Subject Site



Source: Urbis

BACKGROUND CONTEXT

Lachlan Avenue Development Pty Ltd are committed to capitalising on the proximity of the site to public transport and destinations such as Macquarie University, Macquarie Centre and other key activity centres by supporting residents to go about their daily lives without the need for a personal car.

Figure 2 shows the proximity of the site to key locations and public transport. The site is less than 400 metres from

- Macquarie Park Metro Station.
- Buses from Macquarie Centre.
- Express buses from Herring Road.
- Shared paths on Waterloo Road and along Shrimpton's Creek.

The purpose of this report is to compare three similar developments within New South Wales and examine the requirements of visitors accessing student accommodation buildings.

The approach for this comparative analysis utilises Human Movement Data to analyse the behaviour of visitors to comparable developments in Sydney. The three developments chosen for this comparative analysis are Parramatta Village (University of Western Sydney), Cowper Street Apartments (University of New South Wales) and Iglu Mascot – Post-COVID-19 only (Not tied to any specific institution).

Figure 2: Proximity of site to key locations and public transport

Source: Urbis

02

METHOD

METHOD

Human Movement Data (HMD) was used to investigate the method of travel for visitors to different student accommodation sites across Sydney in a pre and post-COVID-19 context. Three sites were used for comparative purposes based on their similarity to Macquarie Park. These were

- Parramatta Village (University of Western Sydney).
- Cowper Street Apartments (University of New South Wales).
- Iglu Mascot – Post-COVID-19 only (Not tied to any specific institution).

These three sites were selected due to their common features with the Lachlan Avenue site, including

- Proximity to the Campus.
- Proximity to Green Travel Modes.
- Provision of on-street parking.
- Non-CBD setting.

Geofences were used to capture the HMD for each site and the surrounding streets. These 'precincts' are introduced and defined in greater detail over the following pages. The locations of the geofences – which include the selection of footpaths, roads, parking lanes, and public transport stops, were used to define travel modes along with an exclusionary approach to ensure only visitors to these sites were selected.

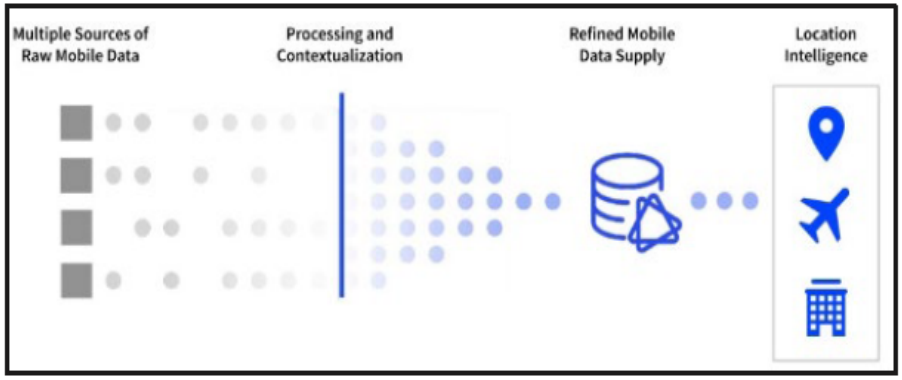
Figure 3: Overview of three existing comparison sites

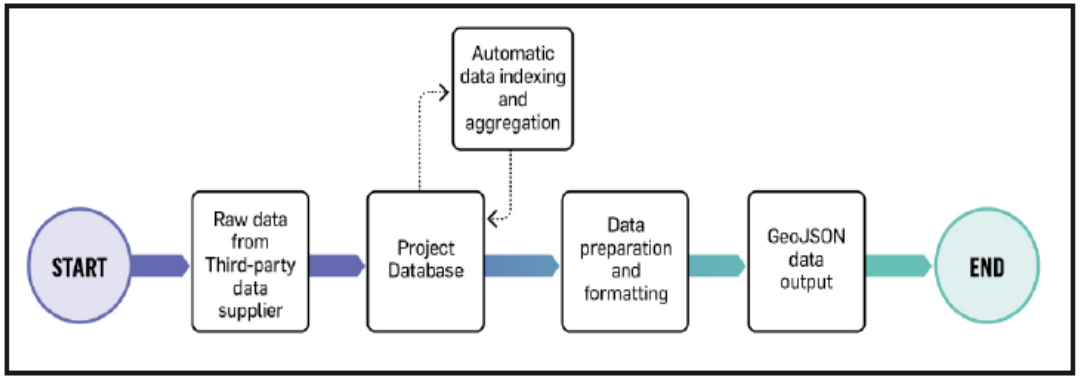
Source: Urbis

HUMAN MOVEMENT DATA (HMD)

- HMD is acquired from the locations of mobile devices and provides empirical evidence of people's recent movement within any environment.
- This rich data source provides visibility of use within 48 hours of activity while maintaining privacy in accordance with the NSW and Australian Government Privacy Acts.
- Figure 7 below details the process of obtaining location information through raw mobile phone GPS data sources and the steps involved in processing this data.

Figure 7: Process of obtaining and processing location intelligence through raw mobile phone GPS data sources





- The HMD used for the purposes of this project was collected for people passing through the study area.
- Using this data, the following has been analysed
  - Identification of visitors to the student accommodation sites.
  - Assigning modes to those who were visiting the Student accommodation site and dwell times.
  - Where people were five, 15, 30 and 60 minutes before and after visiting the three sample sites.
  - Where people who visited the three sample sites live and work.

SITE CONTEXT – PARRAMATTA VILLAGE

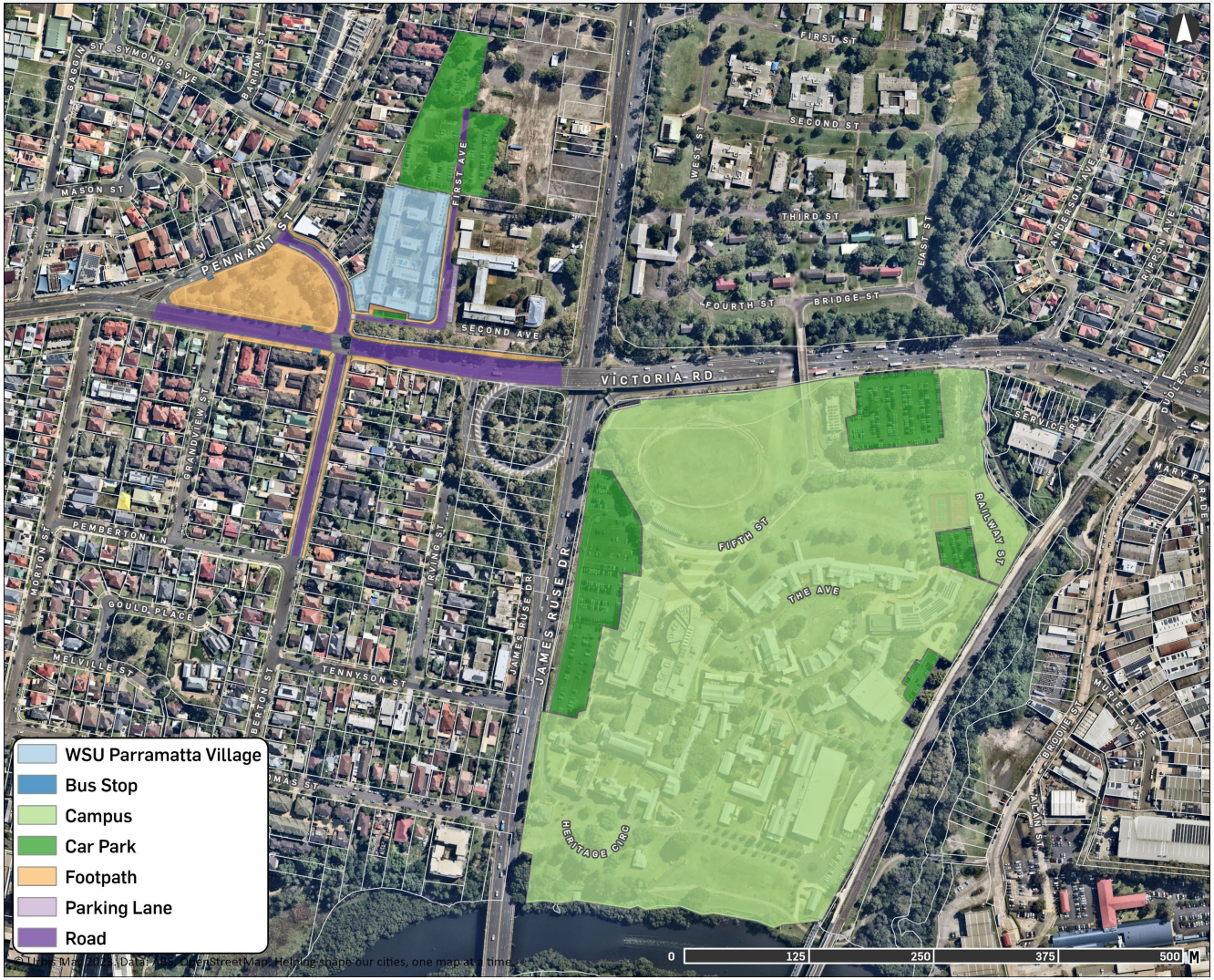
The Western Sydney University Village Parramatta (Parramatta Village) student accommodation at 70 Pemberton Street in Parramatta was selected due to the site's proximity to the adjacent campus and its suburban nature.

The site is a 10-minute walk from the University of Western Sydney Parramatta Campus, which is a similar distance to the campus centre from the Lachlan Avenue site. **Figure 4** on the right defines the precincts used to determine travel modes.

The range of the precinct selection extends along Pemberton Street to capture any potential on-street parking, bus usage and car usage along Victoria Road.

Parramatta Village has 345 beds, and the resident and visitor parking provision is zero. However, a Western Sydney University parking area is located adjacent to the site to the north.

Figure 4: Parramatta Village Study Area



Source: Urbis

SITE CONTEXT – COWPER STREET APARTMENTS

The Cowper Street Apartments, located in Randwick, was selected due to its non-CBD setting and its existing underutilised visitor parking area. In a post-COVID-19 context, it also has access to the L2 Randwick Line of the Sydney Light Rail Network.

Sydney CBD and Southeast Light Rail is located close the Cowper Street apartments, providing a comparative example to the Sydney Metro, less than 300 metres from the Lachlan Avenue site. The precincts for which the travel modes were defined, and the student accommodation building are detailed in **Figure 5** to the right.

The precinct selection of the site includes Mulwarree Avenue, William Street, Prince Street and Cowper Street to capture local on-street parking areas and Alison Road and the light rail corridor along Alison Road to capture car and public transport, users.

The Cowper Street Apartments has 185 beds and 56 parking spaces in an internal basement car park. There is no direct allocation for visitor parking. However, visitors can park in the basement.

Figure 5: Cowper Street Apartments Study Area

Source: Urbis

SITE CONTEXT – IGLU MASCOT

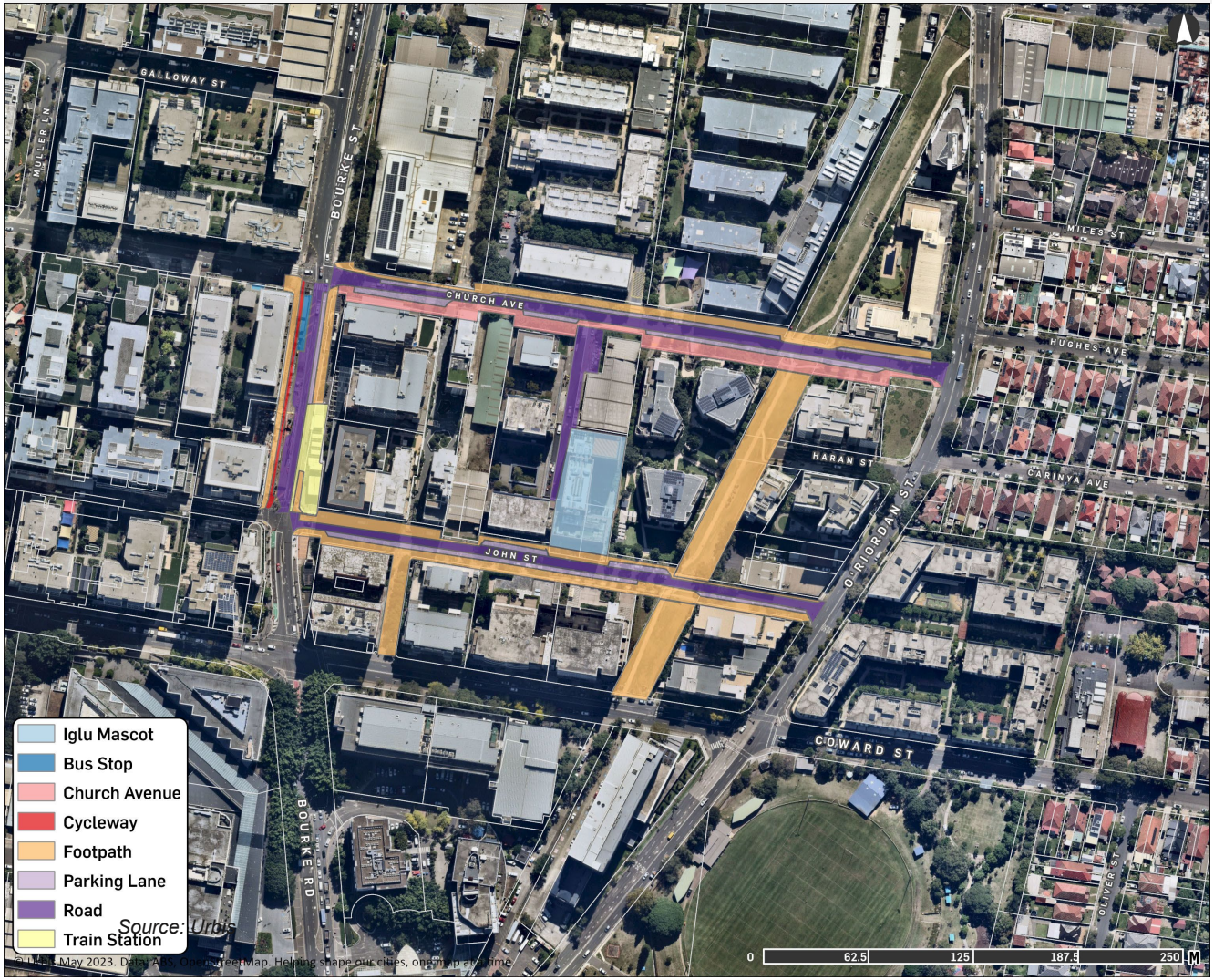
Iglu Mascot was selected due to its proximity to a train station, location within a rapidly densifying area, and absence of on-site parking.

The proximity of Mascot train station to the site is a critical consideration as it reduces the reliance on the car to access education, employment, and services, which is similar and relevant in the context of the development at Lachlan Avenue. The precincts of which the travel modes were defined, and the student accommodation building are shown in **Figure 6** to the right.

The precinct selection includes John Street, Bourke Street, and Church Avenue to capture road users and any potential on-street parking areas. Linear Park and Laycock Street were also captured as they are pedestrian connections to the site and are key in identifying all pedestrians accessing the site. Mascot Train Station was also included.

Iglu Mascot was completed during the COVID-19 pandemic. As a result, the analysis of this site only considered the post-COVID-19 context. Iglu Mascot has 435 beds and no internal car parking.

Figure 6: Iglu Mascot Study Area



Source: Urbis

HUMAN MOVEMENT DATA METHOD

Method

HMD has been sourced from the third-party provider Near. Near's mobile location data is aggregated from a variety of high-quality sources, including data from proprietary applications (apps) and locational data derived from mobile advertising. Across Australia, the dataset has approximately 6.1 million active unique devices per month. Consequently, the dataset is seen as accurate for this report.

These apps are predominantly English-speaking apps and will have varying levels of penetration across different user groups. Some user groups, for example, Chinese residents, could potentially have lower penetration rates. There are limitations with specific countries when assessing international visitors, for example, penetration across China is limited due to strict privacy laws.

The mobile phone data assessment includes the following constraints.

- The resident and worker locations of each mobile phone are derived from the device's Common Evening Location (CEL) and Common Daytime Location (CDL), respectively.
- The CEL for a device is estimated by determining where a device most frequently appears during the "non-work" hours (evening through morning and weekends). The overnight hours are defined as after 6 pm and before 8 am.
- The CDL for a device is estimated by determining where a device most frequently appears during "work hours (daytime on weekdays. The hours are defined as after 8 am and before 6 pm from Monday through Friday.

Data has been analysed over the following periods

- Period 1 (January to December 2019) – pre-COVID-19
- Period 2 (April 2022 to April 2022) – post-COVID-19

Assumptions

- Modes were determined using a matter of exclusion based on the precinct that the devices of non-residents visiting the building were appearing in first and last on a particular day.
  - If a user was only observed in a precinct defined as a non-car precinct (e.g a train station, bus stop or footpath), they were assigned as non-car. I
  - If a user was seen to be observed on then a footpath and then in the building, they were defined as a ride share / taxi.
  - If a user was observed to be appearing on a road and in a parking lane or car park, then they were defined as a private vehicle user.
- Visits staying on the premises for less than 10 minutes were excluded as they were considered to be visitors associated with delivery.
- Visits staying longer than 14 hours were excluded from this analysis as they were assumed to be residents that may have a common evening location assigned elsewhere.
- People with a Common Evening Location at the site or within the ABS Meshblocks immediately surrounding the site were assumed to be residents and were excluded from any visitor analysis.
- If a visitors first and last ping is observed to be in a building, these devices have been proportionally distributed to each of the other modes respectively.

03

HUMAN MOVEMENT DATA ANALYSIS

DWELL TIMES OF VISITS BY MODE OF TRAVEL – PARRAMATTA VILLAGE – PRE COVID-19

Key Findings

The graphs on the right, as shown in the graphs on **Pages 17** to **21**, represent the length of stay of devices visiting one of the study sites by mode of transport. People who have stayed for under six minutes are assumed to be delivery drivers and are therefore excluded from this analysis.

The graphs on the right indicate that, in a pre-COVID-19 context, more than 45 per cent of visits to the student accommodation site were made using non-car modes or ride share / taxi. This suggests that, despite being in a car-dominated area with weak transport connections, only roughly half of visitors drive. This higher proportion could also be due to the large catchment area from which Western Sydney University students are drawn.

On weekends, however, the mode share for non-car and ride share / taxi modes increases significantly, accounting for 66 per cent of the mode share. This potentially suggests that residents don't drive as much when going out for recreational purposes.

Figure 7: Dwell Time By Mode – Weekdays

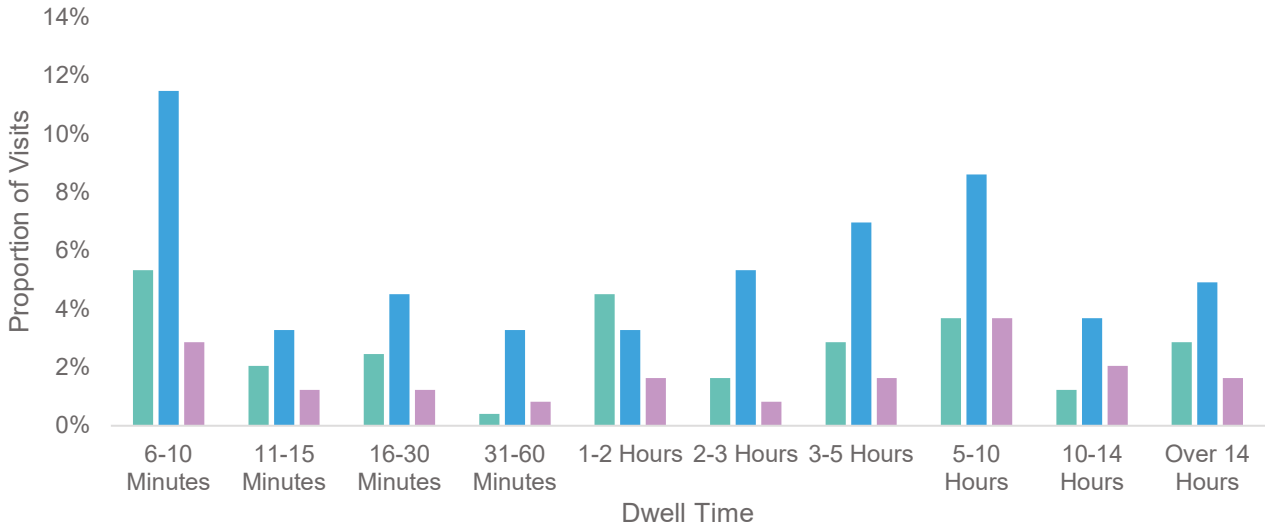
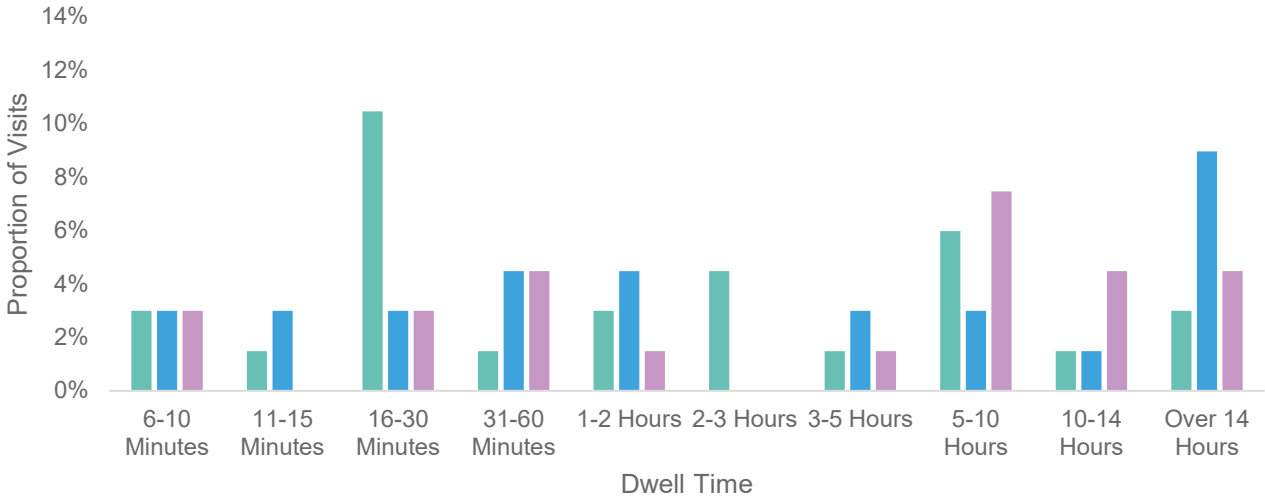


Figure 8: Dwell Time By Mode - Weekends



Source: Urbis

DWELL TIMES OF VISITS BY MODE OF TRAVEL – PARRAMATTA VILLAGE – POST COVID-19

Key Findings

In the post-COVID-19 scenario, it was found that on weekdays, the proportion of modes for visitors has shifted significantly in favour of non-car modes. Non-car modes accounted for 61 per cent of the sampled visits to the site, with the largest increases seen in the ride share / taxi class. On the website for Parramatta Village, car use is not advertised, and its walking proximity to campus is boasted, suggesting that providing positive messaging may encourage a reduction in private vehicles.

On weekends, the results remained similar, with non-private vehicle modes being the dominant method of travel to the site. This was especially the case for people staying long periods of time over the weekend, with those people often opting for ride share / taxis.

Figure 9: Dwell Time By Mode – Weekdays

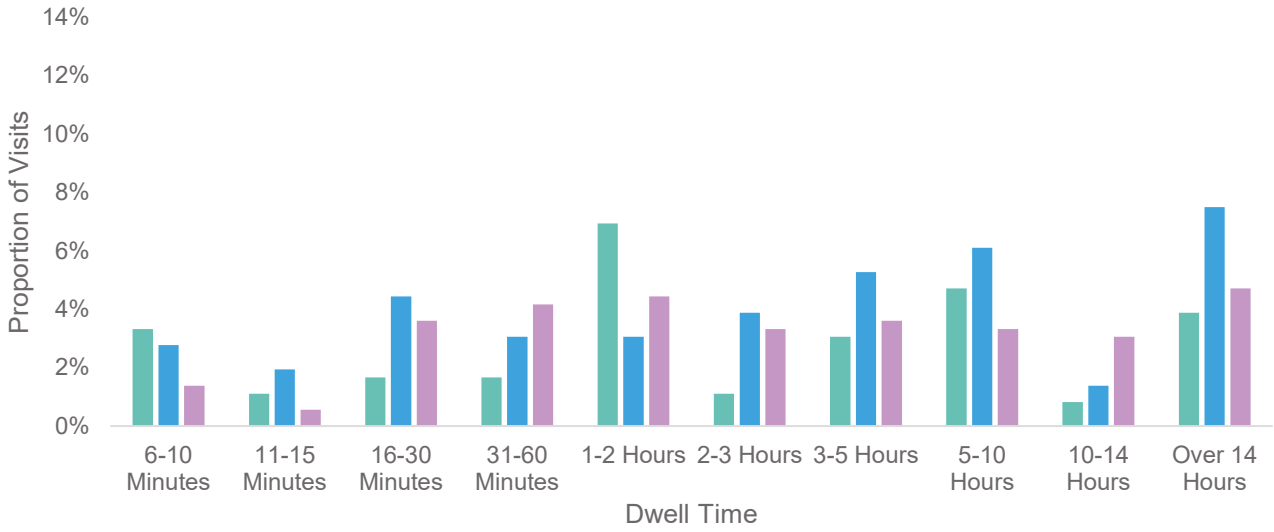
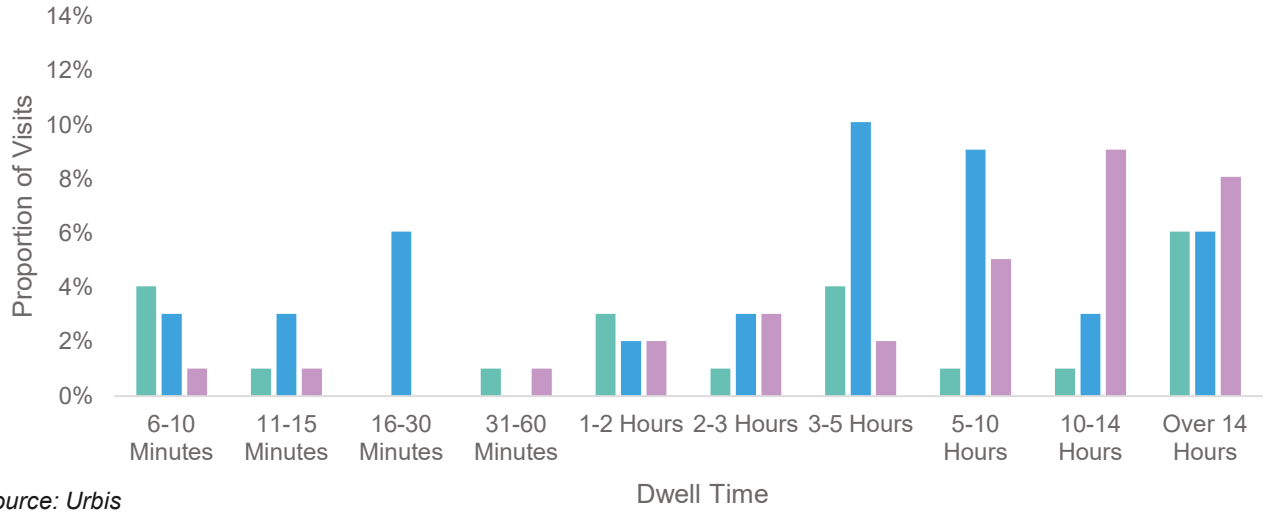


Figure 10: Dwell Time By Mode - Weekends



Source: Urbis

DWELL TIMES OF VISITS BY MODE OF TRAVEL – COWPER APARTMENTS – PRE COVID-19

Key Findings

The Cowper Street Apartments in Randwick is a long-established student accommodation facility located approximately two kilometres from UNSW Campus Central. In a pre-COVID-19 context, 64 per cent of visitors to the apartments used a green travel mode or a ride share / taxi to access the site, despite there being high availability of on-street parking. On-street parking is located on the southern side of Mulwarree Avenue, some parts of William Street, and along King Street, which are exempt from the resident parking scheme. For context, all the local streets immediately surrounding the Lachlan Avenue site are subject to Ryde's Resident Parking Scheme, restricting non-resident parking to two hours on weekdays. A high proportion of visitors were also staying for under one hour, with few devices in the sample observed to stay longer than two hours.

By comparison, the weekend saw a much higher use of car modes, accounting for 52 per cent of observed visits. However, 36 per cent of that 52 stayed less than 30 minutes. It is important to note the small sample size available during this time period.

Figure 11: Dwell Time By Mode – Weekdays

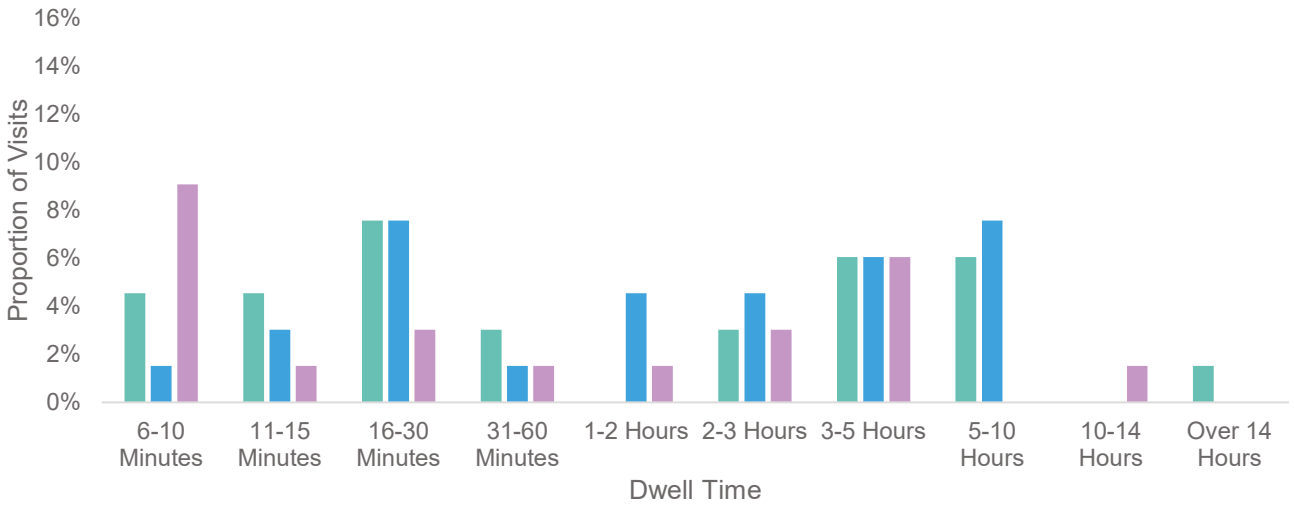
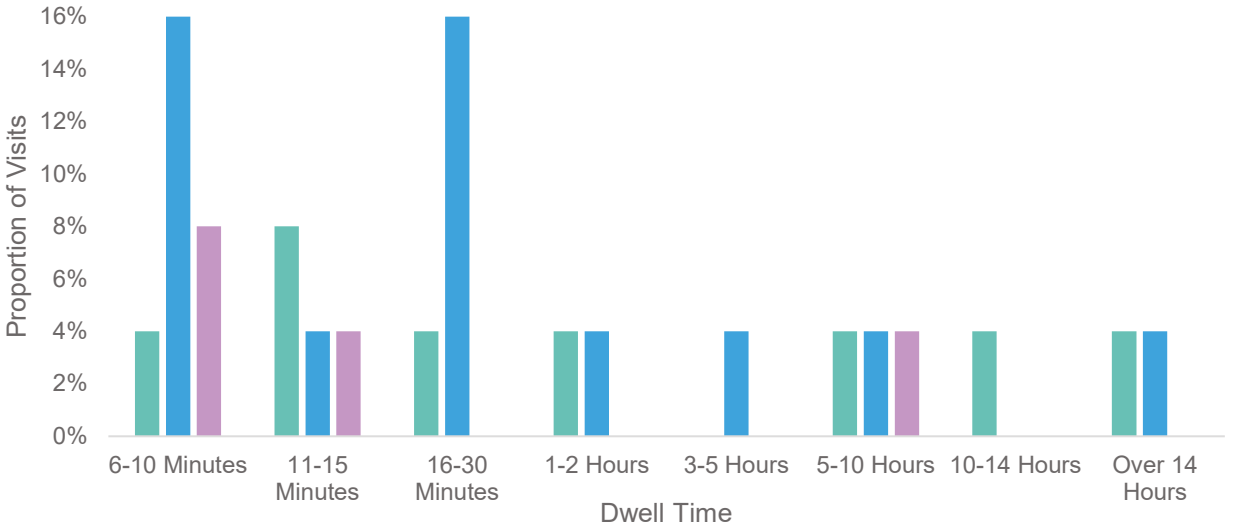


Figure 12: Dwell Time By Mode - Weekends



DWELL TIMES OF VISITS BY MODE OF TRAVEL – COWPER APARTMENTS – POST COVID-19

Key Findings

In a post-COVID-19 scenario, the share of weekday visitors to the site who used green travel or ride share/taxi modes remained high, accounting for 64 per cent of observed visits. The spread of dwell time also stayed similar, with very few visits being observed staying longer than five hours. The addition of the Randwick Line of the Sydney Light Rail may have further consolidated the use of green travel modes to access the site.

On the weekend, the sample size was particularly small. However, the data that was obtained details that visitors are typically staying for short periods of time and are using private vehicles. However, an occupancy study of the site completed in 2018 *(Transport Impact Assessment Mulwarree Apartments Student Housing – TTW 2018*) found that visitor parking is underutilized, which led to the approval of a reduced parking provision for the site.

Figure 13: Dwell Time By Mode – Weekdays

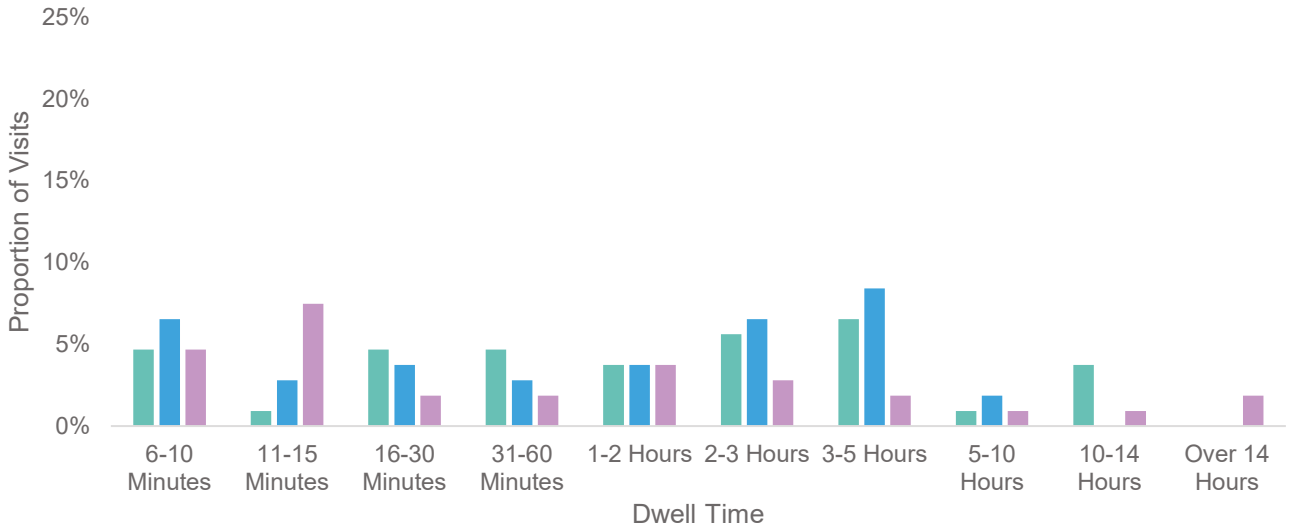
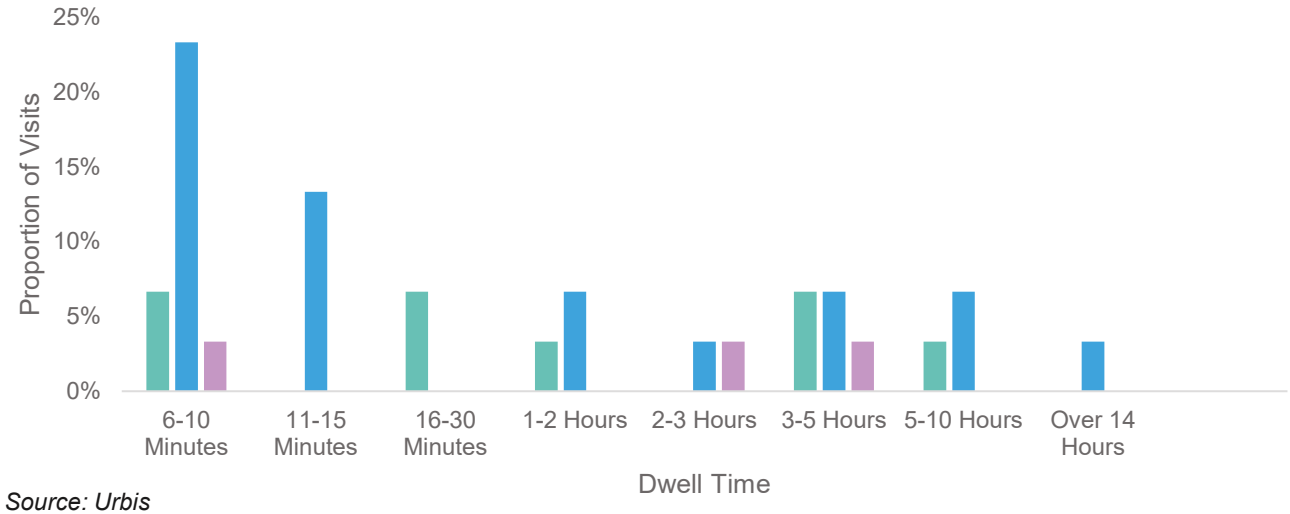


Figure 14: Dwell Time By Mode - Weekends



Source: Urbis

DWELL TIMES OF VISITS BY MODE OF TRAVEL – IGLU MASCOT – POST COVID-19

Key Findings

Iglu Mascot is a recently built student accommodation facility and is not associated with any University. Iglu Mascot was not operational in a pre-COVID-19 context, and only a post-COVID-19 scenario has been assessed. It is within a 200-metre walk to Mascot train station, making it highly relevant to the Lachlan Avenue site. Devices that visited the site were observed to be staying for long periods of time. However, the vast majority of these devices accessed the site using green travel modes or a ride share / taxi. On a weekday, this accounted for 72 per cent of visits, and on a weekend, this accounted for 70 per cent of visits.

Mascot is an area of rapid uplift, and the streets surrounding the station all have some level of parking control. These characteristics are similar in context to the Lachlan Avenue site. This suggests that when strong alternative transport options are provided, coupled with measures to discourage driving, visitors to student accommodation will generally avoid driving.

Figure 15: Dwell Time By Mode – Weekdays

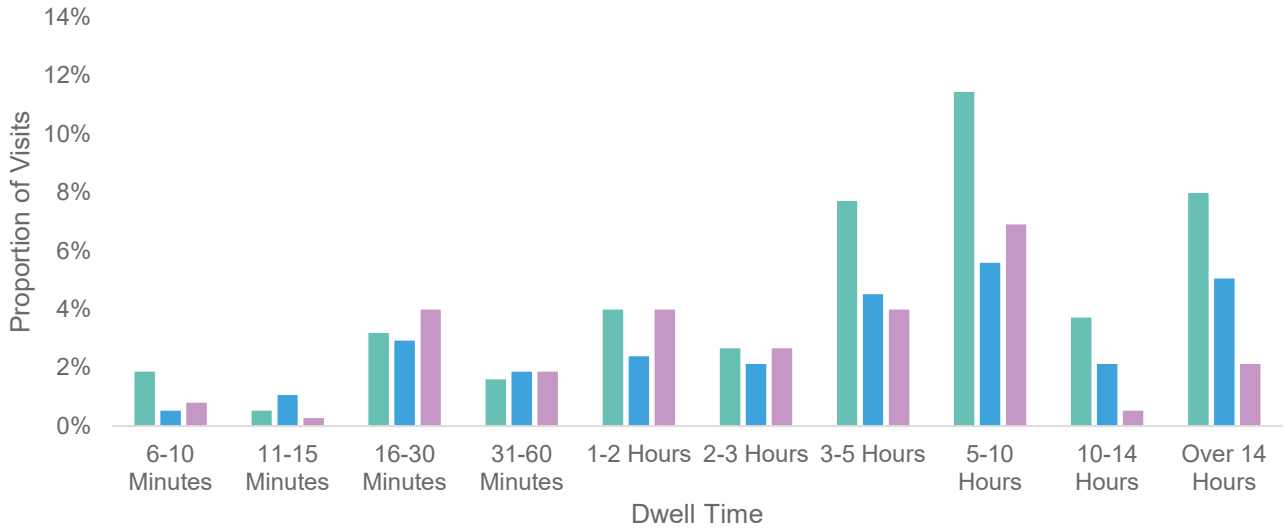
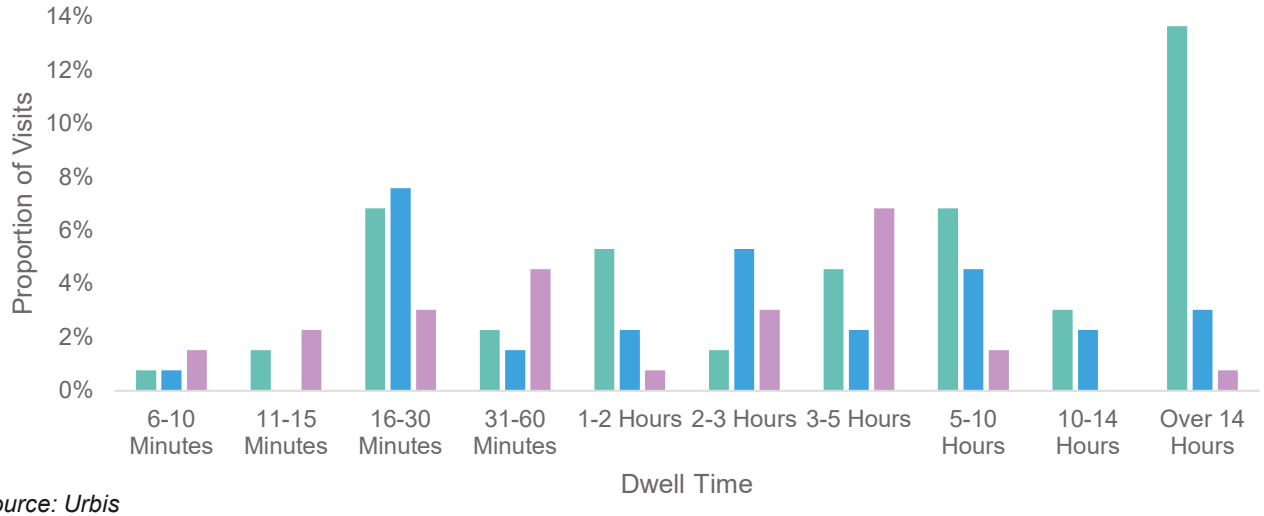


Figure 16: Dwell Time By Mode - Weekends



Source: Urbis

CROSS USAGE BETWEEN PRECINCTS – PARRAMATTA VILLAGE – PRE COVID-19

Key Findings

Cross-usage is used to investigate how people move between different areas within the precinct. This can be used to identify visitation trends amongst those who visited the student accommodation buildings.

The top row of each to the right is the most important as it shows where those who visited the building also visited. There is a low correlation between the building and the parking lane. This suggests that if people are driving to visit the student accommodation building, they are likely parking in the rear car park. The correlation between the footpath and the building is unclear.

*Note: Cross usage does not necessarily add to 100 per cent as devices may be pinging in multiple precincts on the same day.

Figure 17: Cross Usage Between Precincts – Weekdays Pre-COVID-19

	Building	Bus Stop	Car Park	Footpath	Parking Lane	Road
Building	0%	0%	12%	16%	3%	22%
Bus Stop	100%	100%	13%	38%	25%	63%
Car Park	100%	0%	100%	51%	12%	75%
Footpath	100%	1%	39%	100%	15%	69%
Parking Lane	100%	2%	42%	70%	100%	82%
Road	100%	1%	42%	52%	13%	100%

Figure 18: Cross Usage Between Precincts – Weekends Pre-COVID-19

	Building	Bus Stop	Car Park	Footpath	Parking Lane	Road
Building	0%	1%	6%	14%	3%	18%
Bus Stop	100%	100%	25%	50%	0%	50%
Car Park	100%	2%	100%	63%	17%	76%
Footpath	100%	2%	26%	100%	10%	65%
Parking Lane	100%	0%	36%	50%	100%	82%
Road	100%	1%	25%	52%	13%	100%

Source: Urbis

CROSS USAGE BETWEEN PRECINCTS – PARRAMATTA VILLAGE – POST COVID-19

Key Findings

In the post-COVID-19 time period, cross-usage of building visitors as the footpath increased on weekdays and weekends when compared to pre-COVID-19, while cross-usage between the building and the car park and parking lanes decreased, suggesting that there may have been a slight mode shift of visitors to the building away from private vehicle usage.

Notably, in both instances, cross-usage between the building and the bus stop is below one percent, suggesting that people don't typically use the bus to visit the site.

Figure 19: Cross Usage Between Precincts – Weekdays Post-COVID-19

	Building	Bus Stop	Car Park	Footpath	Parking Lane	Road
Building	0%	0%	11%	18%	3%	26%
Bus Stop	100%	100%	25%	50%	13%	63%
Car Park	100%	1%	100%	42%	7%	64%
Footpath	100%	1%	26%	100%	10%	61%
Parking Lane	100%	2%	28%	63%	100%	84%
Road	100%	1%	28%	43%	9%	100%

Figure 20: Cross Usage Between Precincts – Weekends Post-COVID-19

	Building	Bus Stop	Car Park	Footpath	Parking Lane	Road
Building	0%	0%	9%	20%	3%	23%
Bus Stop	100%	100%	0%	67%	33%	67%
Car Park	100%	0%	100%	44%	9%	69%
Footpath	100%	1%	21%	100%	10%	58%
Parking Lane	100%	3%	34%	78%	100%	91%
Road	100%	1%	28%	51%	10%	100%

Source: Urbis

CROSS USAGE BETWEEN PRECINCTS – COWPER STREET APARTMENTS – PRE COVID-19

Key Findings

Cross-usage at the Cowper Street Apartments in Randwick during the pre-COVID-19 time period showed a high level of cross-usage between the building and the road. However, the previous analysis detailing mode split indicated that private vehicle usage was low. This potentially suggests that there is a high proportion of ride share / taxi users visiting the site. This is further supported by the fact that parking lane cross-usage between the building parking is half that of the building and road cross-usage.

The trends between the weekday and weekend were similar, suggesting that the behavior of visitors was consistent throughout the week in a pre-COVID-19 context.

Figure 21: Cross Usage Between Precincts – Weekdays Pre-COVID-19

	Building	Bus Stop	Footpath	Parking Lane	Road
Building	0%	8%	26%	21%	43%
Bus Stop	100%	0%	55%	43%	87%
Footpath	100%	17%	100%	47%	76%
Parking Lane	100%	16%	60%	100%	79%
Road	99%	16%	46%	38%	100%

Figure 22: Cross Usage Between Precincts – Weekends Pre-COVID-19

	Building	Bus Stop	Footpath	Parking Lane	Road
Building	0%	7%	28%	20%	41%
Bus Stop	100%	0%	57%	27%	77%
Footpath	98%	13%	100%	46%	81%
Parking Lane	100%	9%	66%	100%	88%
Road	99%	12%	56%	43%	100%

Source: Urbis

CROSS USAGE BETWEEN PRECINCTS – COWPER STREET APARTMENTS – POST COVID-19

Key Findings

Since the COVID-19 pandemic, there has been an increase in cross-usage between building and parking lanes, which may suggest that people are less likely to use ride-sharing modes and taxis. This trend seems to be consistent across Greater Sydney. Another change that occurred during this time was the introduction of the Sydney City and Eastern Suburbs Light Rail, with the Wansley Street Light Rail Stop being conveniently located near the site. However, visitors have a higher cross usage with the bus stops located near the site.

Figure 23: Cross Usage Between Precincts – Weekdays Post-COVID-19

	Building	Bus Stop	Footpath	Light Rail	Parking Lane	Road
Building	0%	15%	37%	4%	33%	54%
Bus Stop	100%	0%	57%	7%	37%	77%
Footpath	100%	24%	100%	8%	57%	80%
Light Rail	98%	26%	71%	0%	49%	75%
Parking Lane	100%	17%	64%	6%	100%	82%
Road	100%	22%	54%	6%	49%	100%

Figure 24: Cross Usage Between Precincts – Weekends Post-COVID-19

	Building	Bus Stop	Footpath	Light Rail	Parking Lane	Road
Building	0%	16%	38%	3%	36%	55%
Bus Stop	100%	0%	66%	5%	53%	82%
Footpath	100%	27%	100%	3%	54%	75%
Light Rail	100%	28%	44%	0%	28%	50%
Parking Lane	100%	23%	58%	2%	100%	79%
Road	100%	23%	53%	2%	52%	100%

Source: Urbis

CROSS USAGE BETWEEN PRECINCTS – IGLU MASCOT – POST COVID-19

Key Findings

Cross-usage at Iglu Mascot was examined in a post-COVID-19 context. Patterns of cross-usage of visitors between different areas within the precinct immediately surrounding the site were fairly consistent between weekdays and weekends. This has been a common finding across all sites, potentially supporting the idea that visitors are also students who typically don't operate on a nine-to-five schedule.

There is strong cross-usage between the footpath and the building. This suggests that visitors are walking to the site, potentially from the train station or other surrounding areas, which is typical of high-density areas. There is also a large amount of road usage, similar to that of footpath usage, suggesting visitors may be using ride-sharing or taxis to access the site.

Figure 25: Cross Usage Between Precincts – Weekdays Post-COVID-19

	Building	Bus Stop	Cycleway	Footpath	Parking Lane	Road	Train Station
Building	0%	1%	2%	60%	36%	60%	10%
Bus Stop	95%	0%	40%	95%	80%	90%	45%
Cycleway	77%	21%	0%	92%	44%	69%	33%
Footpath	98%	2%	4%	100%	52%	79%	14%
Parking Lane	99%	3%	3%	88%	100%	91%	16%
Road	98%	2%	3%	80%	54%	100%	13%
Train Station	93%	6%	8%	81%	54%	78%	0%

Figure 26: Cross Usage Between Precincts – Weekends Post-COVID-19

	Building	Bus Stop	Cycleway	Footpath	Parking Lane	Road	Train Station
Building	0%	1%	5%	61%	40%	66%	11%
Bus Stop	100%	0%	67%	100%	83%	100%	50%
Cycleway	97%	14%	0%	90%	59%	86%	52%
Footpath	99%	2%	8%	100%	58%	78%	12%
Parking Lane	100%	2%	8%	89%	100%	89%	17%
Road	99%	2%	7%	73%	54%	100%	16%
Train Station	94%	5%	24%	63%	56%	90%	0%

Source: Urbis

PRE VISIT ANALYSIS – PARRAMATTA VILLAGE – PRE COVID-19

Key Findings

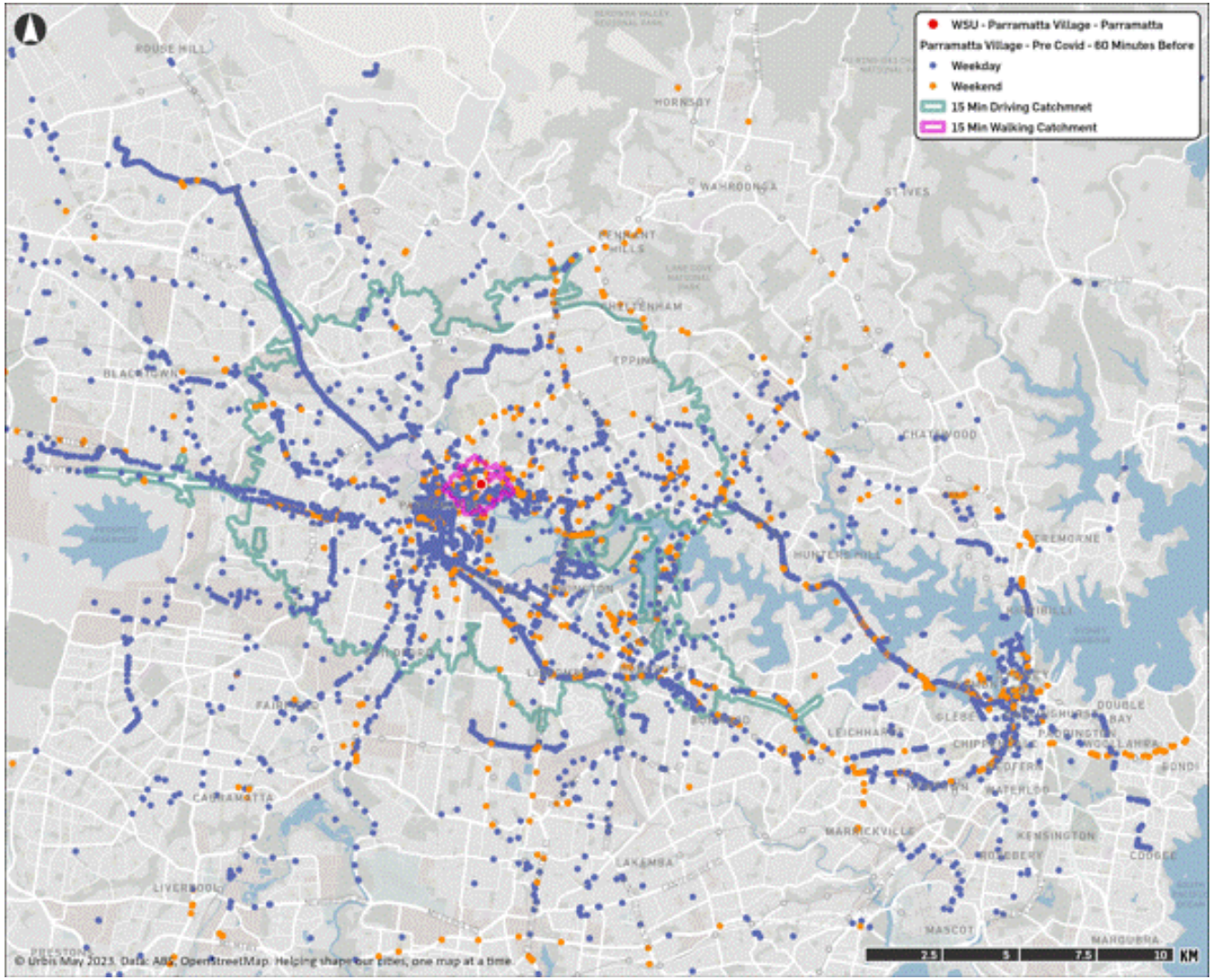
Pre and post-visit analysis was undertaken at the three sample sites. The pre and post-visit analysis shows the 'pings' of devices that visited Parramatta Village and do not live there. This analysis is useful for providing context to understand where the visitor draw is coming from.

Figure 28 to the right shows non-resident device locations at 60, 30, 15 and five minutes before they were observed at the Parramatta Village Apartments.

The map shows that visitors are drawn from all across greater Sydney, however, there is also a strong concentration within the 15-minute driving catchment. This suggests that most visitors may be originating in surrounding suburbs.

Note: Some devices may appear in illogical locations based on their time periods. This is due to an error coordinate assignment of the mobile phone ping and is limited to around 10 per cent of the pre and post-visit dataset.

Figure 27: Parramatta Village - Pre-Visit Locations



Source: Urbis

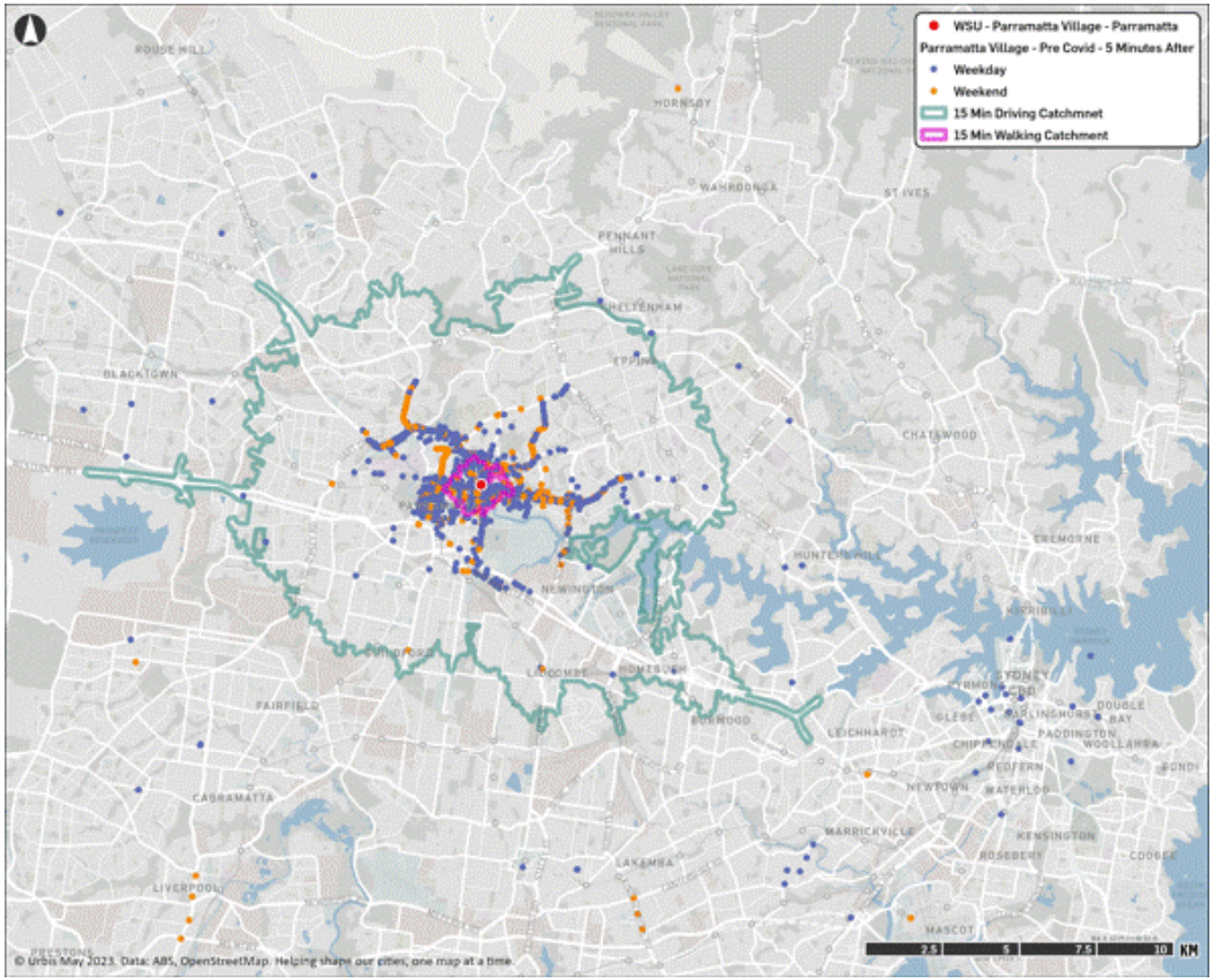
POST VISIT ANALYSIS – PARRAMATTA VILLAGE – PRE COVID-19

Key Findings

Figure 29 to the right shows the post-visit analysis after devices were observed at the site. Once visitors leave the building, there are devices following arterial roads and train lines, indicating drivers or public users leaving the site after the visit. On the weekends, a number of devices are observed to travel east towards Sydney's beaches, suggesting visitors are engaging in recreation activities after visiting the site.

In the 60 minutes post visit, there is also a high concentration of pings in the area immediately surrounding the site, suggesting many visitors live and work locally or study at the WSU Parramatta Campus.

Figure 28: Parramatta Village - Post-Visit Locations



Source: Urbis

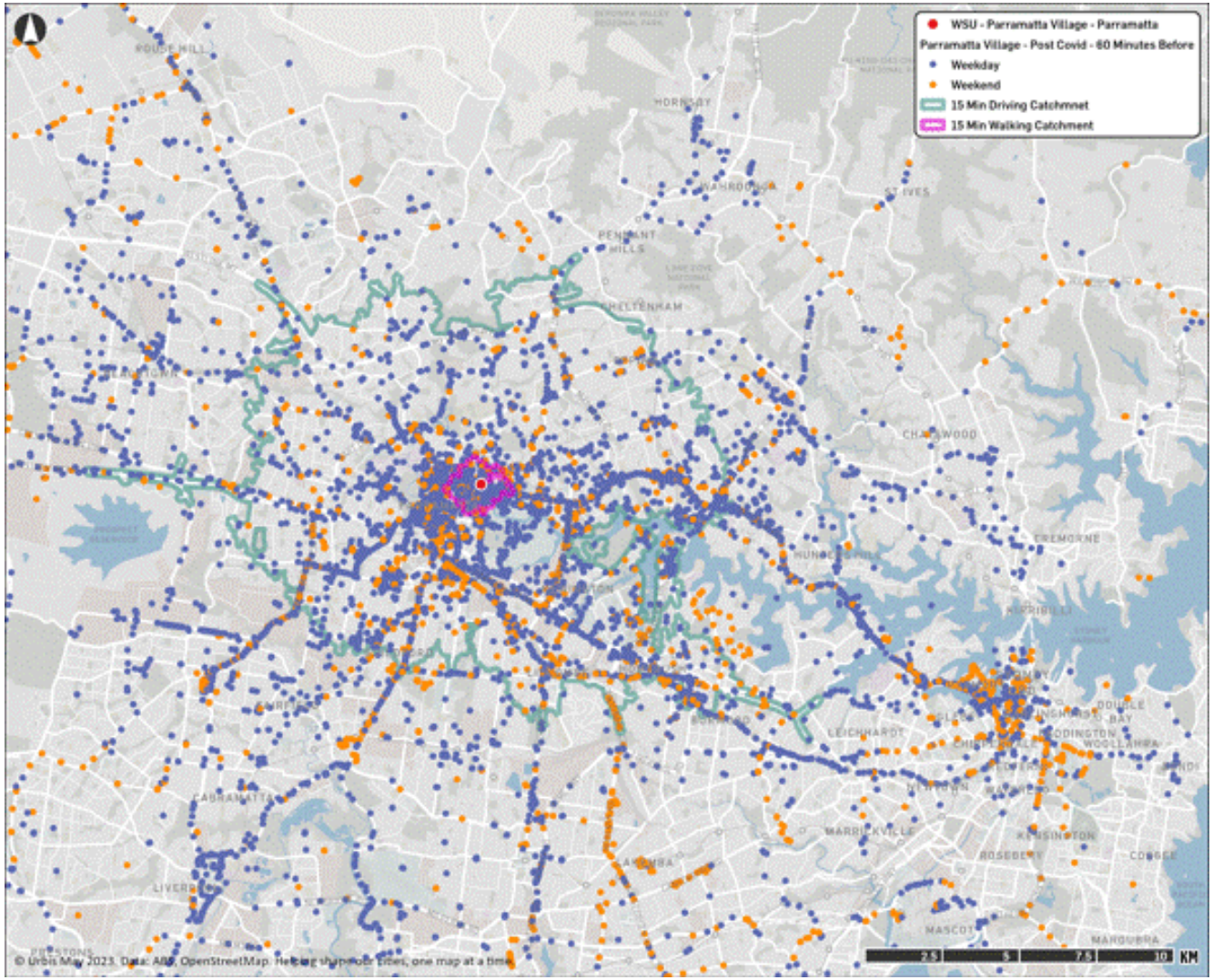
PRE VISIT ANALYSIS – PARRAMATTA VILLAGE – POST COVID-19

Key Findings

Figure 30 to the right shows non-resident device locations at 60, 30, 15 and five minutes before they were observed at the Parramatta Village.

The map shows that visitors are drawn from all across greater Sydney. A significant number of pings are concentrated around the public transportation network, but there is also a substantial amount within a 15-minute driving radius. This suggests that similar to pre covid most visitors may be originating in surrounding suburbs.

Figure 29: Parramatta Village - Pre-Visit Locations



Source: Urbis

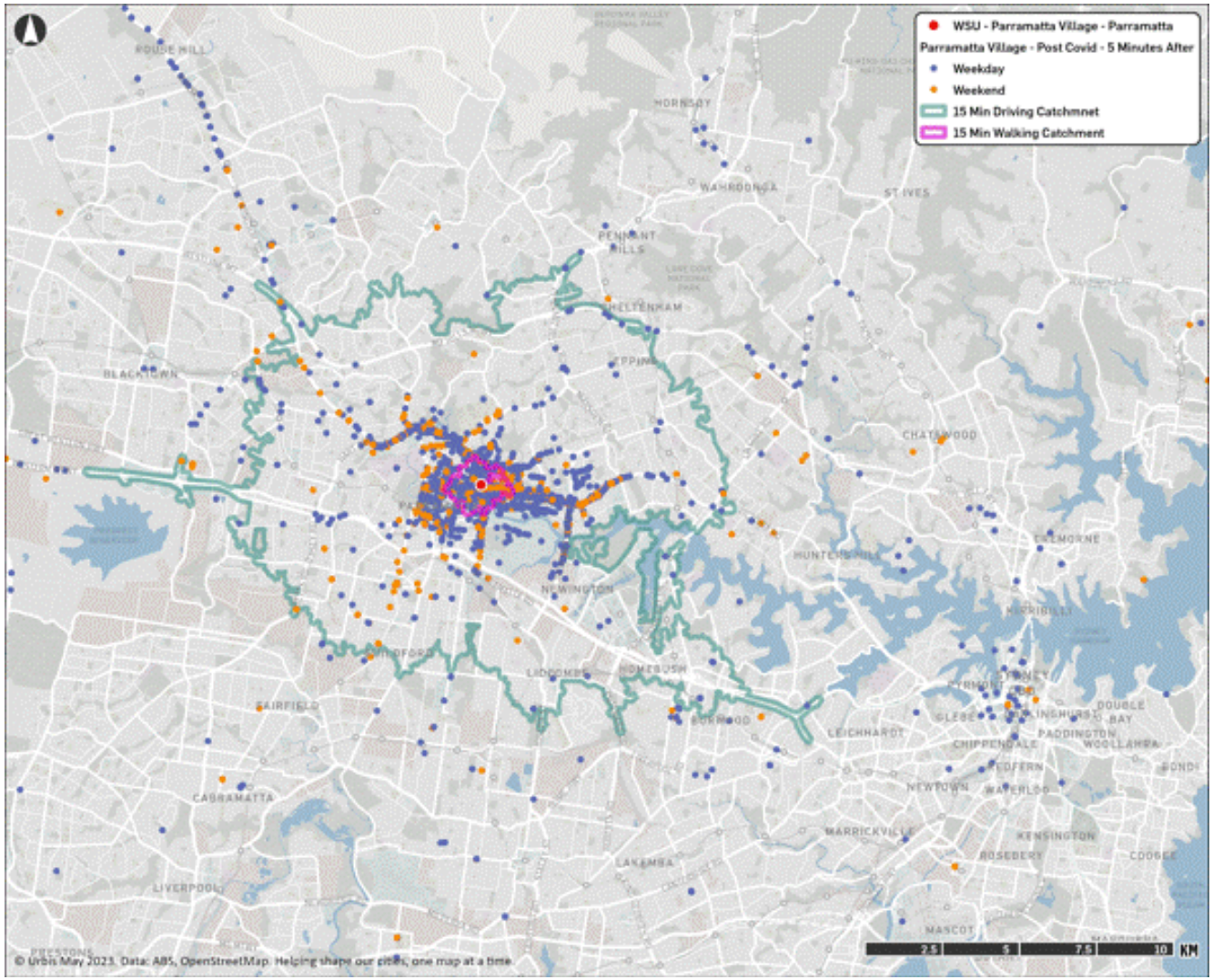
POST VISIT ANALYSIS – PARRAMATTA VILLAGE – POST COVID-19

Key Findings

Figure 31 to the right shows the post-visit analysis at 60, 30, 15 and five minutes after devices were observed at the Parramatta Village. The map shows that once visitors leave the building, there are devices following arterial roads and train lines.

In the 60 minutes post visit, there is also a high concentration of pings in the area immediately surrounding the site, suggesting many visitors live and work locally within 15 minutes of driving catchment or study at the WSU Parramatta campus.

Figure 30: Parramatta Village - Post-Visit Locations



Source: Urbis

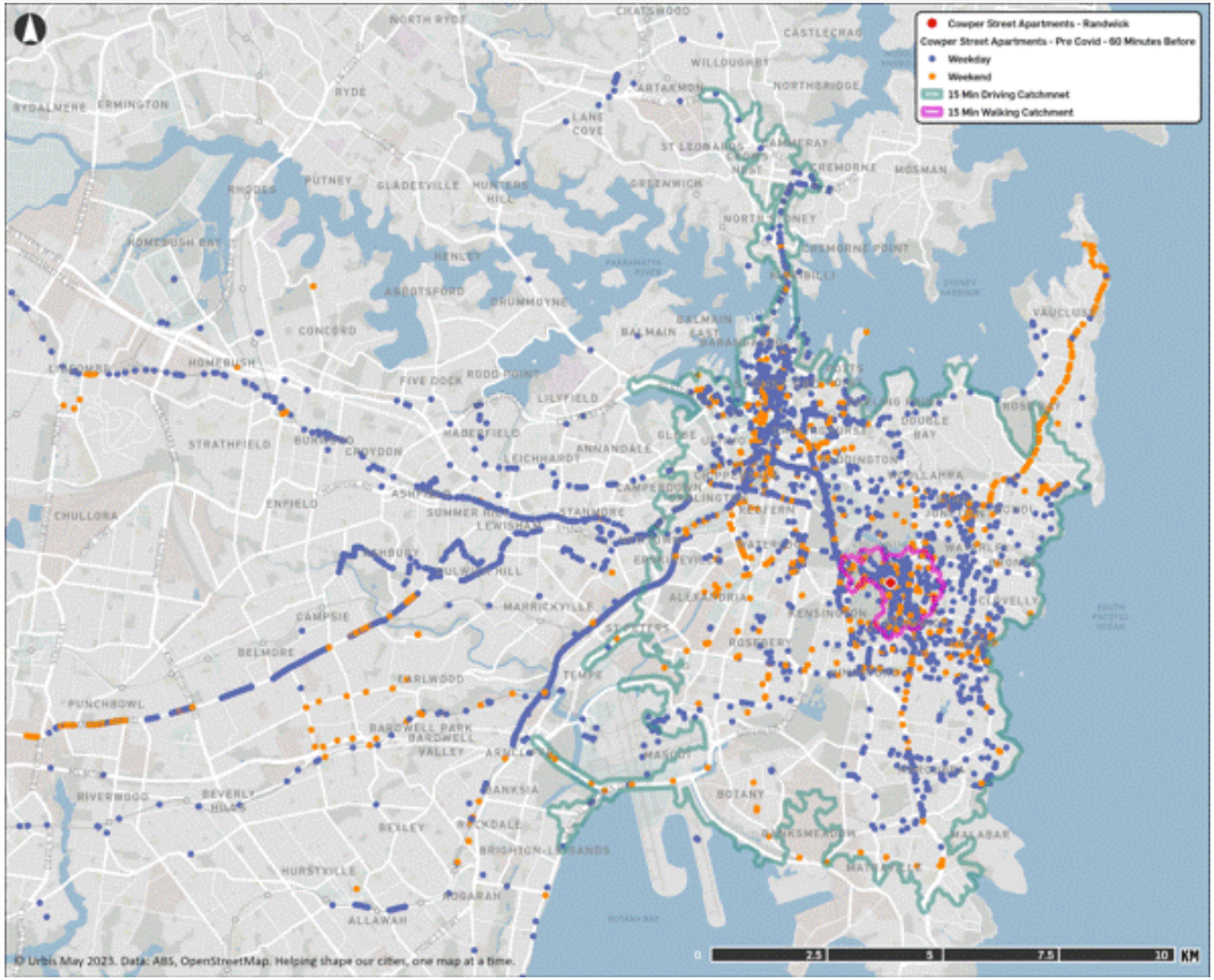
PRE VISIT ANALYSIS – COWPER STREET APARTMENTS – PRE COVID-19

Key Findings

In a pre-COVID-19 context, visitors to the Cowper Street Apartments typically arrived from local areas or were coming in from arterial roads or the train line from outside the eastern suburbs.

A significant number of pings are concentrated around the public transportation network coming from western suburbs. However, there is also a high concentration of visits from inside the eastern suburbs, suggesting that many visitors are coming from local areas.

Figure 31: Cowper Street Apartments - Pre-Visit Locations



Source: Urbis

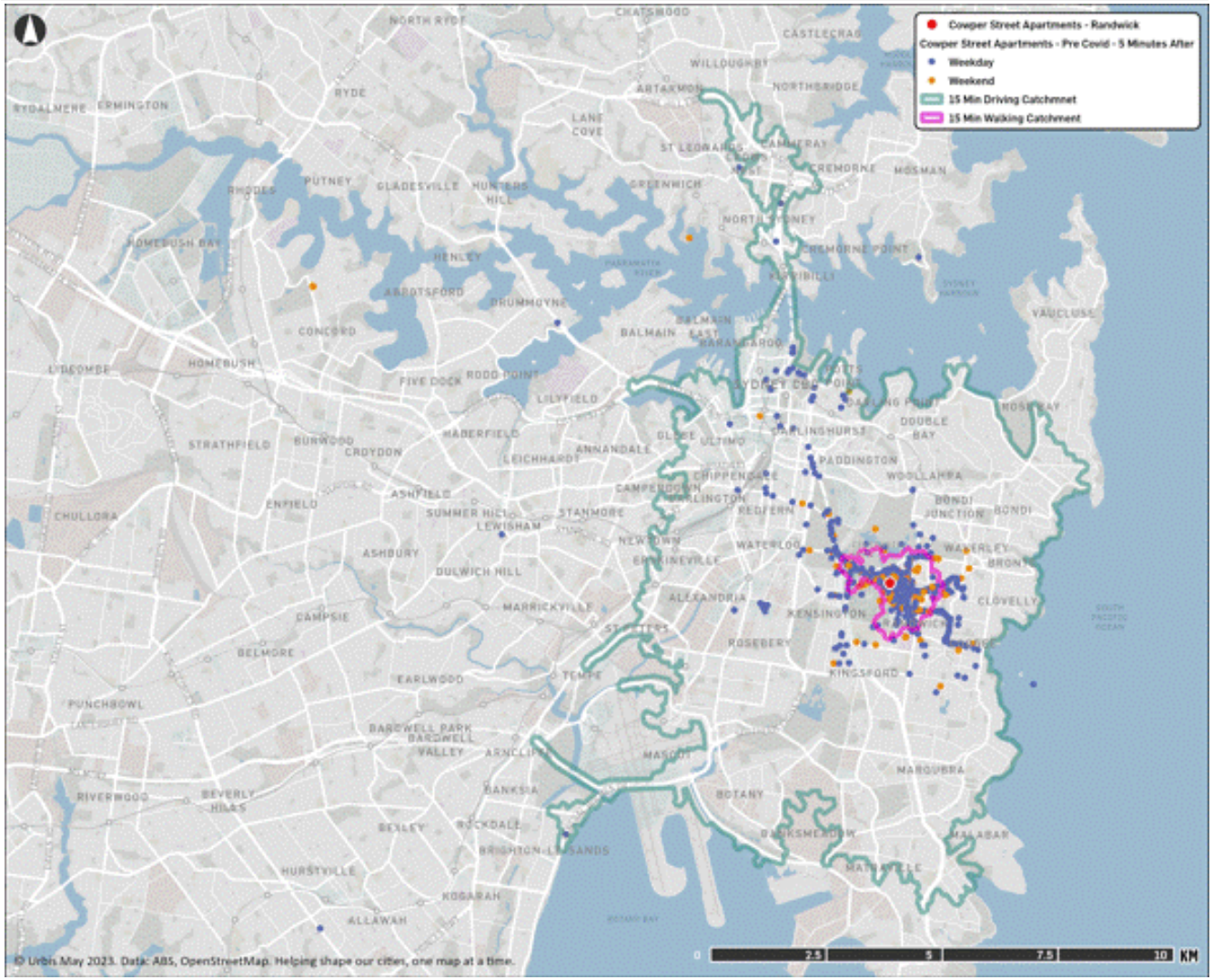
POST VISIT ANALYSIS – COWPER STREET APARTMENTS – PRE COVID-19

Key Findings

In a pre-COVID-19 context, after visitors left Cowper Street Apartments, they were observed to follow bus routes in the eastern suburbs and train lines to the northern and western suburbs. Some devices were also observed to be using the Manly ferry.

However, a significant number of devices were seen to remain in the eastern suburbs, particularly those that remained within a 15-minute walking catchment of the site.

Figure 32: Cowper Street Apartments – Post-Visit Locations



Source: Urbis

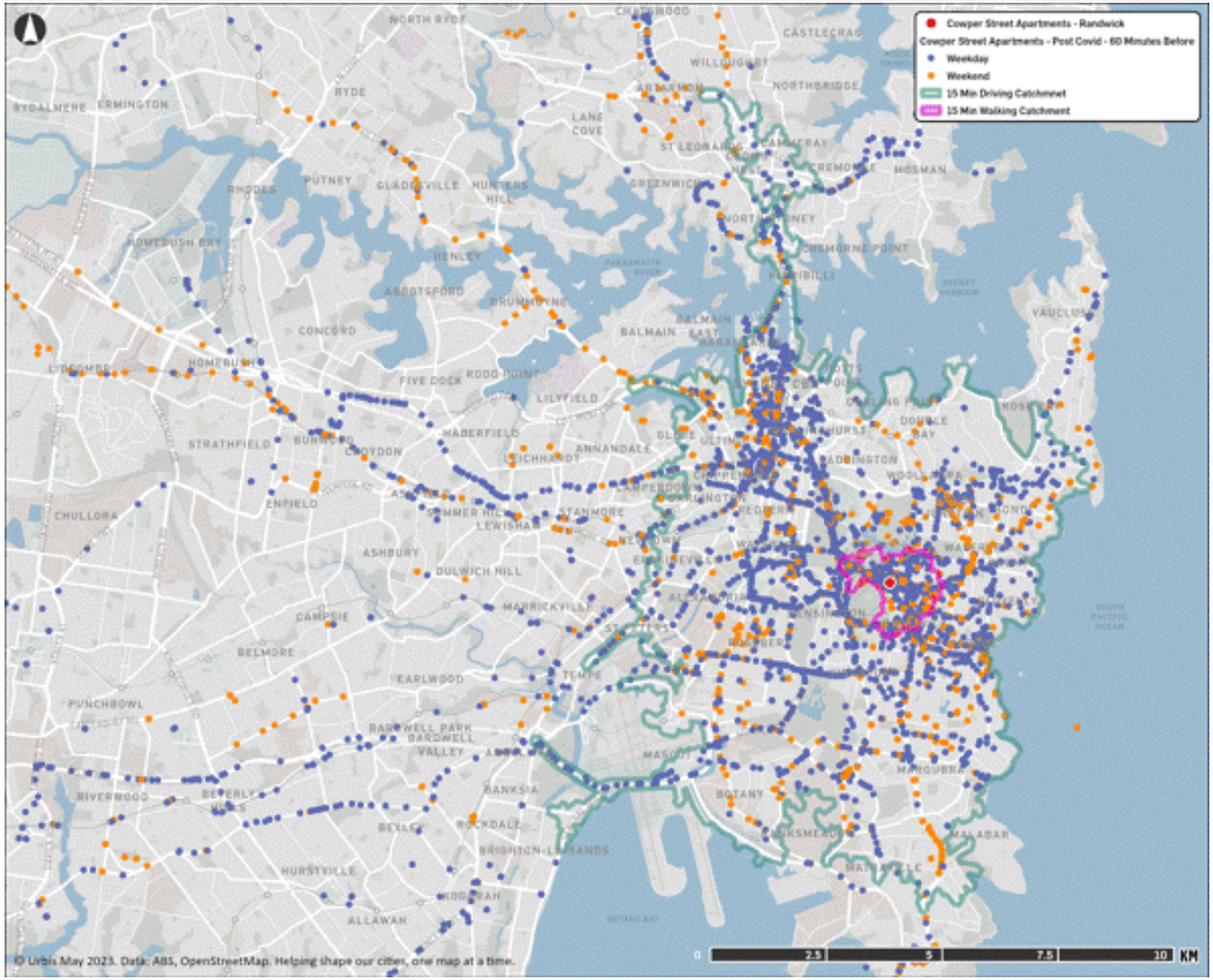
PRE VISIT ANALYSIS – COWPER STREET APARTMENTS – POST COVID-19

Key Findings

In a post-COVID-19 context, visitors to the Cowper Street Apartments typically arrived from local areas and the eastern suburbs. Also, a majority of visitors travelled using train line from western and northern suburbs.

There is a higher concentration of pings within the 15 minutes driving catchment before visiting the Cowper Street Apartments, suggesting that many visitors are coming from local areas.

Figure 33: Cowper Street Apartments - Pre-Visit Locations



Source: Urbis

POST VISIT ANALYSIS – COWPER STREET APARTMENTS – POST COVID-19

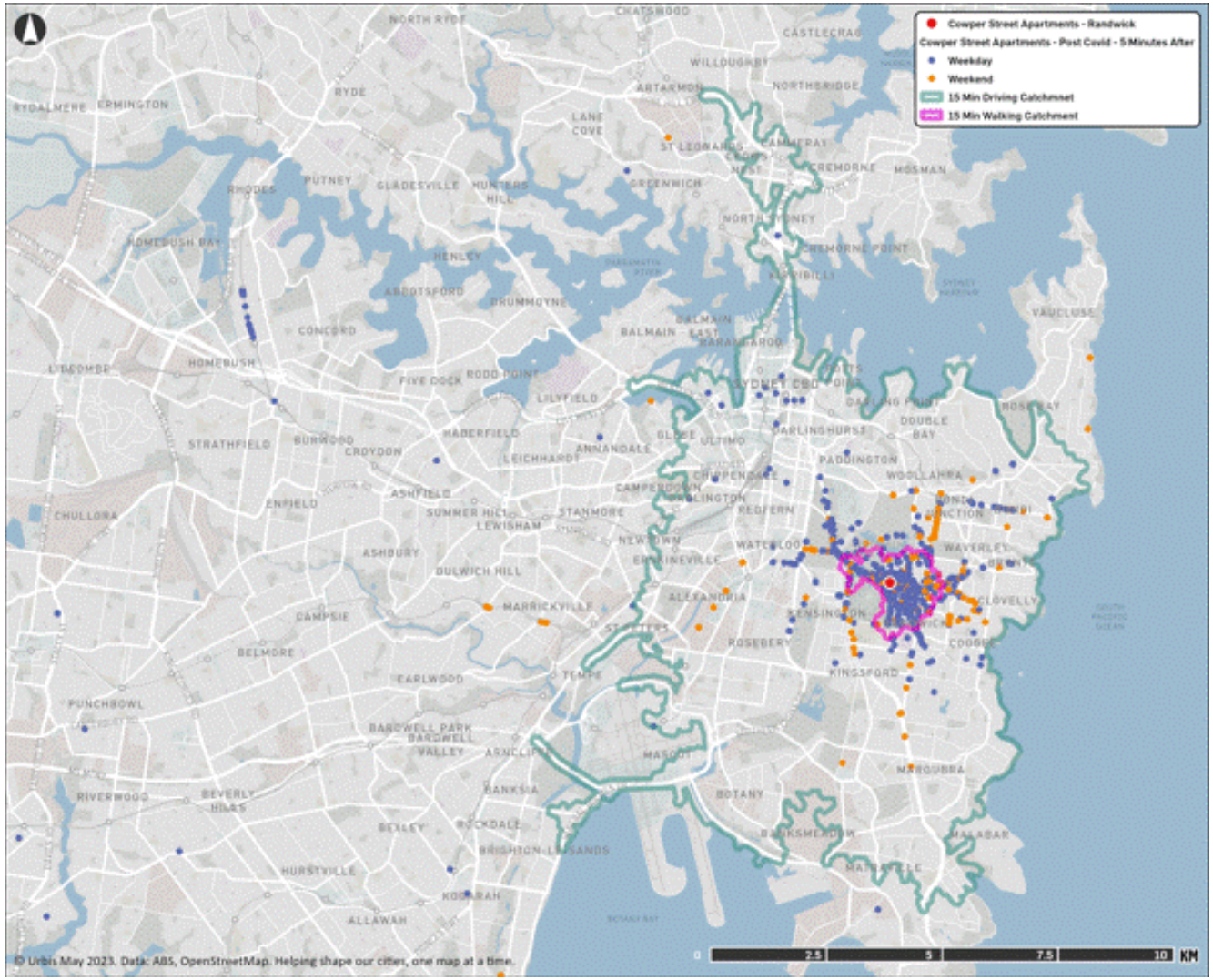
Key Findings

In a post-COVID-19 context, after visitors left Cowper Street Apartments, they were observed to follow bus routes in the eastern suburbs and train lines / arterial roads to the northern and western suburbs.

On the weekends, a significant number of pings are observed along the northern suburbs and towards the east along the beaches, suggesting recreation trips devices are observed to be travelling east towards Sydney's beaches.

However, a significant number of devices were seen to remain in the eastern suburbs, particularly those that remained within a 15-minute walking catchment of the site.

Figure 34: Cowper Street Apartments - Post-Visit Locations



Source: Urbis

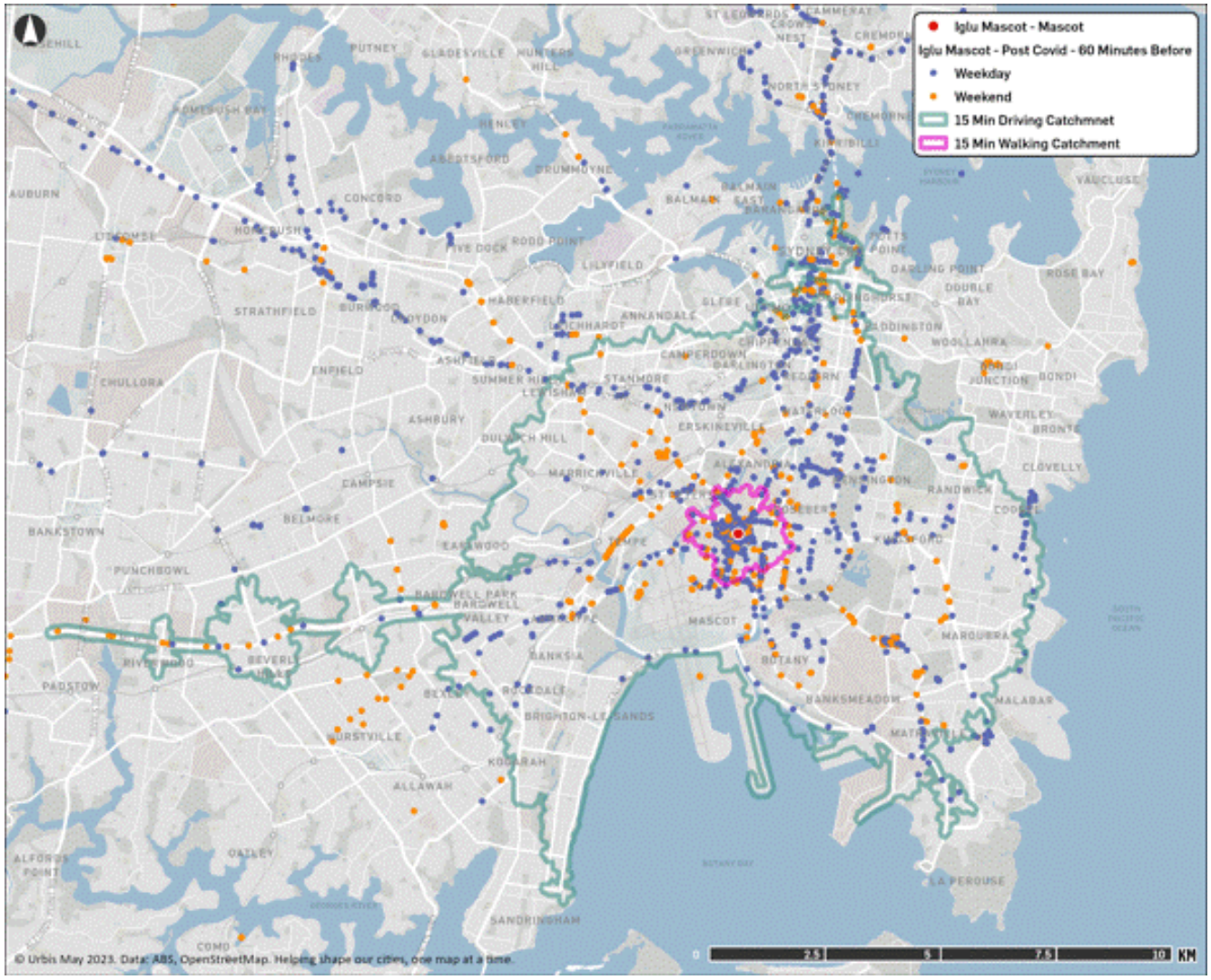
PRE VISIT ANALYSIS – IGLU MASCOT – POST COVID-19

Key Findings

In a post-COVID-19 context, visitors to the Iglu Mascot student accommodation typically arrived from local areas as well as from northern and western suburbs.

There is a higher concentration of pings using arterial roads / train lines before approaching the Iglu Mascot, indicating that many visitors are coming from outside the immediate neighbourhood.

Figure 35: Iglu Mascot- Pre-Visit Locations



Source: Urbis

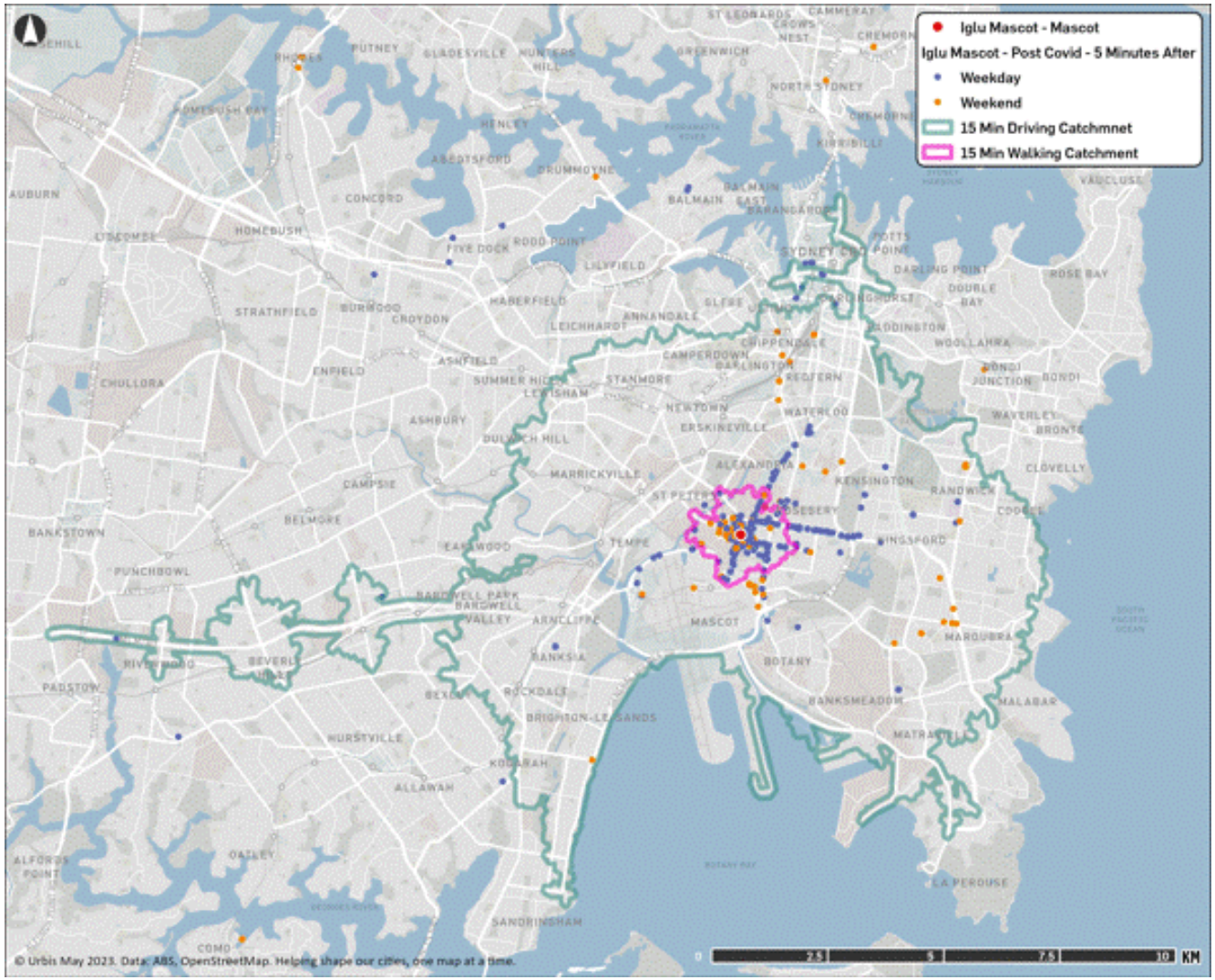
POST VISIT ANALYSIS – IGLU MASCOT – POST COVID-19

Key Findings

In a post-COVID-19 context, after visitors left Iglu Mascot student accommodation, they were observed to follow arterial routes in the eastern and northern suburbs. Also, several visitors travelled west along an arterial road and within the 15-minute walking catchment.

A significant number of visitors end up within the 15-minute driving catchment during both weekdays and weekends.

Figure 36: Iglu Mascot- Post-Visit Locations



Source: Urbis

COMMON EVENING AND COMMON DAYTIME LOCATION OF PARRAMATTA VILLAGE VISITORS

Key Findings

The figure on the right shows the Common Daytime Location (CDL) and Common Evening Location (CEL) of visitors to the Parramatta Village Apartments site. The heat map displays the CEL and CDL of visitors in a pre- and post-COVID-19 context based on the suburb of the CEL and CDL. CEL is commonly used to define the place of work, while CEL shows the place of residence.

In a pre-COVID-19 context, the visitor CEL is well dispersed across western Sydney, with the highest concentration being in Parramatta and the suburbs immediately surrounding it. This is a similar story for the CDL.

In a post-COVID-19 context, this trend is generally the same but with a greater level of concentration in and around Parramatta.

Figure 37: Parramatta Village Visitors Common Daytime and Common Evening Location

Source: Urbis

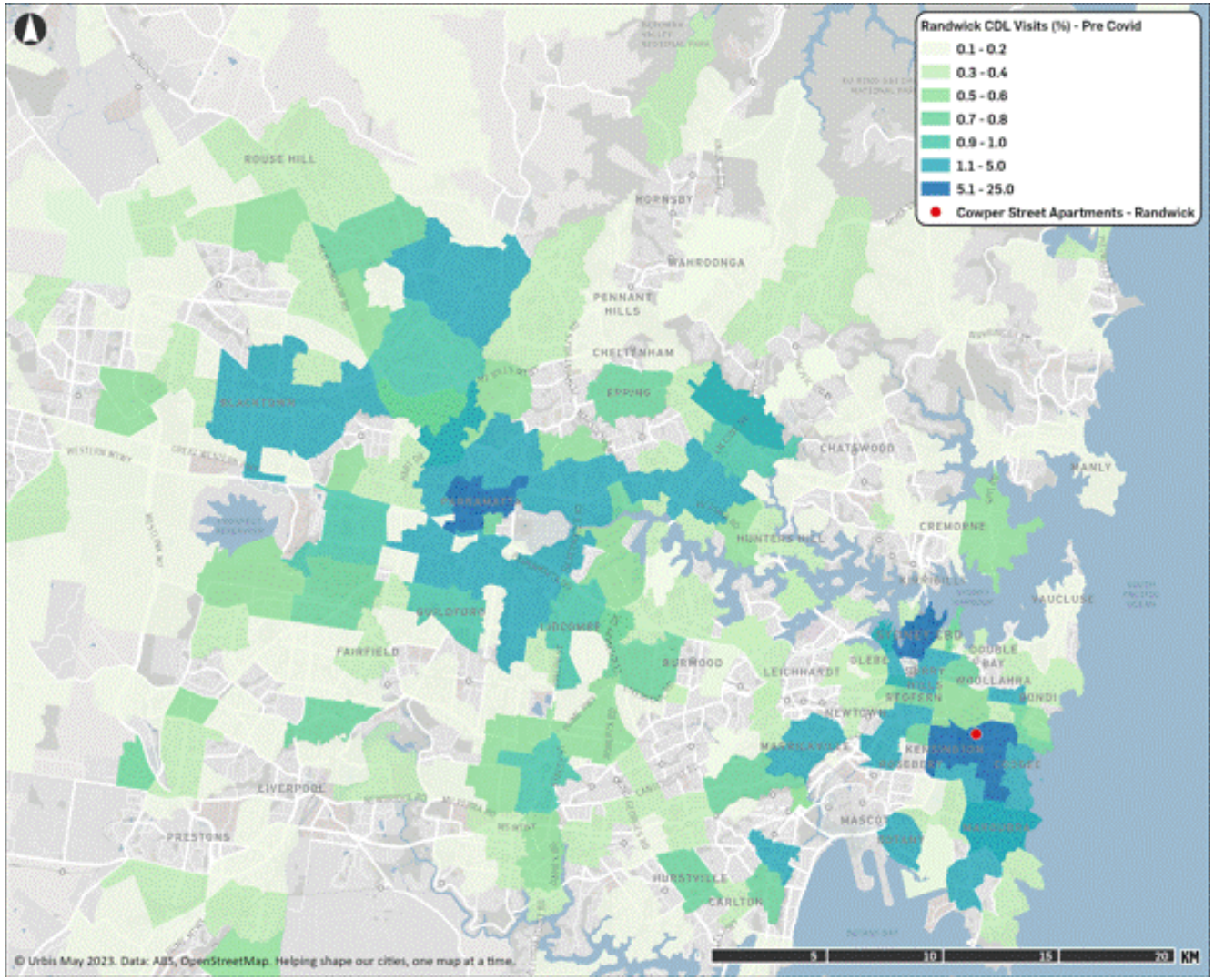
COMMON EVENING AND COMMON DAYTIME LOCATION OF COWPER STREET APARTMENTS VISITORS

Key Findings

When examining the CDL and CEL of visitors to the Cowper Street Apartments, there is a high level of distribution across all of Greater Sydney, with instances of CDL and CEL being found in suburbs surrounding the Sydney CBD and Parramatta, potentially suggesting a broad catchment for UNSW students pre-COVID-19.

In a post-COVID-19 scenario, CDL and CEL of visitors shifted east and were concentrated around the eastern suburbs. This could be a reflection of COVID-19 travel behaviours where people may be less inclined to travel long distances for work and education.

Figure 38: Cowper Street Apartments Visitors Common Daytime and Common Evening Location



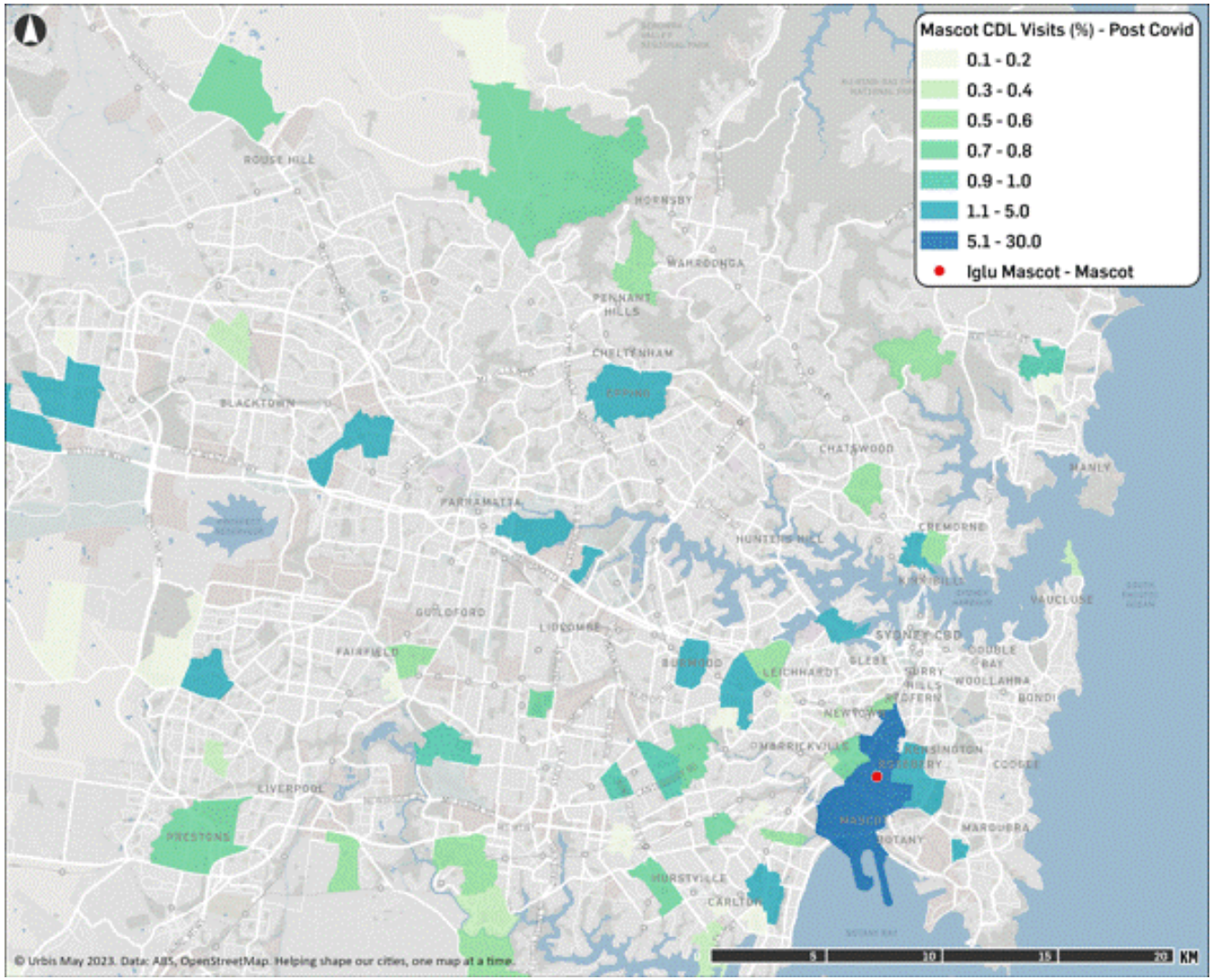
Source: Urbis

COMMON EVENING AND COMMON DAYTIME LOCATION OF IGLU MASCOT VISITORS

Key Findings

The CDL and CEL data after the COVID-19 pandemic was investigated. There was no data available prior to COVID-19 as the Iglu Mascot was not operational during that time. This student accommodation is not affiliated with any university campus, which leads to a more concentrated spread of visitors' CDL and CEL in the southern suburbs of Sydney, particularly around the airport and the eastern suburbs.

Figure 39: Iglu Mascot Visitors Common Daytime and Common Evening Location



Source: Urbis

ASSIGNMENT OF PRIVATE VEHICLE VISITOR TRIPS

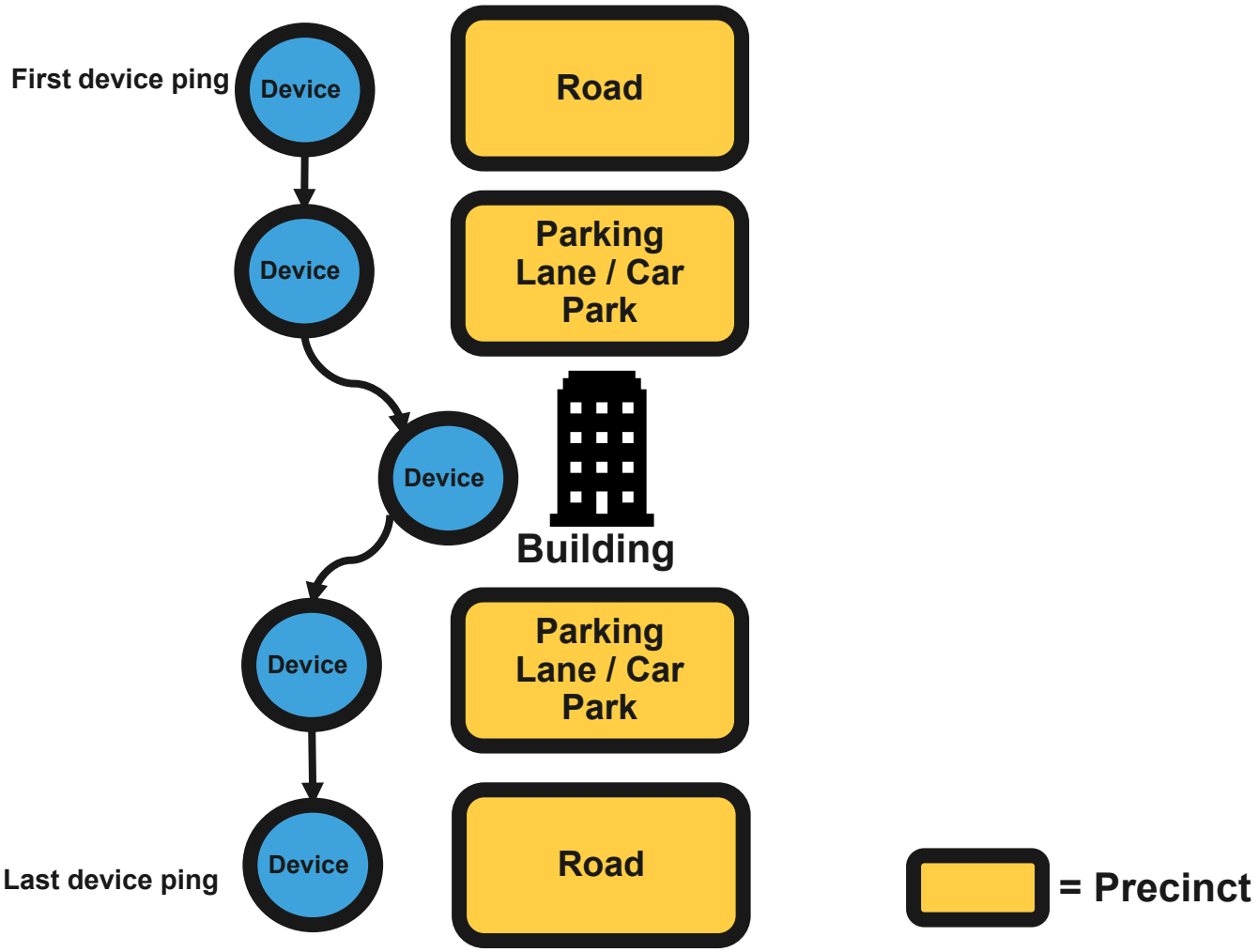
Method of visitor assignment

To determine the assignment of visitor trips that where driving to the sample sites, the location of where the devices appeared within the precinct and the time spent within one of the three sample sites where considered.

As mentioned on **Page 14** of this report, modes where assigned based on the order of precinct which that device appear in on a particular day. Dwell times where calculated based on the first and last ping of a visitor device at one of the three sample sites. To hone in on the demand for the potential demand for car parking at one of the three sample sites, visitors who only used the car mode where considered. Exclusions where also made for devices that where dwelling in the building for under 10 minutes of over 10 hours, as these devices where considered to be either delivery associated trips or residents not captured in the earlier CEL and CDL exclusion.

The figure on the right provides a visualisation of how a device may be assigned as a private vehicle visitor. Note the example is not the only combination of the precincts which a device may have been assigned as devices where assigned based on coming from the road and appearing in a parking lane or car park before or after the visit.

Figure 40: Example of Private Vehicle Visitor Assignment



Source: Near; Urbis

ESTIMATED VISITOR PARKING DEMAND – PARRAMATTA VILLAGE – PRE COVID-19

Key Findings

Using the mode and dwell time analysis shown earlier in this report, a visitor parking demand based on private vehicle usage and departure and arrival times for vehicles was developed. The charts on the right show the parking demand as a proportion of private vehicle visits by non-residents of the Parramatta Village Apartments broken down by dwell time.

The analysis shows that on weekdays in a pre-COVID-19 setting, the peak of visits was between 12:00 PM and 1:00 PM. However, the peak period lingers throughout the afternoon. This could reflect university students visiting people at the student accommodation in the after-lunch period to study, for example.

On weekends, a smaller sample size may have impacted the results, as some dwell time categories were not captured. The peak period is also during the middle of the day, but it is a shorter peak. A second peak emerges in the evening as people potentially visit friends for recreational reasons.

Figure 41: Visitor Parking Profile – Weekdays Pre-COVID-19

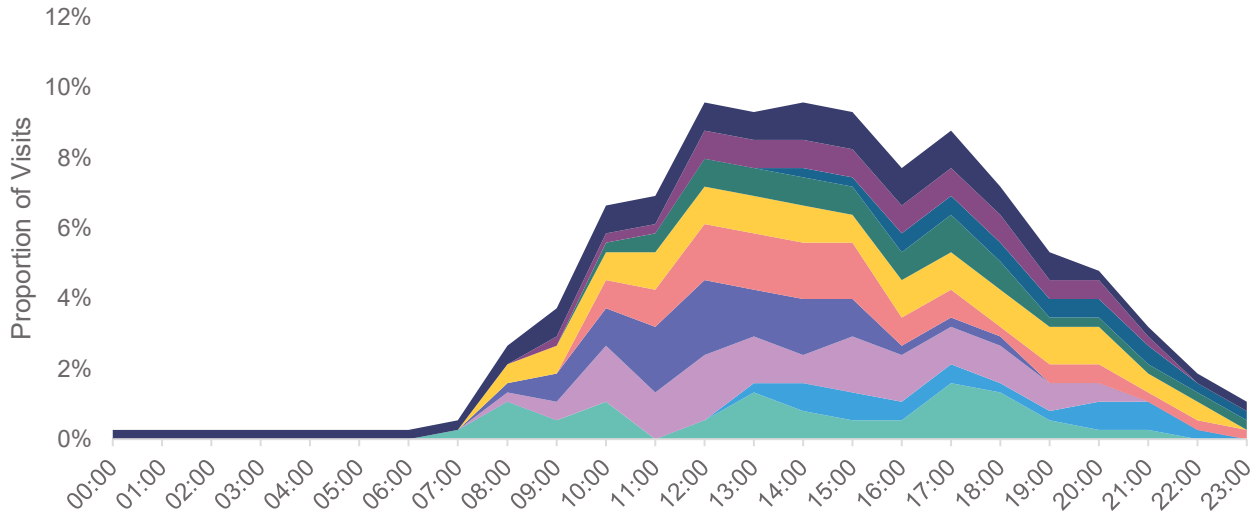
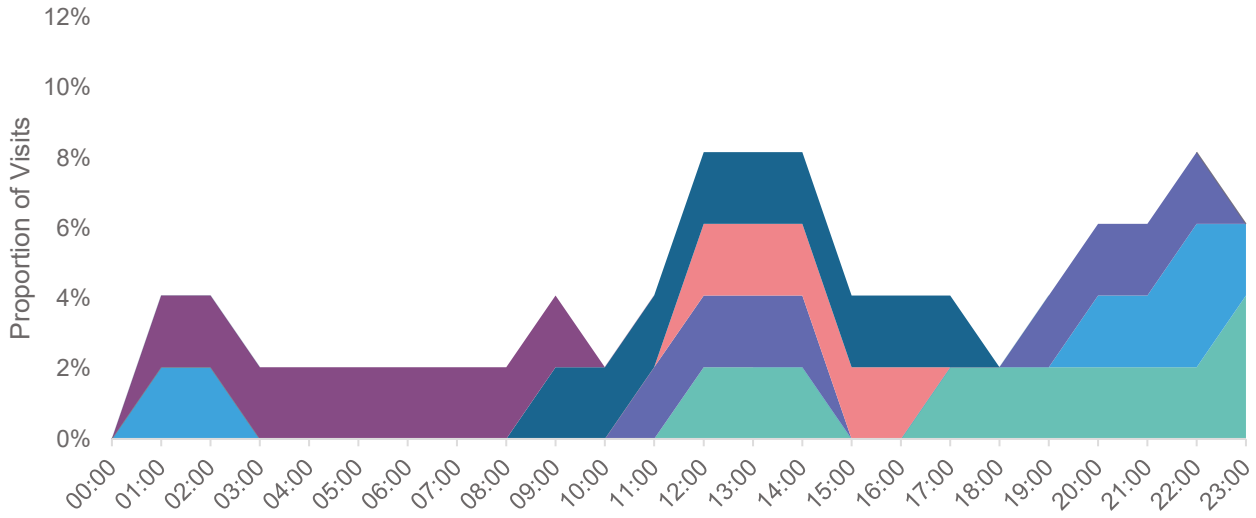
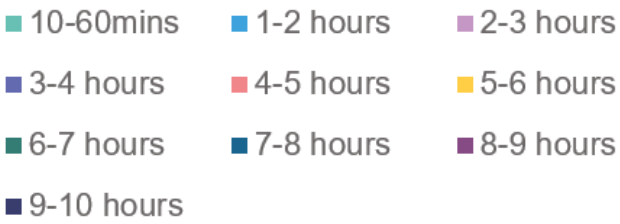


Figure 42: Visitor Parking Profile – Weekends Pre-COVID-19





Source: Urbis

ESTIMATED VISITOR PARKING DEMAND – PARRAMATTA VILLAGE – POST COVID-19

Key Findings

In a post-COVID-19 context, Parramatta Village saw a similar peak period pattern on weekdays compared to pre-COVID-19, albeit with a stronger drop-off in the mid-afternoon, suggesting that pre-COVID-19 university behaviours are returning. On weekends, the peak period has shifted to the evening, with the previously identified peak in the middle of the day being reduced.

Figure 43: Visitor Parking Profile – Weekdays Post-COVID-19

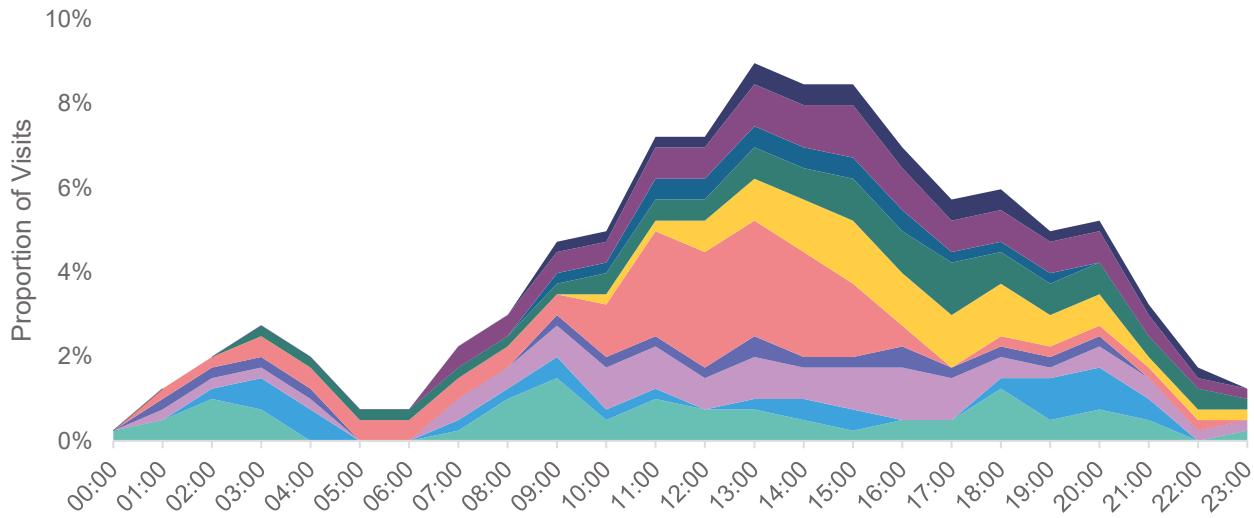
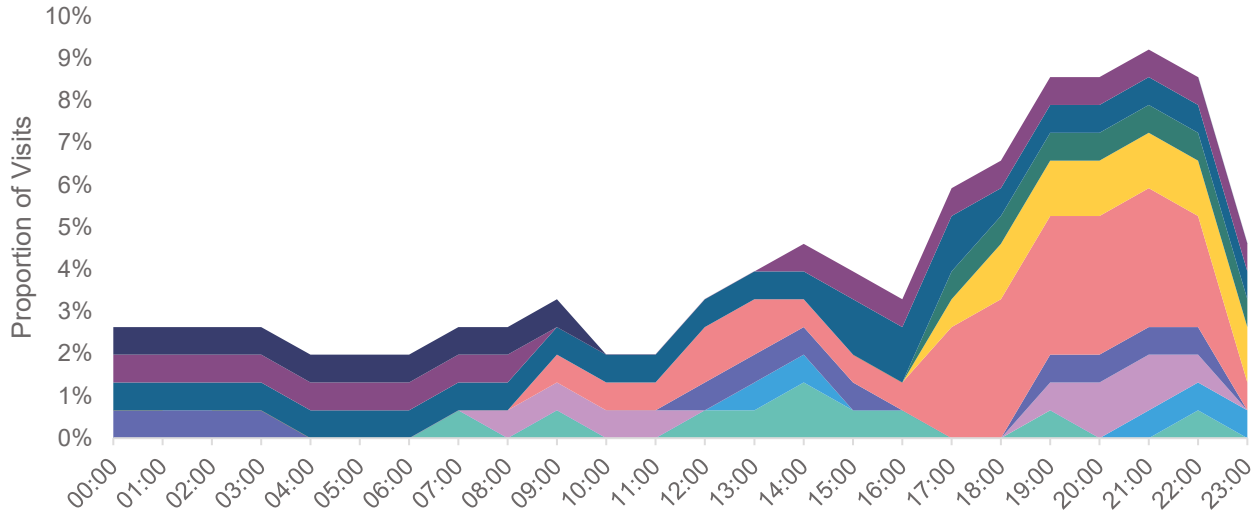


Figure 44: Visitor Parking Profile – Weekends Post-COVID-19



Source: Urbis

ESTIMATED VISITOR PARKING DEMAND – COWPER STREET APARTMENTS – PRE COVID-19

Key Findings

At the Cowper Street Apartments in a pre-COVID-19 context, the peak period for visitor parking demand was observed to be around the morning commuter peak period. This shows a peak from roughly 8:00 AM until 11:00 AM before sharply dropping off. This could be reflective of people who are meeting friends before class and then travelling to class, especially those who live at the student accommodation building.

On a weekend, the sample size was particularly small, resulting in a limited profile. However, there is a clearly defined peak during the lunchtime period.

Figure 45: Visitor Parking Profile – Weekdays Pre-COVID-19

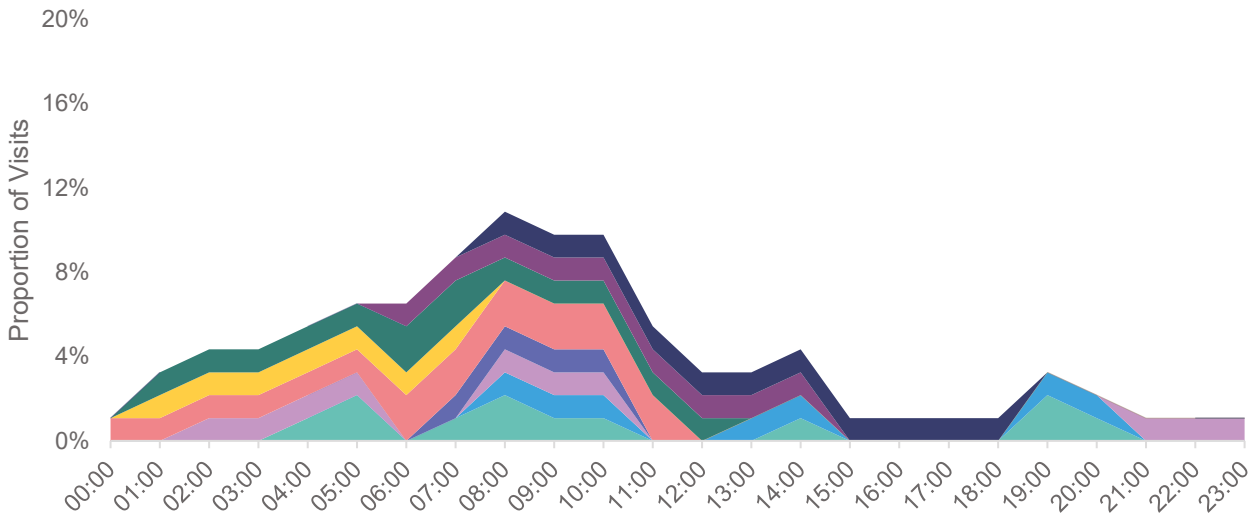
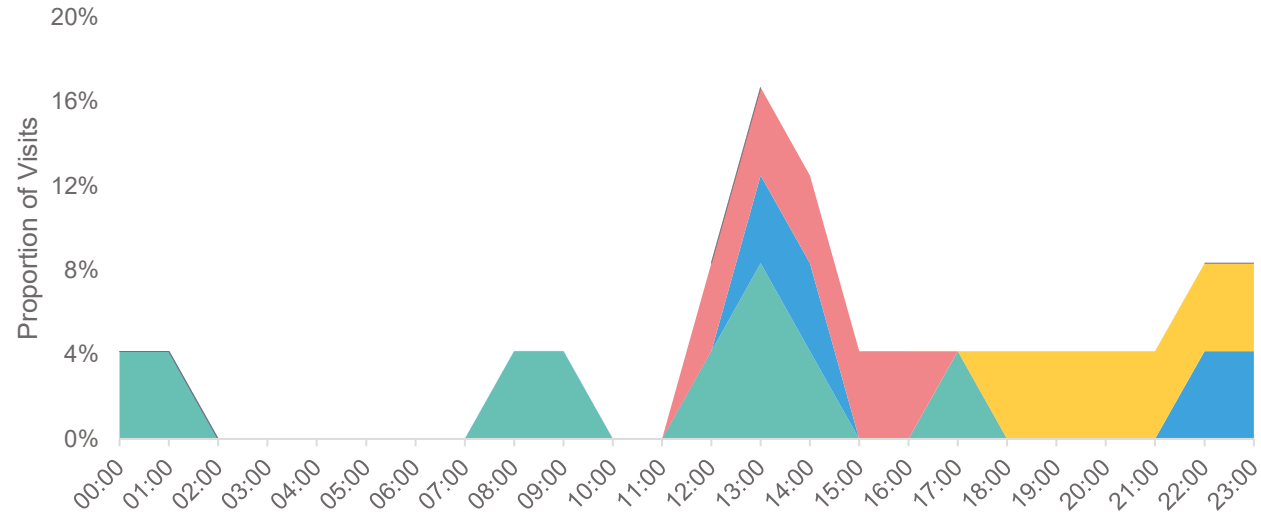


Figure 46: Visitor Parking Profile – Weekends Pre-COVID-19



Source: Urbis

ESTIMATED VISITOR PARKING DEMAND – COWPER STREET APARTMENTS – POST COVID-19

Key Findings

At the Cowper Street Apartments in a post-COVID-19 context, the peak period has shifted to the middle of the day, in line with the post-COVID-19 results at other sample sites. The morning still has a strong representation, with a higher proportion of visits being observed from 8:00 AM through to 2:00 PM.

On the weekend, the peak period shifted towards the evening, which is also typical of other sites. A larger sample size was also collected in the post-COVID-19 period, which may have provided more accurate results.

Figure 47: Visitor Parking Profile – Weekdays Post-COVID-19

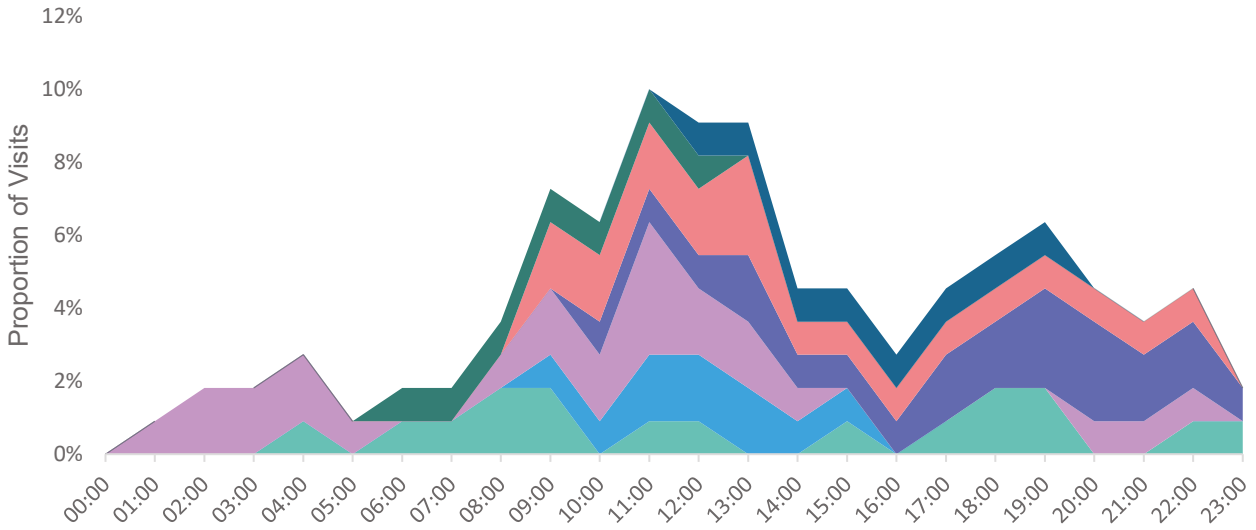
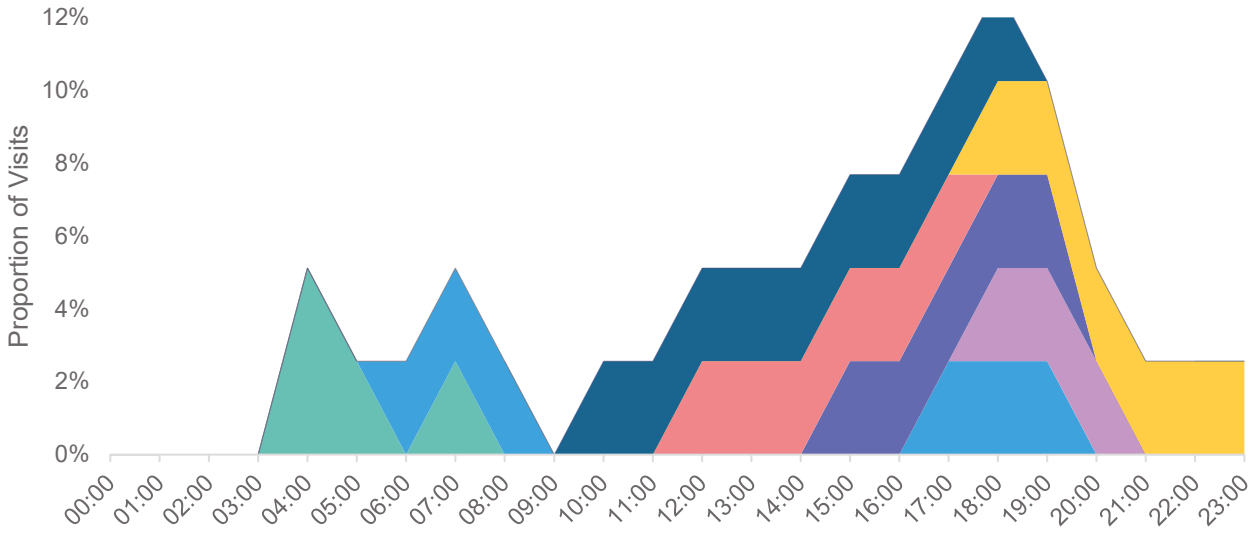
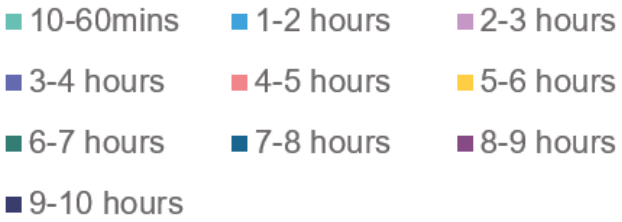


Figure 48: Visitor Parking Profile – Weekends Post-COVID-19





Source: Urbis

ESTIMATED VISITOR PARKING DEMAND – IGLU MASCOT – POST COVID-19

Key Findings

This report displays the visitor parking profile for those who used their private vehicles to visit the Mascot site after COVID-19. Similar to the other two sites after COVID-19, the peak hours during weekdays are observed in the middle of the day, with a high percentage of visits occurring between 11:00 AM and 2:00 PM, followed by a decline in the afternoon.

Weekend results were interesting, with two clear peak periods emerging during mid-morning to early afternoon, followed by a drop in visits, and then another peak period in the early evening. Although there are some common trends across all three sites with peak visits of private vehicle users during evening hours, it is not as consistent as the weekdays, where the middle of the day remains the peak period.

Figure 49: Visitor Parking Profile – Weekdays Post-COVID-19

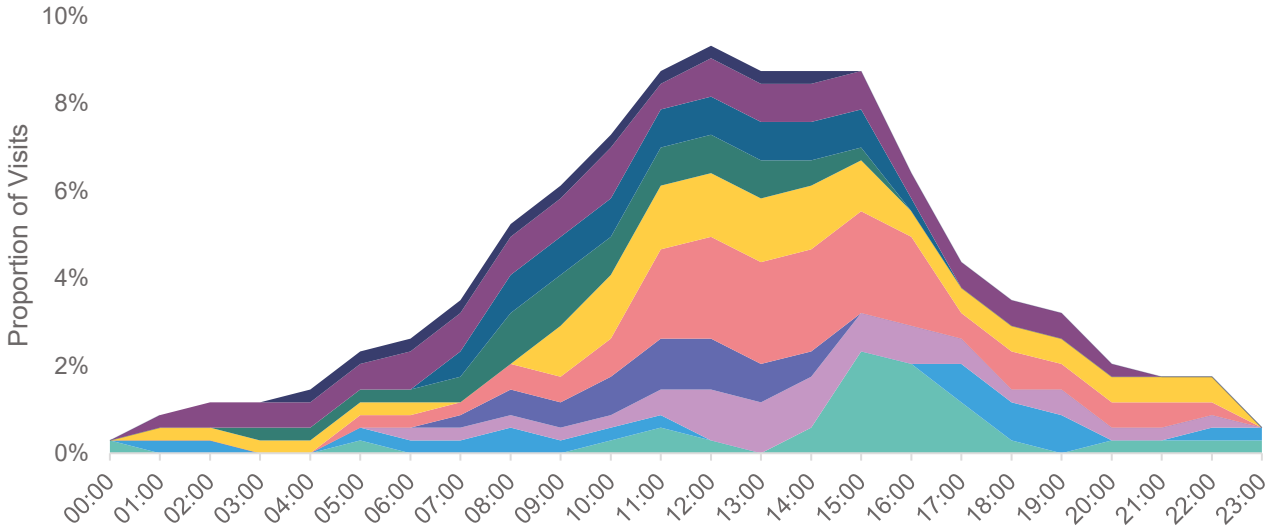
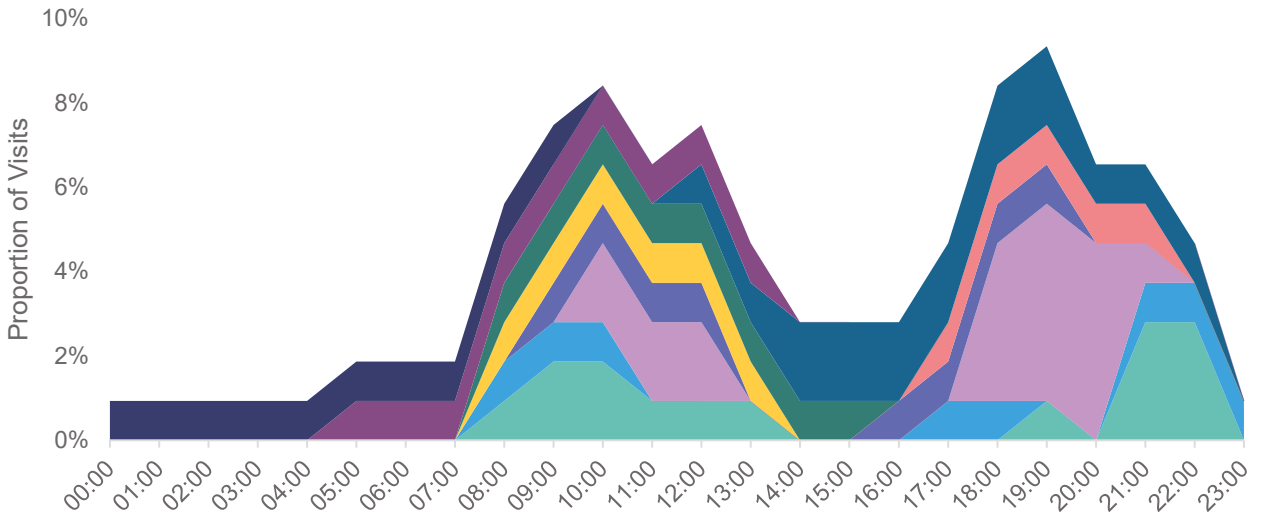
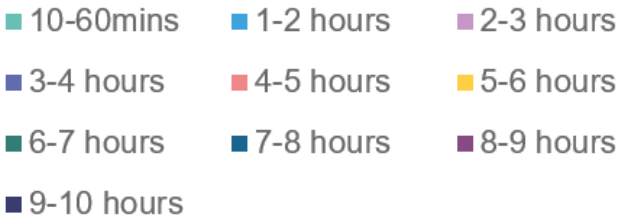


Figure 50: Visitor Parking Profile – Weekends Post-COVID-19





Source: Urbis

04

ASSESSMENT OF VISITOR PARKING DEMAND FOR LACHLAN AVENUE

AVERAGE ESTIMATED VISITOR CAR PARKING DEMAND FOR THE 3 STUDIED SITES

Method

Average proportions were developed based on the profiles for each site, pre and post-COVID and by weekday and weekend. The figures show the weekday and weekend average profiles as an average proportion of visits. Due to the similarities in profiles, the pre and post-COVID data were combined together to create these profiles.

The weekday average shows a fairly consistent peak during the middle of the day, reflective of the similarities in the peak periods across the three sites. The weekend on the other hand has a less consistent profile, reflective of different peak periods observed at the three sites.

The average proportions for the weekday was used to develop the anticipated parking profile for 17-21 Lachlan Avenue by converting the proportions into car visitors and scaling it based on the number of beds at the proposed development. The weekend was not applied due to the inconsistencies in the peak demand. This profile was applied

Figure 51: Visitor Parking Profile – Weekday Average

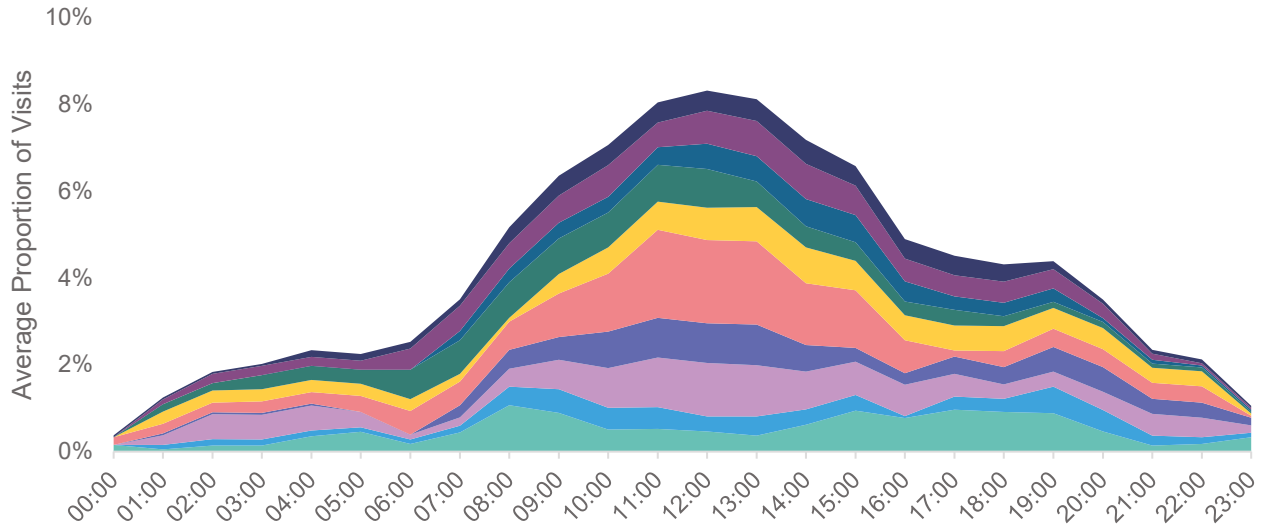
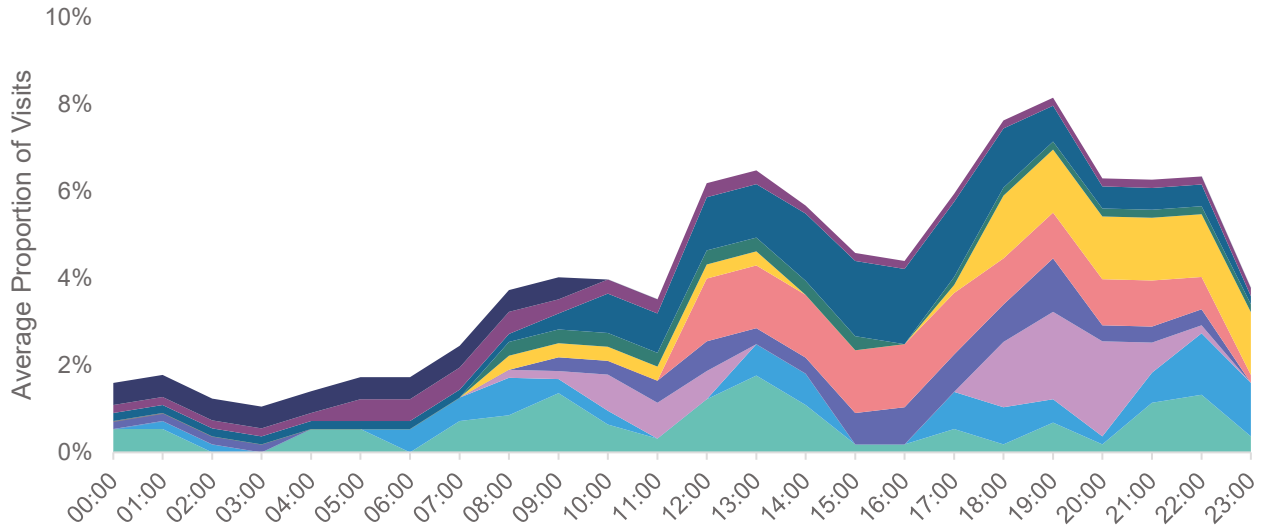
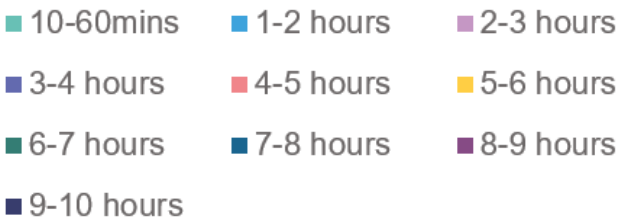


Figure 52: Visitor Parking Profile – Weekend Average





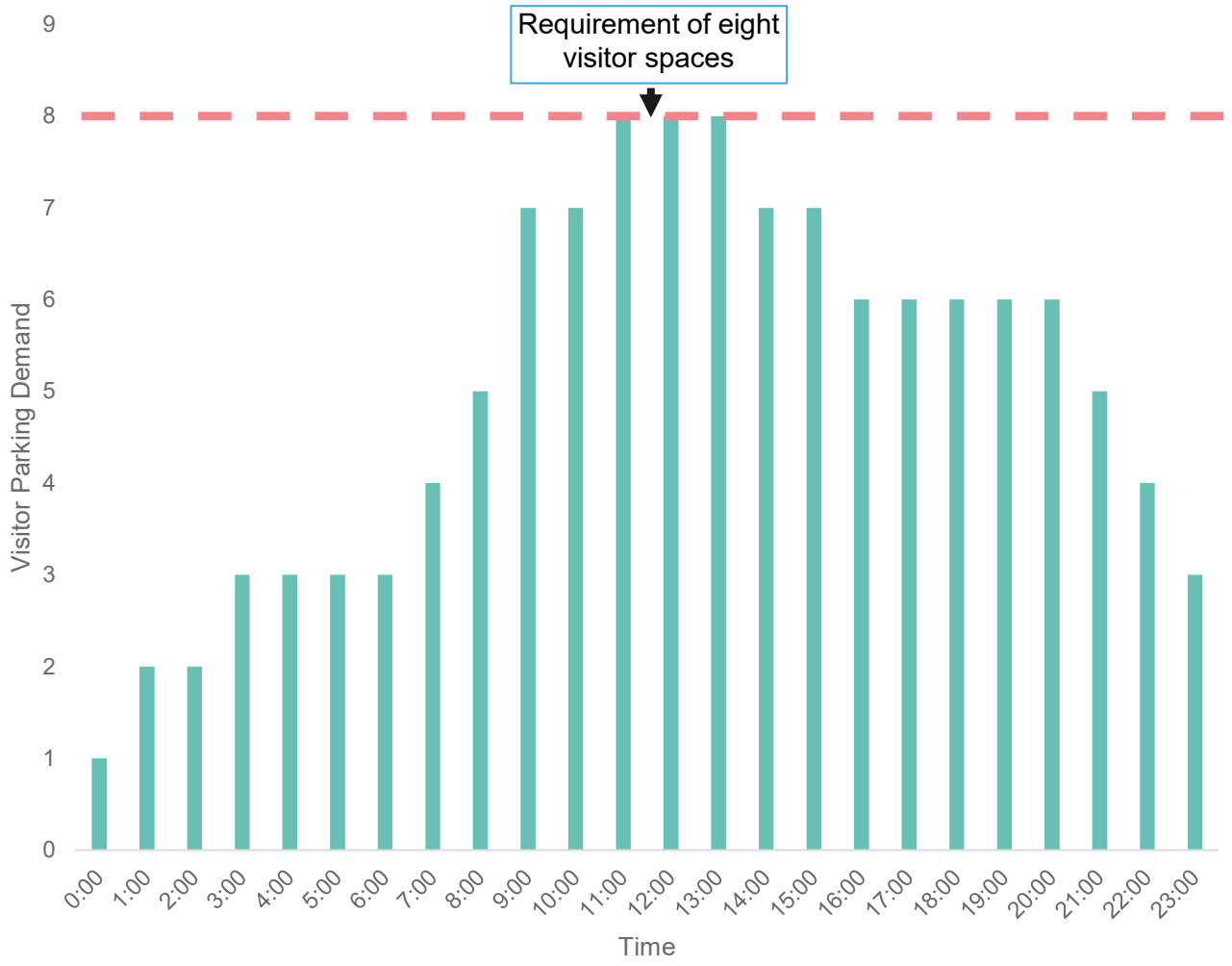
ESTIMATED VISITOR PARKING REQUIREMENTS FOR 17-21 LACHLAN AVENUE STUDENT ACCOMMODATION

Key Findings

Anticipated visitor parking demand for the development at 17-21 Lachlan Avenue is shown in **Figure 53**. This profile was determined by averaging the pre and post COVID parking demand for weekdays at the three sample sites and then factoring the values by the proposed number of beds at the 17-21 Lachlan Avenue development (732 beds).

The figure on the right identifies the anticipated peak visitor parking demand of eight spaces. This peak occurs for three hours during the middle of the day between 11:00 AM and 1:00 PM, before gradually dropping off in the afternoon and the evening.

Figure 53: Estimated Visitor Parking Requirement for Student Accommodation (based on weekday demand)



Source: Urbis

05

KEY FINDINGS & CONCLUSIONS

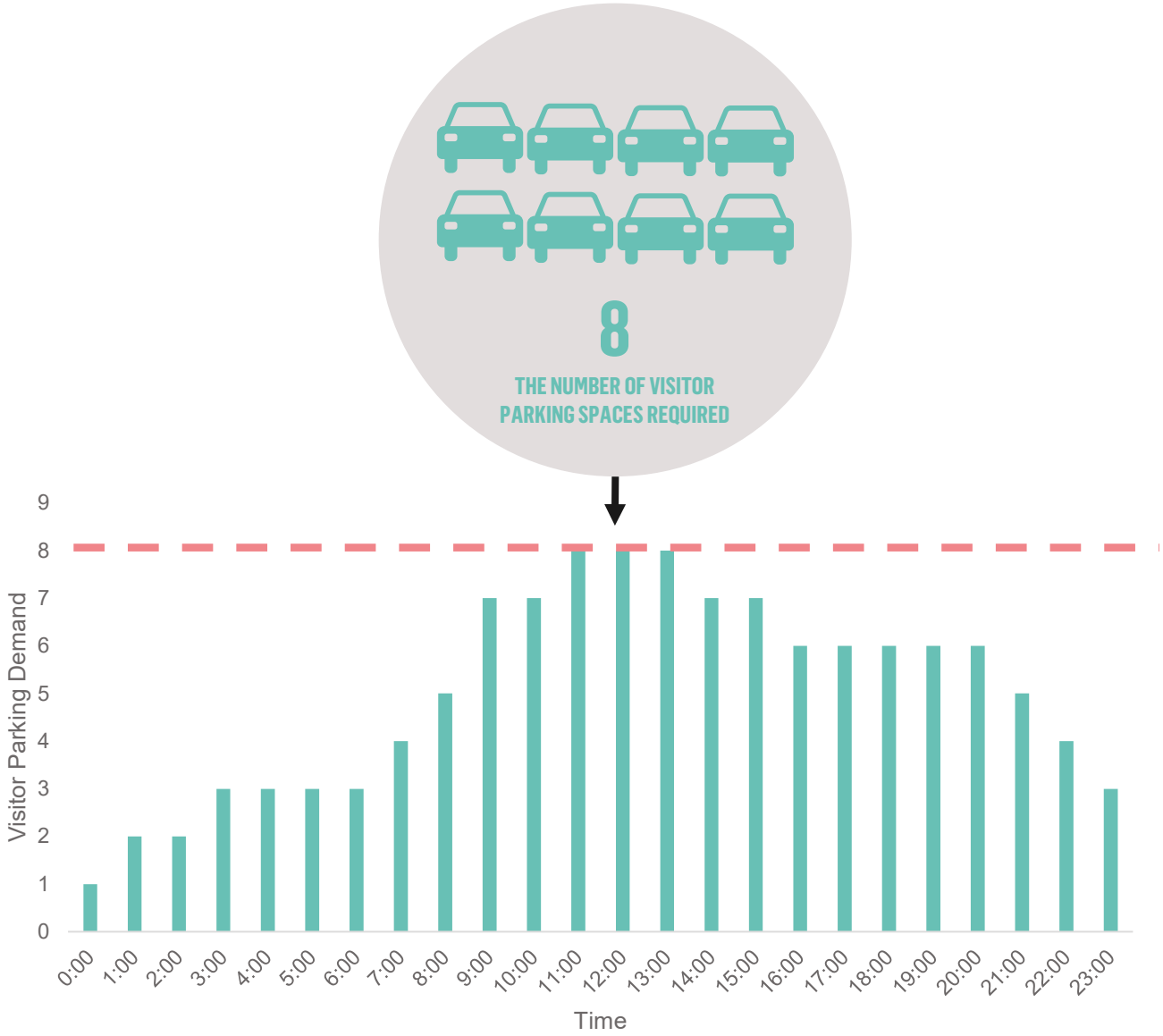
KEY FINDINGS AND CONCLUSION

Key Findings

The report has reviewed the behaviours of visitors at three student accommodation sites across Sydney to identify the requirement for visitor parking spaces at the proposed 732-bed student accommodation facility located at 17-21 Lachlan Avenue Macquarie Park.

The analysis in this report identified that people who were driving and parking at student accommodation facilities accounted for a low proportion of visits. The analysis of the three sites was averaged and factored (discussed further in **Section 4**) to determine an anticipated peak car parking demand for visitors to 17-21 Lachlan Avenue.

A peak demand of eight spaces was determined based on the analysis in this report. This is significantly lower than the provision Ryde Council suggests. A provision of eight dedicated visitor spaces within the basement will be satisfactory to meet the demand of visitors who are driving to the proposed development.



APPENDIX C GREEN TRAVEL PLAN

17 - 21 LACHLAN AVENUE AND 163 HERRING ROAD, MACQUARIE PARK – GREEN TRAVEL PLAN FOR THE PROPOSED STUDENT ACCOMMODATION DEVELOPMENT

Prepared for Lachlan Avenue Development Pty Ltd

URBIS

22ND NOVEMBER 2022

CONTENTS

1. BACKGROUND

SUSTAINABLE STUDENT ACCOMMODATION

Student accommodation for Macquarie University

Lachlan Avenue Development Pty Ltd (the proponent) has proposed constructing a 732 room student accommodation facility at 17 - 21 Lachlan Avenue and 163 Herring Road in Macquarie Park. The target market is students attending Macquarie University, a short walk from the site.

An emphasis on green travel

The site is well connected to existing public and active transport. The site is less than 400 m from:

- Trains and buses from Macquarie Centre.
- Express buses from Herring Road.
- Shared paths on Waterloo Road and along Shrimpton's Creek.

The development will be sustainable with an emphasis on green travel. There are zero resident parking spaces proposed there is an opportunity to capitalise on the extensive green travel network surrounding the site.

This Green Travel Plan outlines

- The travel patterns of similar local students (Sections 2), highlighting the lack of car usage.
- The available travel options proximate to the site and the on site infrastructure to support green travel (Section 3).
- A Travel Demand Management Plan (Section 4) that outlines appropriate measures to support zero resident car parking spaces, while not impacting the amenity of people living near the site nor contributing to excessive traffic generation.

Figure 1: Site

Source: Urbis

Note: Walk speed is assumed to be 4.5 km/h. Traffic light wait time for pedestrians is assumed to be one minute.

MOST TRIP TYPES WILL BE SERVICED BY NON CAR MODES

Student accommodation resident trip types are shown in **Table 1**. Most day to day trips, such as those for university, shopping, work and social purposes can be completed without a car. Financially, if a car is only required occasionally, ride hailing or car share is more cost effective, especially in a student context.

Table 1: Likely mode used for trip type

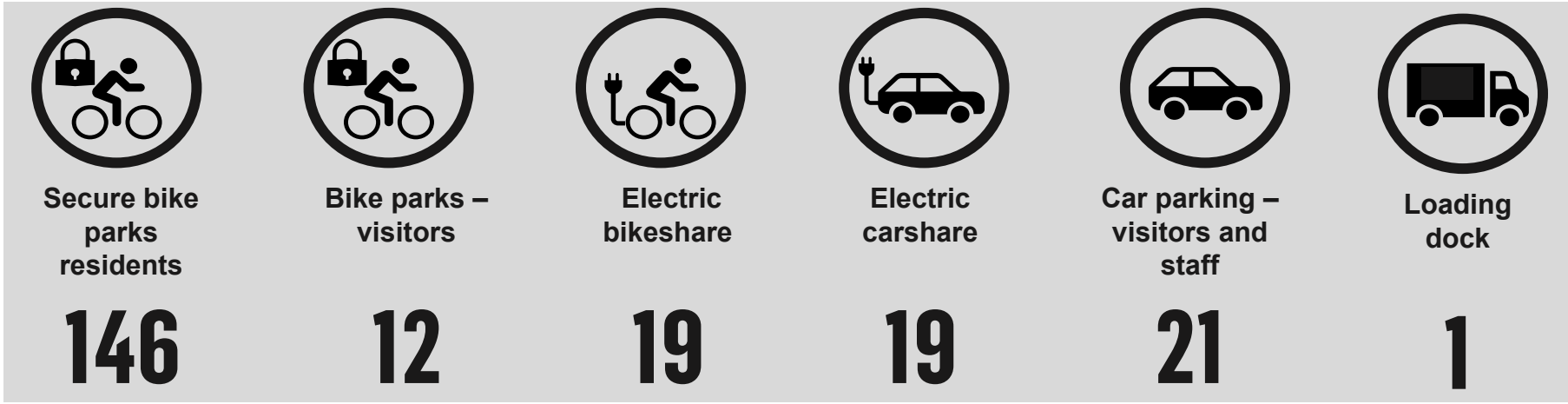
Distance	Type of Trip				Most likely mode					
	University	Shopping	Work	Social/ Recreational	Walking	Cycling	Bus	Train/ Metro	Car share	Ride hailing
0 – 800 m	Class, Library, Campus Central	Macquarie Centre, Grocery shopping, Department store	Macquarie Centre workers	Ubar, The Ranch Hotel, Gym and Pool, Cinema	✓	✓				
801 m – 1,200 m	Class, Lake, Sports and recreational centre	Local specialist retail	Macquarie Park, North Ryde CBD	National Park	✓	✓		✓		
1,200 m – 2,000 m	University sports fields	Lachlan's Line shopping village	Local café workers	Cafes, bushwalks, bars and restaurants	✓	✓	✓	✓		
2,000+ m	Field trips	Bulky goods, specialist retail	Chatswood, Sydney and North Sydney CBD workers	Eastwood town centre, Chatswood and Sydney City, beaches, weekend/ day trips			✓	✓	✓	✓

GREEN TRAVEL OPTIONS ARE READILY AVAILABLE ON SITE TO STUDENTS

Lachlan Avenue Development Pty Ltd are committed to capitalising on the proximity of the site to public transport and destinations such as Macquarie University, Macquarie Centre and other key activity centres by supporting residents to go about their daily lives without the need for a personal car. There will be a range of facilities onsite, and these are summarised in **Figure 2**. These will operate as follows

- **Resident bike parking** will be available for those who own their own bike. The storage area for privately owned bicycles will be secured by access control and monitored by CCTV. There will be charging outlets proximate to these spaces so that privately owned electric bicycles can be charged.
- **Visitor bike parking** will be accessible in the public domain and will not require security access control.
- **An electric bikeshare and carshare scheme** will be operated under a similar model to other commercial carshare schemes on the market (such as GoGet) but will be available for use only by residents of the building. In this case a booking platform will cover both electric bikes and cars. This will allow residents to book vehicles by the day or by the hour for a fee. As indicated on Page 5, there are a range of longer trips (2 km or more) or which involve carrying goods that the electric carsharing service will be useful. Likewise, electric bikeshare will be offered in recognition that not all students will be able to afford an electric bike.
- **Car parking for staff and visitors** is provided and will be monitored by staffed access gate to ensure appropriate use.
- **A loading dock** is provided, although it is noted that this student accommodation comes furnished so rather than this being used by removalists moving into and out of the building with furniture, it will be used mainly for deliveries including post, groceries and parcels.

Figure 2: Provision of on site transport options



2. EXISTING TRAVEL PATTERNS

BACKGROUND DEMOGRAPHIC FOR THE STUDY AREA

Demographics analysis of the local area was undertaken. The following statistics for 2016 were identified using Australian Bureau of Statistics (ABS) data

- Household Composition.
- Dwelling Tenure Type.

Figure 4 to Figure 7 highlight the breakdown of tenure type and household composition in the area for tertiary students. Group households account for 11 per cent and 33 per cent of household types for full time and part time workers respectively. Renting is by far the most common tenure type.

The study area including Macquarie University and surrounding ABS Statistical Area Level 1 (SA1) and Statistical Area Level 2 (SA2) were used. This study area is shown in **Figure 3** below.

Figure 3: Study area

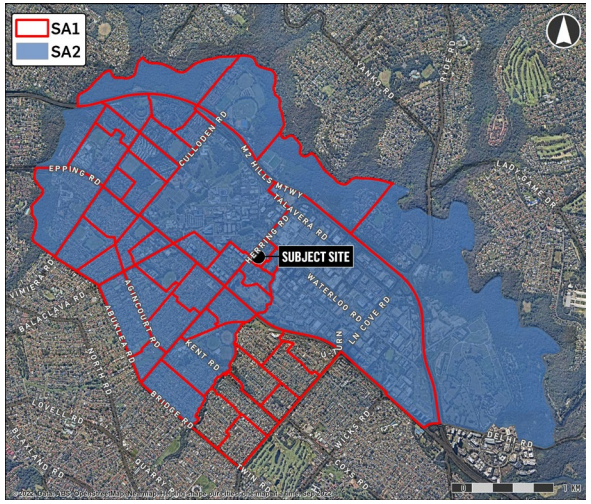


Figure 4: Student household type full time workers

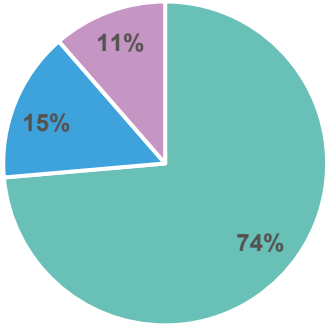
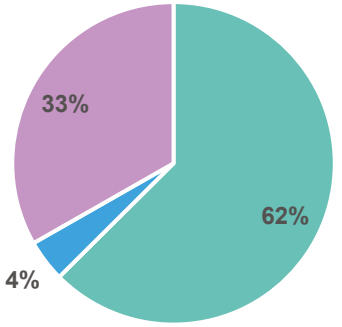


Figure 5: Student household type part time workers



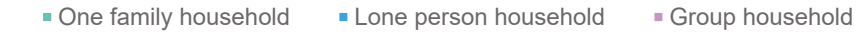


Figure 6: Student tenure type full time workers

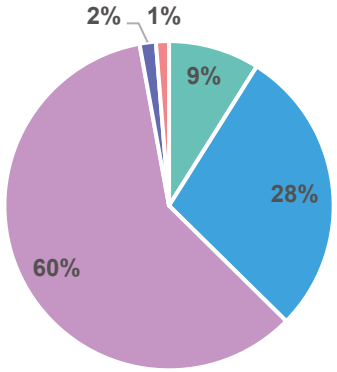
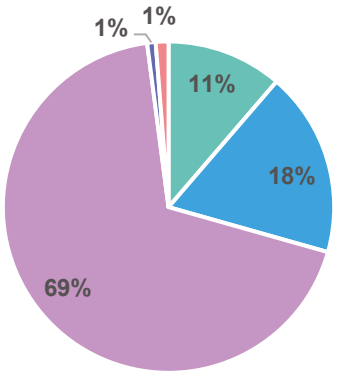


Figure 7: Student tenure type part time workers



Source ABS Tablebuilder Place of Enumeration and Dwelling Type datasets
Note: The SA1 study area could not be used for this analysis due to ABS data anonymity protection measures.

EXISTING GREEN TRANSPORT NETWORK

Figure 8 shows the 800 metre walking catchment and the three kilometre cycling catchment surrounding the site. These catchments show the actual distance using the street network. The site is well served by shared path routes (shared between pedestrians and cyclists) which allow cyclists to travel more safely than onroad bike paths that require cyclists to mix with traffic.

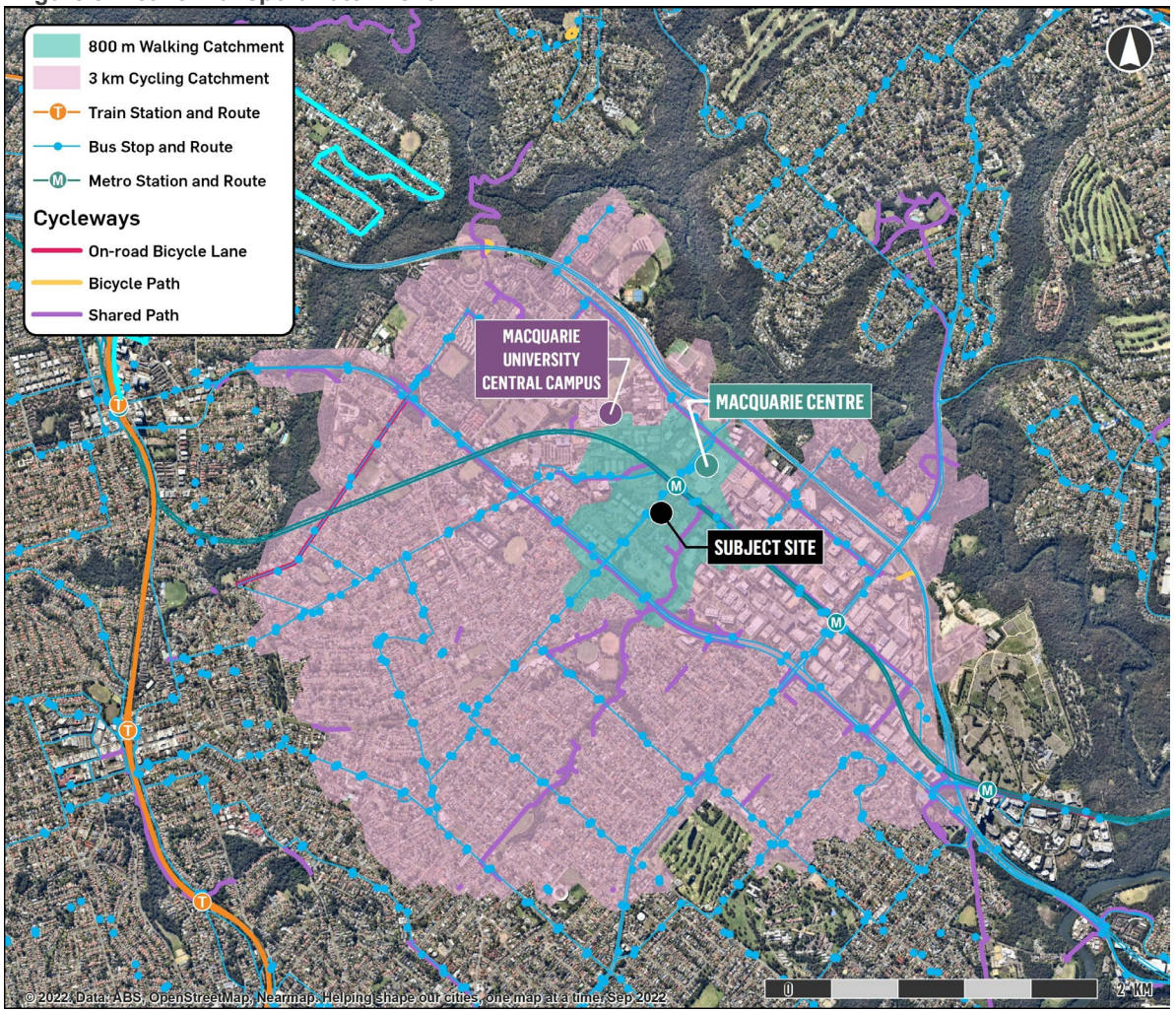
The site is a 220 metre walk to the Macquarie Park Metro Station which provides trains to Chatswood and Epping. These stations allow for extensive access across Sydney by public transport. Additionally, bus routes from Macquarie Centre and Herring Road connect to the Sydney CBD, Parramatta, Ryde, Gladesville, The Hills region, St Ives, Mona Vale and Chatswood.

Macquarie University is extremely well connected by existing green travel options.

GREEN TRAVEL INITIATIVE

The information in **Figure 8** on walking and safe cycling routes in the area will be provided to staff and residents in a Transport Access Guide (TAG)

Figure 8: Active Transport Catchment



Source: Urbis, TfNSW Cycleway Dataset

MOST TRIPS UNDERTAKEN IN RYDE LGA ARE FOR SOCIAL PURPOSES

Trips in the Ryde Local Government Area (LGA) are taken for a variety of reasons. **Figures 9 and 10** show the output from analysis of Transport for NSW (TfNSW) Household Travel Survey for the Ryde and Parramatta LGAs.

The Parramatta LGA was selected as a benchmarking location as it has similar characteristics to Macquarie Park. This data source encompasses all trip types (not just work trips such as with ABS Census data). This analysis shows the importance of social and recreational trips in Ryde (27 per cent), followed by commuting (20 per cent) and serve passenger trips (16 per cent). Parramatta has a near identical breakdown of trip trips.

The average distance travelled for trip types was also reviewed, with commuting and work related business trips being the longest. Shopping and social / recreational trips were all under five kilometres, suggesting that Ryde locals choose to both shop, and enjoy life locally. Education related trips are slightly longer at 6.7 km. This is likely due to travel lengths to tertiary education institutions outside of the Ryde LGA.

INSIGHT

Social and recreational trips have the largest share of journey types in Ryde LGA. Page 5 indicates the common and likely social recreational destinations for this site and the green travel modes on offer to these locations.

Figure 9: Types of trips taken in the Parramatta LGA

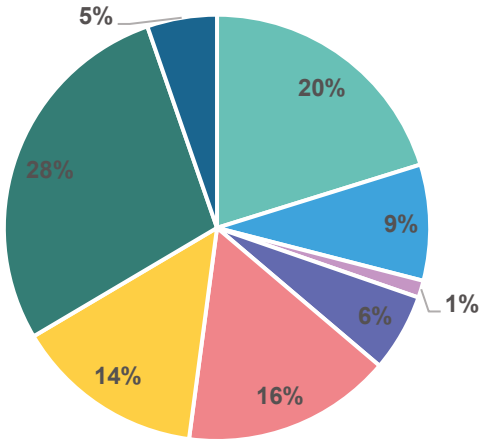
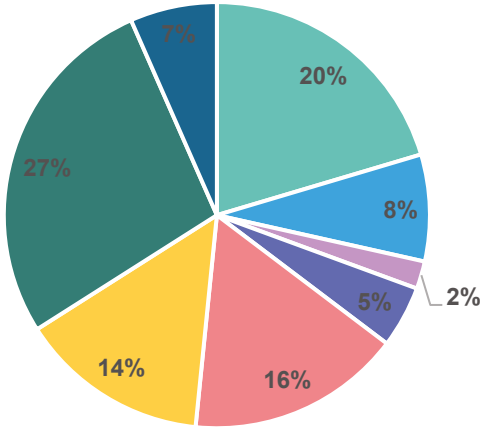


Figure 10: Types of trips taken in the Ryde LGA



Source: TfNSW Household Travel Survey 2018 19

81 PER CENT OF STUDENTS TRAVELLED TO WORK USING GREEN TRAVEL MODES

A review of mode splits to work for this area indicates that 81 per cent of students travel to work using green travel modes. The following were also observed.

- 40 per cent of workers who lived near campus walked to work. This is reflective of the Macquarie Park SA2 being by far the highest destination for employment.
- 41 per cent of student workers who lived near campus caught public transport to work. This is reflective of the high levels of public transport accessibility near the university campus.
- Only 19 per cent used a private vehicle to get to work, reflecting the lower levels of car ownership among employed students and local employment opportunities.

Car ownership amongst students in the Macquarie Park – Marsfield SA2 was also determined. 82 per cent of University Students in the SA2 were in households with fewer cars than people who lived there, suggesting that many students choose to not own cars.

INSIGHT

81 per cent of students living on or near the Macquarie University Campus use a green travel option to commute to work.

Figure 11: Mode of travel of student workers in the SA1s surrounding the campus

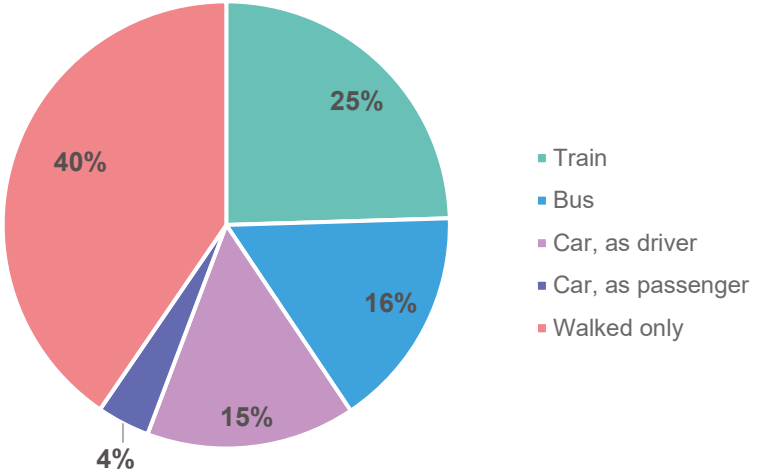
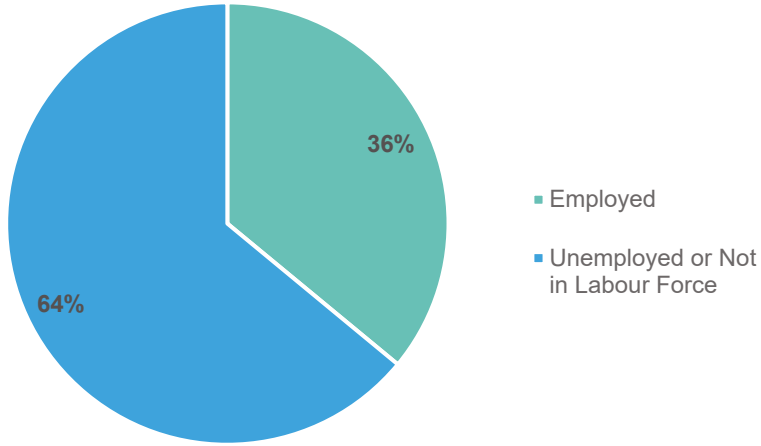


Figure 12: Proportion of university students who work



Source: ABS Tablebuilder Place of Work dataset and Place of Enumeration Dataset

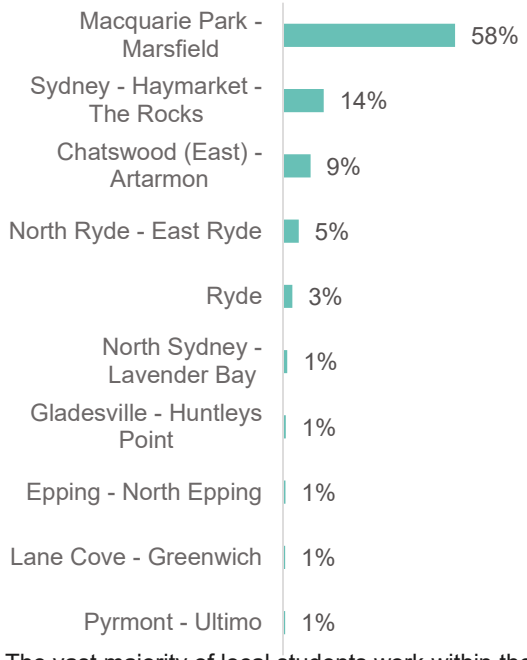
Note: Data excluded people who did not go to work on census day or did not state how they commuted to work

*Note: The ABS source data to determine **Figure 11** was different to that of **Figure 12** due to ABS Tablebuilder data attribute limitations*

98 PER CENT OF STUDENTS WITH JOBS LIVE WITHIN A 30 MINUTES OF WORK

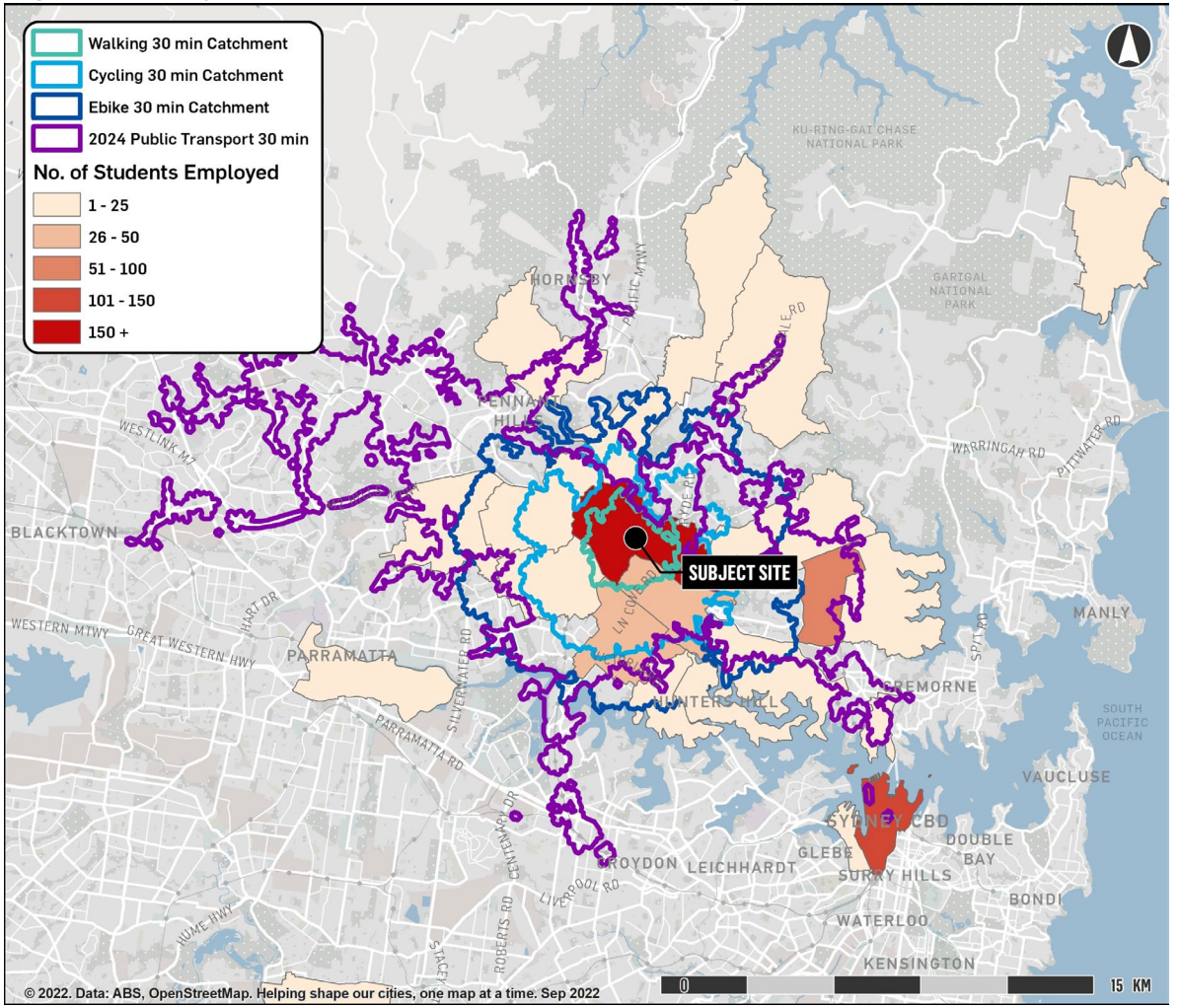
98 per cent of local students will live within 30 minutes of their work based on 2024 Metro network that will connect Macquarie Park to Bankstown.

Figure 13: Employed student location of work



The vast majority of local students work within the Macquarie Park – Marsfield SA2, reflective of the high mode share of walking to work. The following two highest destinations (Sydney – Haymarket – The Rocks and Chatswood (East) – Artarmon) are areas that are very well connected by public transport to Macquarie Park. During peak periods, the Macquarie University Metro Station has services every four minutes in each direction.

Figure 14: Employed student location of work (SA2) and 30 min green transport catchments



Source: Urbis, ABS

Note: Data excluded people who did not go to work on census day or did not state how they commuted to work

Note: Public Transport Catchment analysis considered the completion of Metro City and Southwest in 2024.

Note: If any part of the SA2 was within a catchment area, it was assumed the workers for whole SA2 was accessible.

RETAIL IS HIGHLY ACCESSIBLE BY WALKING FROM THE SITE

There are multiple shopping options within walking distance to and from the site. Macquarie Shopping Centre, a regional shopping centre is located at a 360 metre walk from the site. Within Macquarie Shopping Centre there is a range of retail offerings a summary of which is shown in **Table 2**.

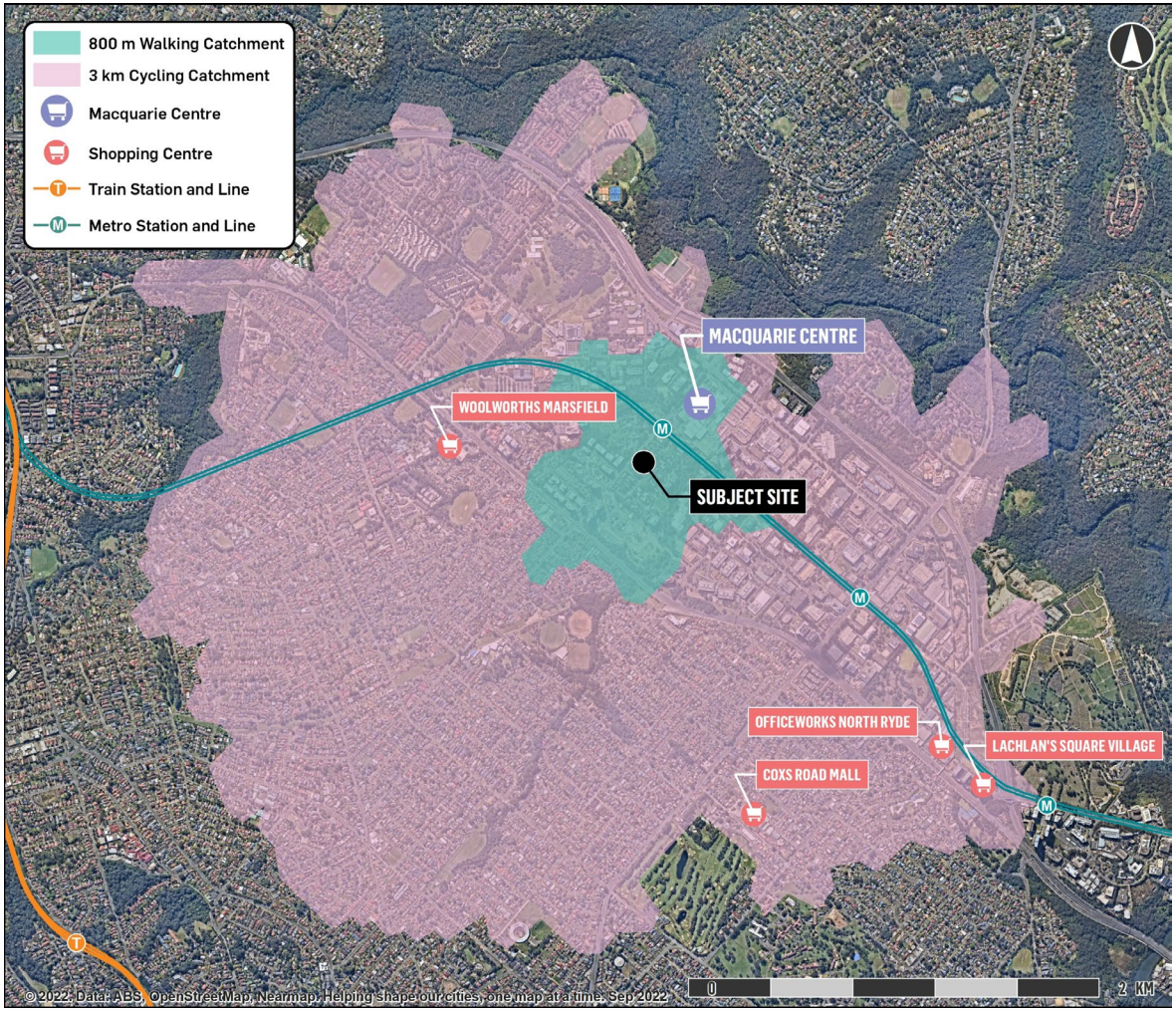
Table 2: Local retail offerings

3	Supermarkets
4	Department Stores
1	Fresh Fruit Market
2	Butcher
1	Post Office
+	Speciality Retail

INSIGHT

The vast majority of shopping needs can be completed within a five minute walk from the site at Macquarie Shopping Centre.

Figure 15: Local retail locations



Source: Urbis

SOCIAL & RECREATIONAL DESTINATIONS ARE EASILY ACCESSIBLY

As indicated in the household travel survey, residents of Ryde tend to travel locally for social and recreational trips. The figure on the right highlights the variety of social and recreation locations are within walking distance or can be accessed by public transport locally. Some key local social/recreational offerings are shown in **Table 3.**

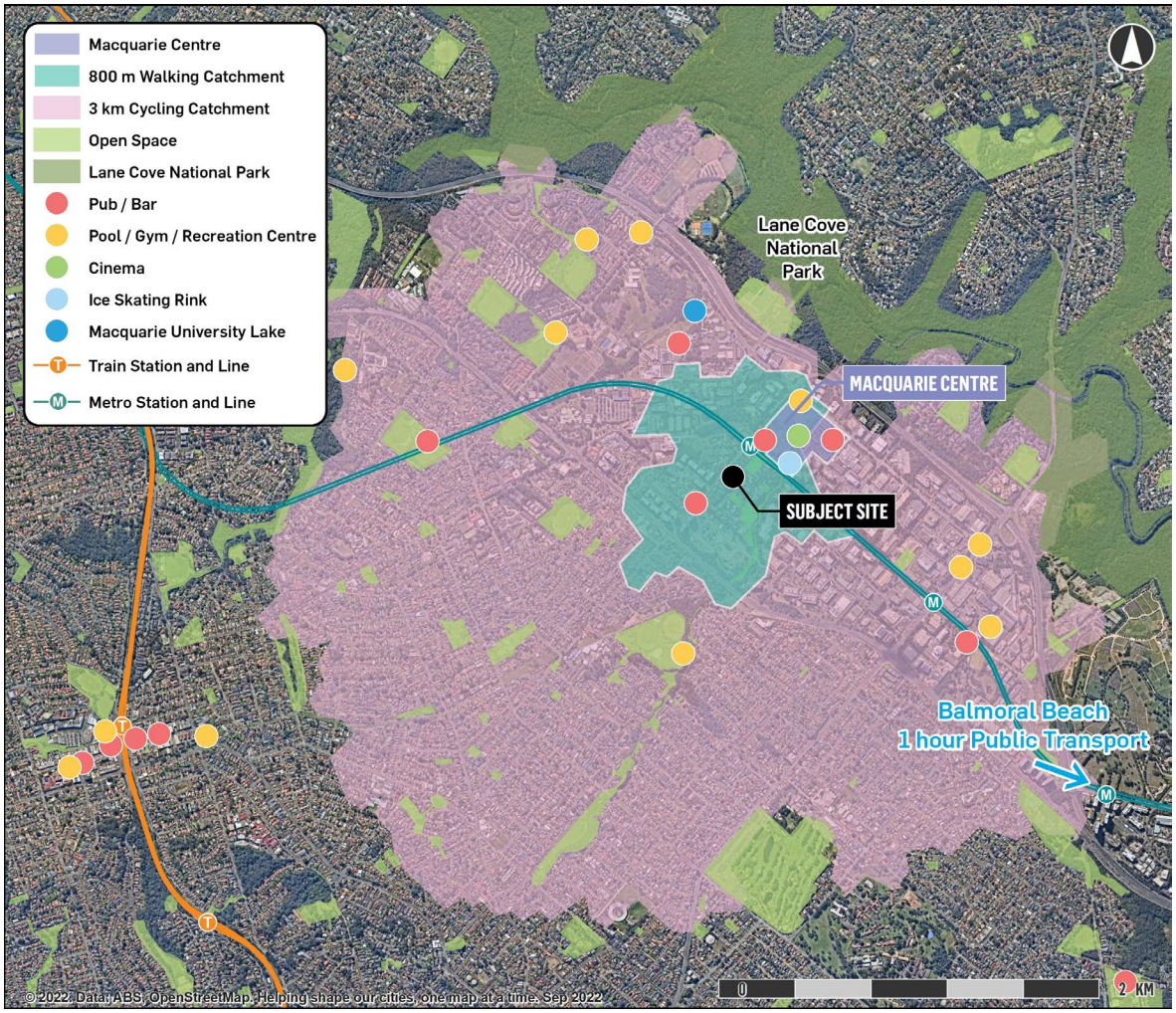
Table 3: Key local social/recreational offerings

Ubar and Macquarie University Lake
The Ranch Hotel
Lane Cove National Park
Macquarie University Sport and Recreational Centre
Eastwood town centre
Green spaces in Shrimpton's Creek Corridor
Green spaces in Macquarie University itself

INSIGHT

There is an abundance of social and recreational destinations that are accessible by walking or public transport.

Figure 16: Local social and recreational locations



Source: Urbis

3. A STRATEGIC RESPONSE TO BEHAVIOUR CHANGE

PROVIDING CAR BASED INFRASTRUCTURE WILL INDUCE DEMAND FOR CAR TRAVEL

There are two dominant and opposing approaches employed in transport planning (shown in Figure 16). Predict and Provide is an approach where demand is predicted based on historical trends or arbitrary rates and then infrastructure/parking is provided in line with the prediction. Predict and Provide results in inducing demand, a phenomenon where increasing the supply of something (like parking) makes people want that thing even more (as it becomes more convenient relative to other options), resulting in requiring more supply to maintain existing access levels and leading to a negative feedback loop which happens almost every time new roads are built[1].

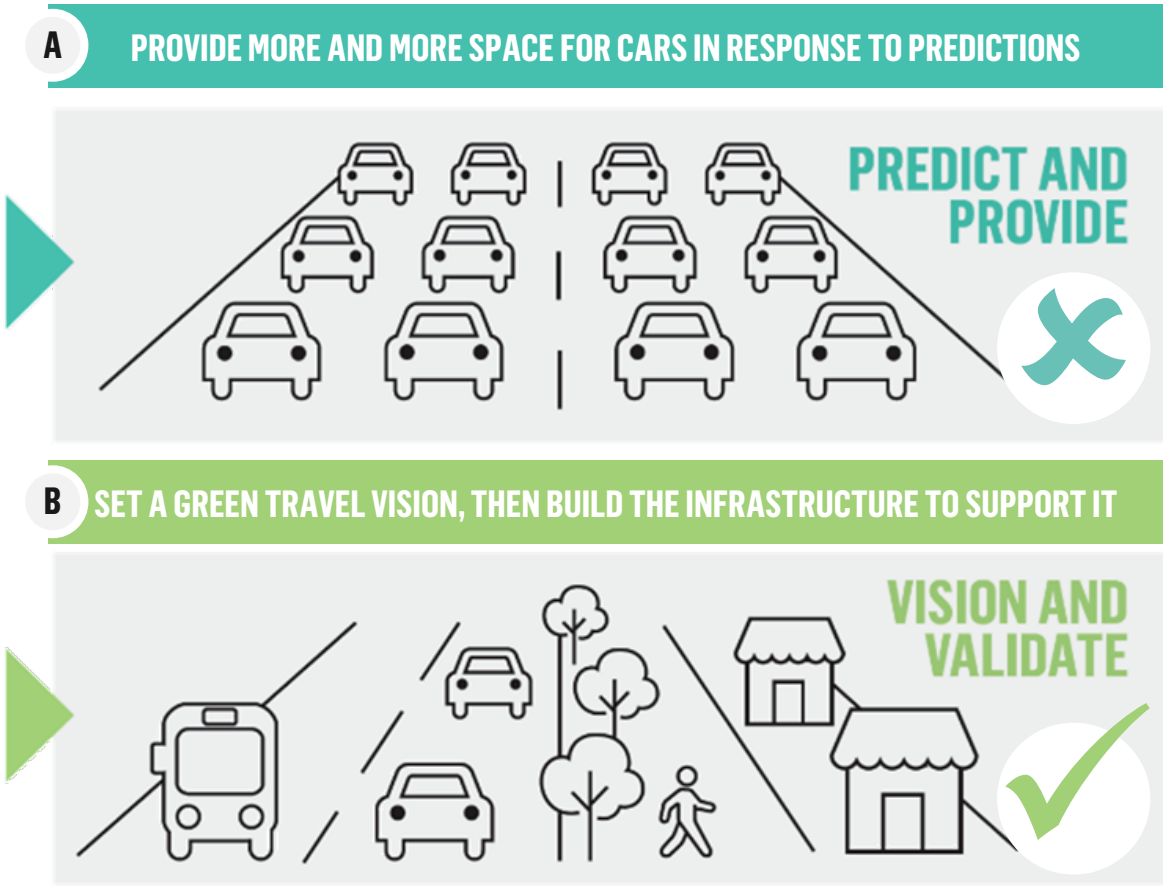
Alternatively, the vision and validate approach sets the transport vision for the future, which in this case is low car use, and then builds the infrastructure to support the vision.

There has been a range of behaviour change studies that have shown that strategies to shift behaviour are much less effective if parking management is not also addressed. Some key findings of relevance are in **Table 4**. Most notably car ownership and car use depend on numerous factors, among which are parking availability at destination and at home.

Lachlan Avenue Development Pty Ltd has emphasised active and public transport use for those residing at and visiting the site with zero resident parking and limited visitor parking provision.

1) Duranton and Turner, 2009, The Fundamental Law of Road Congestion: Evidence from US Cities, NBER

Figure 16: A 'Predict and Provide' approach compared with a 'Vision and Validate' approach



LOW CAR USE REQUIRES STICKS AND CARROTS

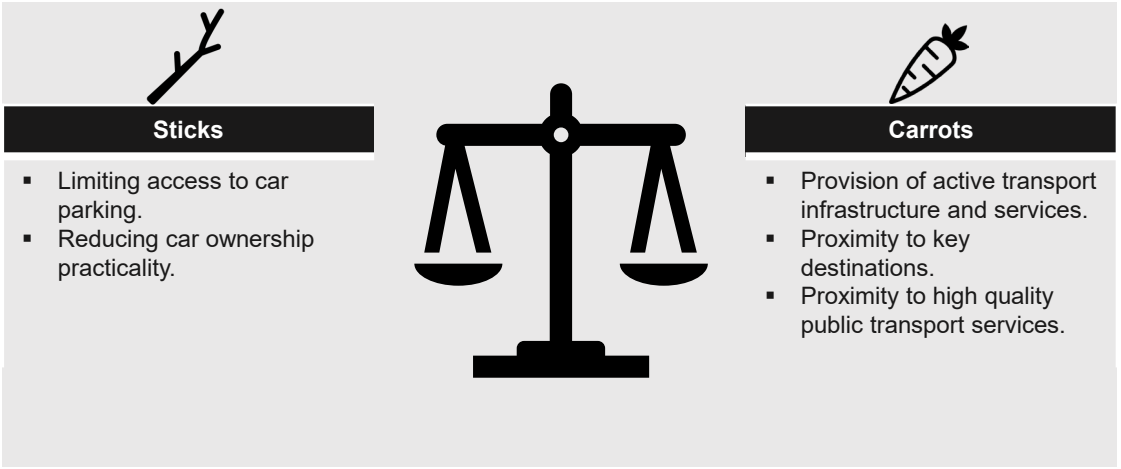
There has been a range of behaviour change studies that have shown that strategies to shift behaviour are much less effective if parking management is not also addressed. Some key findings of relevance are in **Table 4**. Most notably car ownership and car use depend on numerous factors, among which are parking availability at destination and at home.

Lachlan Avenue Development Pty Ltd has outlined an approach which provides both the sticks and carrots required to achieve low car use (**Figure 17**). emphasised active and public transport use for those residing at and visiting the site with zero resident parking and limited visitor parking provision.

Table 4: Findings from select behaviour change studies of relevant

Key research findings	Reference	How do these apply to 17-21 Lachlan Avenue Student Accommodation?
Limited access to parking at home affects car use. The decision to drive decreases with increasing walking distance to the car park, especially in densely built up areas.	Christiansen P., et al, 2017, *Parking facilities and the built environment: Impacts on travel behaviour*, Transportation Research	By providing no parking, students will be incentivised to walk to the university, shops and for social, work and other trips.
By making driving and parking less convenient you can enhance the convenience, safety, comfort, and cost savings of other modes.	A. Kristal and A. Whillans, 2019, *Why it's so hard to change people's commuting behavior*, Harvard Business Review	When car parking is not available, students are more likely to not drive a car at all rather than offering both green travel options and car parking.

Figure 17: Sticks and Carrots



IF STUDENTS DID HAVE A CAR, THERE ARE MORE PRACTICAL OFF SITE OPTIONS

There is very limited on-street parking or commercial parking available within the Macquarie Park area .All on-street parking within at least a one kilometre walk of the site is restricted. Residents of the proposed development will not be eligible for the resident parking scheme. The closest on-street parking is on Sobroan Road (one kilometre southwest of the site, off Epping Road). There are off-street commercial car parks in Macquarie Park that could offer students parking.

There is no convenient supply for residents to potentially park cars locally. If residents of the student accommodation wish to park their car locally, they can purchase a Macquarie University parking permit, with an annual cost starting from $508. By comparison, the cost passed onto residents for providing basement car parking would be an additional $10,000 per annum. Car space leasing is available, however, this is unlikely to be cost competitive for students.

There are also a number of student accommodation buildings in the vicinity of the site that do not offer student resident parking including

- Macquarie University Central Courtyard Student Accommodation.
- Robert Menzies College.
- Morling College.
- Dunmore Lang College.

Table 5: Parking type practiciality

Parking Type	Walk Distance	Cost	Practical/ Likely
On Street Parking	1 km (nearest available)	Free	The nearest available on street parking is on Sobroan Road, which is highly utilised and difficult to find parking so is impractical.
Commercial Car Park	None Available	N / A	There is no large scale commercial car parking available in Macquarie Park such as a Wilson Car Park.
University Parking	800 m	Approx. $508 p.a	If students needed to have their own car this would be a practical option, with it being unlikely that they would need a car for day to day use (see Page 5).
Car Park Leasing	Various	Minimum. $2,340* p.a	If students wanted a closer car parking option and were less cost sensitive this could be a practical option.
On site parking	0 m	Approx. $10,000 p.a	The cost of providing on site parking would be around $70,000 per space. This would be passed onto residents and would be cost prohibitive (would result in around 35 per cent of the annual cost of housing)*.

**Note: Cost based on currently available spaces in Macquarie Park found on www.parkhound.com.au.*

**Note: Based on cost analysis completed by Lachlan Avenue Development Pty Ltd.*

4. TRAVEL DEMAND MANAGEMENT PLAN

TRAVEL DEMAND MANAGEMENT PLAN

This page contains tailored initiatives that will be undertaken by Lachlan Avenue Development Pty Ltd to ensure that residents, staff members and visitors use sustainable transport modes whenever possible and do not own a car that will be kept on the property or parked in nearby streets. They are separated into three levels, with the intention to both encourage through the provision of information; as well as intervening and penalising to ensure those attending the site are only driving where there is a need (such as deliveries).

Level 1
Encouraging/Informing (Carrot)

- Develop a Transport Access Guide (TAG) for residents where they are given information on available travel options. The emphasis should be on green travel options including those available on site as well as active transport links and public transport options (include maps contained in this document and TfNSW's trip planner link).
- Use the TAG for visitors also and have it available on the website with visitors to be given information on available travel options to travel to the site to recommend the use of green travel options (include maps contained in this document and TfNSW's trip planner link). Advise of short term visitor parking options and restrictions.
- Display signage in public areas of the building to remind residents of the parking restrictions on site and in the surrounding streets.

Level 2
Intervening (Carrot)

- Provision of high quality bike parking where bikes
  - Can be locked.
  - Are observable by CCTV cameras.
  - Are only accessible via access control.
  - Can be charged via electrical outlets.
- Provide electric bikeshare and carshare that residents can book by the hour or by the day.
- Negotiate with Council regarding the installation of bike parking hoops on street for visitors to be installed at Lachlan Avenue Development Pty Ltd's expense.
- Establish a system for visitors parking bay use which includes the ability to pre booked spaces and access to be only via intercom to the reception/Duty Manager.

Level 3
Penalising (Stick)

- Limiting parking is a legitimate travel behaviour change technique (see Page 17). Without this 'stick' the 'carrot' initiatives listed in Level 1 and Level 2 on this page are less effective.
- The operational plan of management states that as part of the lease agreement, you cannot bring a car and you cannot apply for the residential parking scheme.

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