URBIS

WSU BANKSTOWN CITY CAMPUS

SOLAR AMENITY STUDY

PREPARED FOR

WALKER CORPORATION

JUNE 2020

REVISION C

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Project Code:	SA7500
Report Ref:	01 RPT_WSU UD Solar Amenity Study
Report Status:	Revision C
Date:	30th June 2020

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1.0 INTRODUCTION

OVERVIEW

The report considers the Solar Amenity Controls proposed by Canterbury Bankstown Council for Paul Keating Park in Bankstown City Centre, and its implications for the proposed Western Sydney University (WSU) vertical campus at 74 Rickard Road in Bankstown City Centre.

Paul Keating Park is a 1.207ha park located in Bankstown City Centre's Civic Core. It forms part of an urban block which includes Bankstown Council Chambers, Town Hall, Library and Knowledge Centre and Council offices. Immediately to the north of the park is the site of the proposed WSU Bankstown City Centre Campus.

Canterbury-Bankstown Council is preparing a new LEP that will apply to the entire LGA. As part of this process, it has prepared a number of studies to inform new planning controls for Paul Keating Park and surrounding sites, including:

- Best Practice Research: Open Spaces in City Centres - Solar Amenity Controls; and
- Open Spaces in City Centres Solar Amenity Study Case Study: Paul Keating Park.

From these studies, Council has proposed the following solar amenity control apply to the WSU site:

"Development must allow for 4 hours of continuous solar amenity to a consolidated area of Paul Keating Park between 10am and 3pm on 21 June (inclusive of existing shadow). The size of the consolidated area must be a minimum 50% of the area of Paul Keating Park (not including the footprint of the Council Chambers)."

This control was described by Council as:

"Allowing sensible development to occur on lots near parks while maintaining adequate standards of amenity to the parks, thus achieving a balanced approach between public benefit, amenity, development and urban densification."

CONTENTS

The implications of Council's proposed control for the provision of a successful university campus on the site, as envisaged in State government and Council strategic plans and policies, are established in this report and structured as follows:

PROJECT BACKGROUND

WESTERN SYDNEY UNIVERSITY GROWTH STRATEGY

The proposed Bankstown City Campus (BCC) is a key component of the WSU's 'Western Growth Strategy', an initiative to bring the highest quality education opportunities and world-class research expertise to greater western Sydney. The implementation of the Western Growth Strategy in the Bankstown CBD follows the opening of the Parramatta City Campus and the Liverpool City Campus which set the benchmark for state-of-the-art tertiary learning, teaching and research facilities in Western Sydney CBDs.

The BCC presents an opportunity to contribute to the regeneration and activation of the Bankstown CBD and will facilitate innovation and discovery in a dynamic and technology-enabled campus. The BCC will provide student-centred and research-led facilities and implement a new model for delivering education and research, responding to the growth of digital disruption, shifting labour market and evolving industry.

As the largest educational provider in Western Sydney, WSU is a key driver of the region's social and economic development. As the region changes, WSU will deliver education to meet the needs and expectations of current and future students and teachers.

The BCC will expand upon the public services and facilities in Bankstown's Civic Precinct and the wider CBD, providing a new educational facility and enhanced public domain to complement the existing cultural and civic facilities of the Knowledge Hub, Bryan Brown Theatre, Council administrative facilities and public open space of Paul Keating Park. The proposed campus will make a significant contribution to economic development, employment and training opportunities in Western Sydney.

BANKSTOWN CITY CAMPUS

In December 2018, WSU submitted a Planning Proposal request to Canterbury – Bankstown Council that sought to amend the maximum Height of Building and Floor Space Ratio (FSR) development standards applying to the site under the Bankstown Local Environmental Plan 2015. In November 2019 Council submitted the Planning Proposal to the Department of Planning Industry and Environment (DPIE), and is currently awaiting a Gateway determination.

Also in December 2018, a SEARs request for State Significant Development Application (SSDA) for the proposed WSU campus building was lodged with DPIE. The subsequent SSDA application was lodged in October 2019 that complied with the maximum height and FSR controls sought by the Planning Proposal. The proposed building is 19 storeys, comprising approximately 29,270 sqm of gross floor area (GFA).

SITE DESCRIPTION AND LOCATION

WSU's proposed Bankstown City Campus is at 74 Rickard Road, within the Bankstown City Centre's civic precinct. The civic precinct is the block bounded by Rickard Road in the north, Chapel Road to the west, Jacobs Street to the east and The Mall to the south.

The site is surrounded by civic uses including:

- Canterbury Bankstown Council Chambers set amongst a grove of trees (to the south west);
- City of Canterbury Bankstown Council Offices (to the east);
- A retail and office building including Hoyts Cinemas (to the south east);
- Paul Keating Park (to the south and south west); and
- Bankstown Town Hall and Library and Knowledge Centre (to the west).

The site is currently occupied by:

- A surface carpark of approximately 63 spaces;
- A rectangular shaped area of turf with little embellishment; and
- Scattered trees.

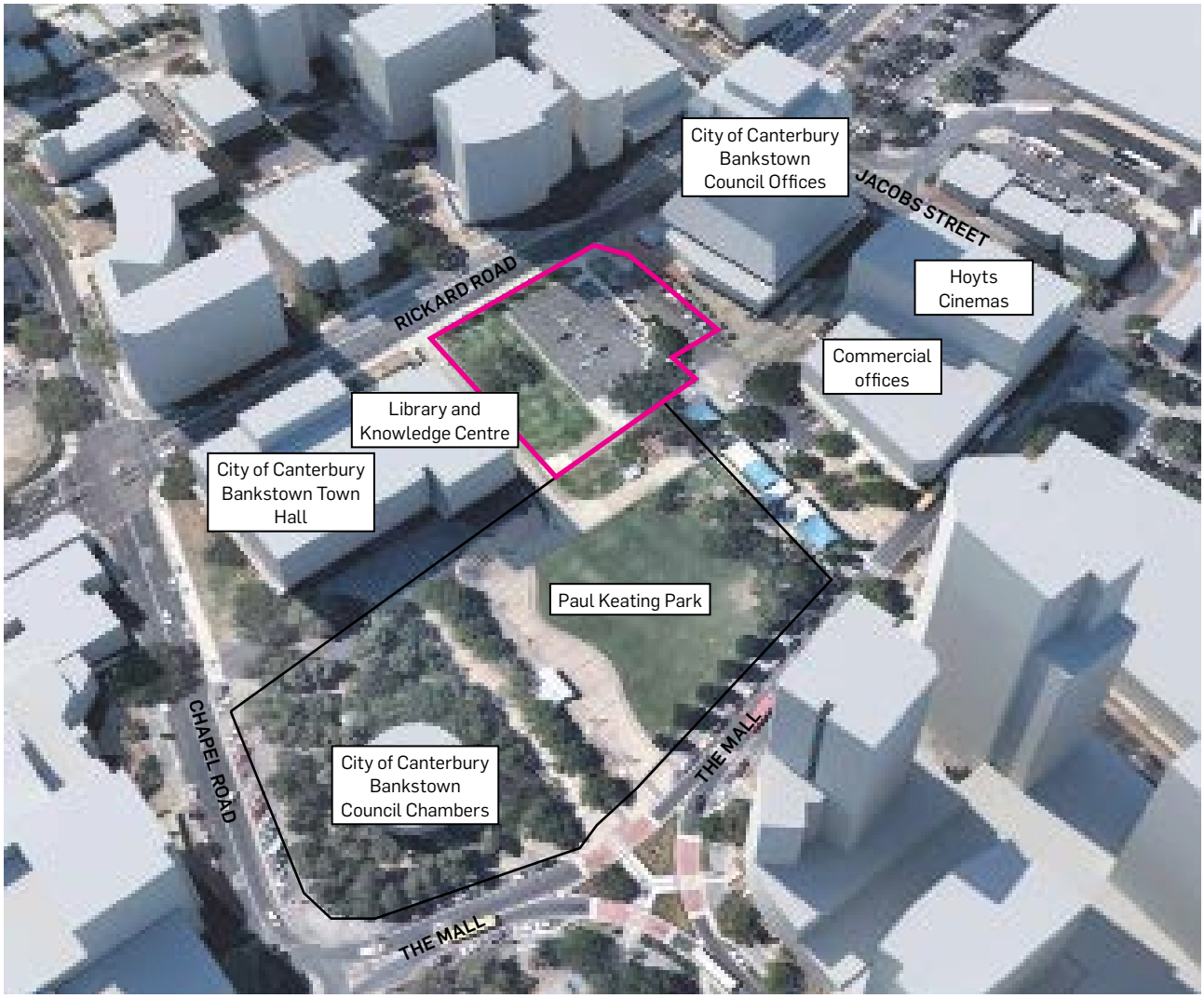


Figure 1 Site location and surrounds

2.0 PLANNING CONTEXT

This section of the report provides a summary of the key regional and local strategic planning directions and policies that apply to the site as follows:

South District Plan: The 2018 A Metropolis of Three Cities and the South District Plan's strategic directions for the Bankstown City Centre.

Connective City 2036: Canterbury Bankstown's Local Strategic Planning Statement (LSPS) was endorsed in March 2020 and complements the District Plan providing LGA specific strategic directions for the site.

Canterbury Bankstown LEP & DCP: Council is currently reviewing and updating the 2015 Bankstown Local Environment Plan (LEP) and Development Control Plan (DCP) following the amalgamation of Canterbury and Bankstown LGA's. The draft LEP is currently on exhibition.

SOUTH DISTRICT PLAN

The South District Plan is a 20-year plan to manage growth in alignment with the 40-year vision for Greater Sydney as set out in the Greater Sydney Regional Plan – A Metropolis of Three Cities. The South District includes the Canterbury-Bankstown, Georges River and Sutherland local government areas.

Bankstown CBD is identified as one of six strategic centres in the South District. It includes Bankstown Central - a large retail shopping adjacent to the bus and rail transport interchange along with civic, community and health care services.

The South District Plan acknowledges the following opportunities for Bankstown CBD:

- **Sydney Metro City & Southwest** - The improved frequency and reduced travel time already associated with the Sydney Metro City & Southwest project has the potential to strengthen economic links to the Harbour CBD and stimulate economic opportunities to attract jobs in Bankstown. New jobs and housing are also planned for Bankstown as part of the metro upgrade.
- The **emerging Bankstown-Lidcombe Health and Education Precinct** - Bankstown-Lidcombe Hospital is located close to Bankstown strategic centre. A range of allied health care providers and services are already located at the centre, as is TAFE Bankstown College. A health and education precinct will emerge from the co-location of health and education facilities in the centre, as well as improved transport connections from Sydney Metro City & Southwest. Over time, investments in the centre have the potential for it to emerge as a health and education precinct.
- **Western Sydney University** - The establishment of a world-class teaching and research campus in the Bankstown strategic centre (identified on the current site) as a key catalyst for introducing a new vibrancy to the centre. This will have an economic flow-on effect, creating opportunities for more local jobs, including knowledge-intensive jobs.
- **Bankstown CBD Collaboration Area** - Bankstown CBD has been identified as a potential Collaboration Area for planning for a highly productive, economically vibrant and liveable centre. Collaborative planning will assist in identifying locations for the key facilities and create opportunities for allied health and education services to locate in the precinct.
- **Strategic Sites** - Investment in, and redevelopment of, strategic sites also provide a unique opportunity for these to be examples of innovative forms of sustainable development.

In relation to a WSU city centre presence, the South District Plan also confirms Council and the University have specifically identified the current site as suitable site for a vertical university campus:

"Western Sydney University will establish a world-class teaching and research campus in the Bankstown strategic centre. The University and Canterbury-Bankstown Council have identified a suitable site located between Council's administration building and Bankstown Library and Knowledge Centre. The campus will potentially accommodate up to 7,000 students."
(page 60)

KEY INSIGHTS:

- The South District Plan confirms the identification of the 74 Rickard Road site as suitable for a vertical university campus by both Council and WSU.
- This represents early adoption of the collaborative planning approach identified in the South District Plan required to transform Bankstown CBD into a highly productive, economically viable and liveable city centre.
- Ongoing commitment to a collaborative approach will be essential to deliver the campus as the key catalyst for introducing new vibrancy and creating more knowledge-intensive local jobs in the centre.

Figure 2 Bankstown Strategic Centre
(Source: South District Plan - page 66)

CONNECTIVE CITY 2036

CITY OF CANTERBURY BANKSTOWN LOCAL STRATEGIC PLANNING STATEMENT (LSPS) 2020

The LSPS reinforces Bankstown City Centre as Canterbury Bankstown's premier urban centre and the location for commerce, civic, cultural, administrative and social activity. Already connected to Greater Sydney by a mass transit system, it acknowledges the centre will be enhanced by the introduction of major infrastructure such as Sydney Metro, universities, renewal of key sites, and a new Hospital (subject to investigation by Health Infrastructure NSW).

The LSPS acknowledges the following opportunities for Bankstown CBD:

- **The Appian Way** will be transformed into a pedestrianised street lined with shops and restaurants. Streets will radiate from The Appian Way to an interconnected network of places with character, creating a 24-hour city.
- **Important precincts** within Bankstown including Saigon Mall, Bankstown Mall and the Civic precincts will continue to define the character and attractiveness of Bankstown as the City's primary civic, cultural and shopping places.
- **Precinct Anchors** - Major public health, transport and education institutions form anchors in the precinct including a new hospital (subject to investigation by Health Infrastructure NSW).
- **Chapel Road Precinct and Bankstown** will be the location for major civic and cultural spaces and places that will draw people from across the city to enjoy major events and celebrations.
- **Bankstown** - To include taller, high density commercial and residential towers, with commercial uses lining most streets, subject to working with Bankstown Airport and within aviation safety parameters for height in the Bankstown City Centre.
- **Chapel Road Precinct** - A north-south spine connecting through the heart of Bankstown Civic Precinct. Designed as a tree-lined, wide footpath boulevard where people can take the bus, walk, cycle or drive it will be the focus for new education, knowledge intensive and cultural jobs connecting public buildings, parks and public places.
- **Paul Keating Park** - is a key open spaces and will continue to offer the City quality outdoor spaces for community and civic events.
- **Renewal of major sites -** will offer new opportunities for new open space and linkages

In relation to the WSU campus specifically, the LSPS identifies the role the WSU Bankstown City Campus plays in anchoring the Bankstown Health and Education Precinct as well as the rapid change an additional 12,000 students will have on Bankstown City Centre. It also acknowledges the ongoing commitment from CBC to engage with WSU as collaborative and active partners in shaping the City's Development including:

"The University of Western Sydney has committed to a new campus in Bankstown which will lead to other associated job and business opportunities including over 650 teaching and support staff." *(page 50)*

"Bankstown City Centre is experiencing a period of rapid change including a planned Western Sydney University Campus for up to 12,000 students." *(page 60)*

"Local organisations such as Western Sydney University, Bankstown Hospital, Bankstown Airport, Sydney Airport, and major businesses that have the size will be active partners in the City's development." *(page 98)*

KEY INSIGHTS:

- The proposed WSU Bankstown City Campus has been designed to accommodate up to 10,000 students and 1,000 teaching and support staff which is in accordance with the campus size envisioned in the LSPS.
- The design of the WSU BCC building has been through a rigorous design excellence process. The proposed scheme incorporates the following outcomes which align with the LSPS identified opportunities for Bankstown CBD:
  - Building setback to the kerb line of the Appian Way maintains clear pedestrian access and sight lines along this pedestrianised street.
  - Podium massing responds to existing civic building setbacks and scale to develop consistent civic building character within the precinct.
  - Tower massing has been designed in response to existing Civic Buildings and Paul Keating Park including sculpting of the upper level forms away from the Knowledge Hub to narrow the frontage to PKP and maximise sunlight to the lawn area.
  - The building design incorporates new landscape terraces as a key feature of the vertical campus infrastructure to respond to the PKP character and create active occupation of integrated open space areas within the building.

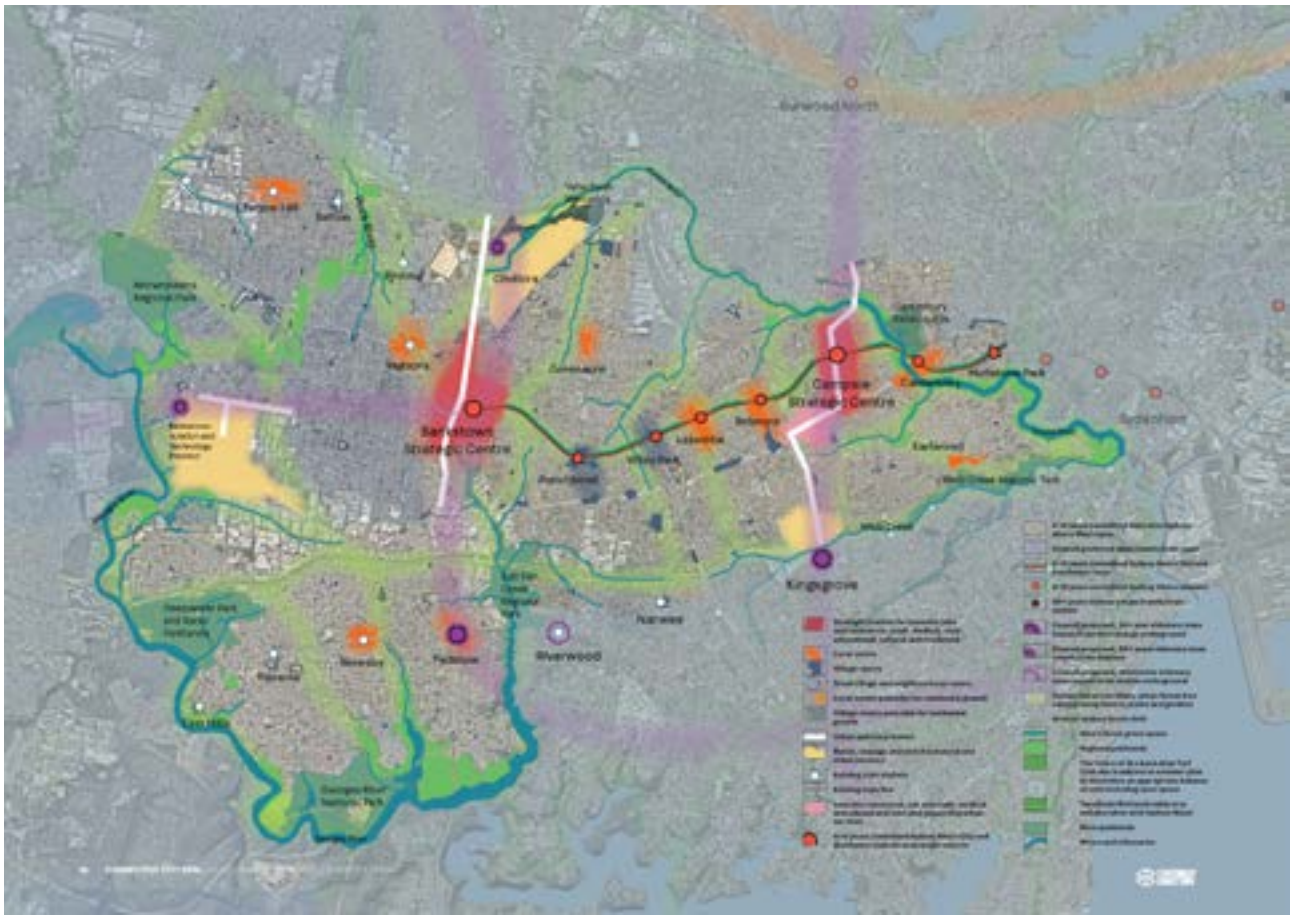


Figure 3 5 City Directions for Connective City 2036
(Source: Canterbury Bankstown LSPS - page 19)

CURRENT LEP AND DCP CONTROLS

BANKSTOWN LOCAL ENVIRONMENT PLAN (BLEP) 2015

The Bankstown LEP 2015 identifies the following development controls for the site.

Zoning and Permissibility

- The subject site is zoned B4 Mixed Use under the Bankstown LEP 2015. As illustrated in Figure 1, the surrounding area is predominately zoned B4 with the exception of land to the south which is zoned RE1 Public Recreation.

Height of Buildings

- Clause 4.3 of the Bankstown LEP 2015 establishes a maximum building height in metres above existing ground level across the site of 53m, as illustrated in Figure 2. To the north the predominate maximum building height is 35m.

Floor Space Ratio

- Clause 4.4 of the Bankstown LEP 2015 establishes the maximum floor space ratio (FSR) for the site of 4.5:1 as shown in Figure 3.

Heritage

- Schedule 5 of Bankstown LEP identifies Item No. I6 'Council Chambers' as a locally significant item on the south-western portion of 375 Chapel Rd.

CANTERBURY-BANKSTOWN DRAFT CONSOLIDATED LOCAL ENVIRONMENTAL PLAN (DRAFT CBLEP)

The draft Consolidated Canterbury Bankstown LEP is on public exhibition until 24 April 2020. The planning controls that will apply to the site under the consolidated CBLEP are the same as those currently contained in BLEP 2015.

DRAFT EMPLOYMENT LAND STRATEGY (ELS)

The draft Employment Land Strategy is a supporting study which is on exhibition in parallel to the draft CBLEP. The draft ELS identifies three strategic directions which frame and organise the planning and economic development actions for the LGA being:

1. Enhance amenity while accommodating growth and change.
2. Develop strategic assets - of which WSU is specifically identified as one of three important strategic assets in the LGA.
3. Modernise and Reposition Industry to build on Locational Advantage.

Directions 1 and 2 are of specific relevance to the WSU proposal and speak to the balanced approach required to deliver both ***"high amenity and sustainable development"*** and ensure ***"planning recognise and seek to maximise economic outcomes from the presence of strategic assets"*** *(page 34)*. The draft ELS also confirms the indicative scale of the WSU campus in line with the design brief for the proposed building as accommodating ***"7,000-10,000 students"*** *(page 39).*

The ELS identifies the following key action for the commercial and administrative core precinct:

"A review of planning controls including height and floor space controls subject to development of a place plan" (page 244).

This reflects the intent to develop precinct specific controls for the WSU site and achieving a balanced approach between development and amenity.

BANKSTOWN DEVELOPMENT CONTROL PLAN (DCP) 2015

The Bankstown Development Control Plan 2015 (Bankstown DCP 2015) identifies the site as being located within the Northern CBD Core, at the heart of Bankstown CBD. The Northern CBD Core Precinct is described as:

"Northern CBD Core Precinct

The Northern CBD Core precinct is located to the immediate north of the railway line. The Civic Precinct and Paul Keating Park form the central focus, and the established character is distinctly commercial due to a concentration of major civic, office and retail buildings (namely Bankstown City Council, Bankstown Court House, Bankstown Police Area Command, Compass Centre and Bankstown Central, which is a regional shopping centre).

This precinct is highly accessible to the railway station and bus interchange, and as a result, this precinct is characterised by taller buildings and higher densities compared to other precincts.

The desired character is to have the Northern CBD Core precinct continue to function as the heart of the City of Bankstown, with a mix of retail and commercial activities on the ground and first floors, and high density living above. Development will generally be in the form of tall buildings to create an identifiable skyline image for the Bankstown CBD. ***The tallest buildings will generally locate around Paul Keating Park to define the Civic Precinct and to take advantage of the amenity provided by the park."***

KEY INSIGHTS:

While the draft consolidated CBLEP proposes no changes to the existing planning controls that apply to the site, the draft ELS confirms:

- The strategic importance of the WSU campus for the LGA;
- The quantum and scale of development envisioned for the WSU campus;
- The intent to develop precinct specific controls for the WSU site and achieving a balanced approach between development and amenity; and
- The existing DCP envisages tall buildings around Paul Keating Park.

Figure 4 BLEP 2015 Zoning

Figure 6 BLEP 2015 Floor Space Ratio

Figure 5 BLEP 2015 Height of Building

LEGEND

Subject Site

ZONING

B4 Mixed Use

RE1 Public Recreation

SP2 Infrastructure

FSR

V 3

Y 4.5

HEIGHT OF BUILDING (M)

V1 35

W 41

Y 53

3.0 COUNCIL SOLAR AMENITY STUDIES REVIEW

This section of the report reviews the methodologies and findings of the two detailed solar amenity studies undertaken by Council being:

- Best Practice Research: Open Spaces in City Centres -Solar Amenity Controls; and
- Open Spaces in City Centres Solar Amenity Study Case Study: Paul Keating Park.

BEST PRACTICE RESEARCH: OPEN SPACES IN CITY CENTRES - SOLAR AMENITY CONTROLS

This benchmarking study analysed a range of controls for ensuring adequate sunlight into urban parks in city centres and urban renewal areas that are applied by Councils in Australia and New Zealand. The purpose was to identify best practice solar amenity controls for parks open spaces in city centres, to inform new planning controls within the Bankstown LEP and DCP.

The report concluded:

- The following control be adopted for Paul Keating Park (page 23): *"Development must allow for 4 hours of continuous solar amenity to minimum 50 percent of the area of Paul Keating Park between 10.00 am and 3.00 pm on 21 June (inclusive of existing shadow)."*
- And that this control (page 5): *"Allows sensible development to occur on lots near parks while maintaining adequate standards of amenity to the parks, thus achieving a balanced approach between public benefit, amenity, development and urban densification."*
- And the three key factors which affect the consideration of solar amenity controls are (page 24): *"Size and type of open space, site context and availability of open space in the area (or lack of)."*

A review of this study identifies that the open spaces considered in this benchmarking study have significantly varied characteristics and contexts - two of the three key factors identified above. However this has not been documented or analysed in Council's study.

To understand the implications of this, Urbis has undertaken additional analysis of the parks identified as 'best practice' in the benchmarking study comparing their unique characteristics and contexts which have been categorised as follows:

- **Park Size:** Larger parks have a greater area to accommodate shading from taller adjoining buildings than smaller parks.
- **Park Orientation:** Parks which have a predominately east west orientation are more susceptible to shading from long shadows cast by buildings to their north.
- **Park Context:** The existing and future strategic context in which a park is located (please refer to note below). Three categories were identified:
  - **Urban Renewal** - Urban transformation land with existing low rise housing, emerging medium density residential, local commercial and local community uses;
  - **High Density Residential** - Medium to high rise predominantly residential forms with mixed use outcomes at lower levels; and
  - **Strategic Centre Mixed Use** - High-density, mixed use centre with regional level commercial, educational and employment buildings, shopping centres and high-rise apartments.

***NOTE: Park Context** - The desirable existing and future strategic context in which a park is located determine its 'susceptibility' to shading impacts.*

For example, a park in a low-medium rise, predominantly residential urban renewal location would be less impacted by surrounding built forms than a major strategic centre whose vision is to accommodate taller, high-density commercial uses for example, the 'Northern Core Precinct' of Bankstown.

This is due to the larger floorplate requirements of major commercial uses (typically minimum 2,000sqm) and the increased amenity and privacy requirements of residential uses which result in greater distances and separation between tower forms.

KEY INSIGHTS:

This analysis considers the 14 parks identified as having best practice solar controls as well as the Drying Green which is identified as having poor solar amenity controls. It identifies:

- The characteristics and context of each of the parks is highly varied and different.
- Only the six parks located in the City of Sydney are comparable to Paul Keating Park in terms of the size. They range from 0.44ha to 1.84ha.
- Of these six similar sized parks three are east-west oriented like Paul Keating Park.
- Chatswood Park and the Drying Green are the only other parks located within a major strategic centre. Chatswood Park is located on the fringe of the Chatswood CBD and is much larger than Paul Keating Park.
- There is no one park in the benchmarking study that is comparable to Paul Keating Park in terms of characteristics and context being:
  - a small park approx 1ha in size;
  - with an east-west orientation; and
  - is centrally located in the heart of a high density, high rise, mixed use strategic centre.
- The park which is closest in context and characteristics is the Drying Green in Green Square Town Centre, however we note this is approximately 50% of the size of PKP.
- The Drying Green does not achieve the best practice solar amenity controls.

This analysis suggests there may be a significant challenge in achieving the best practice solar amenity control as identified in this study to a park with the characteristics and context of PKP.

Given the existing joint commitment between CBC and WSU, as outlined in the District Plan and LSPS, to deliver a world-class vertical university campus on the subject site, the importance of developing an appropriate solar amenity control for PKP park is paramount.

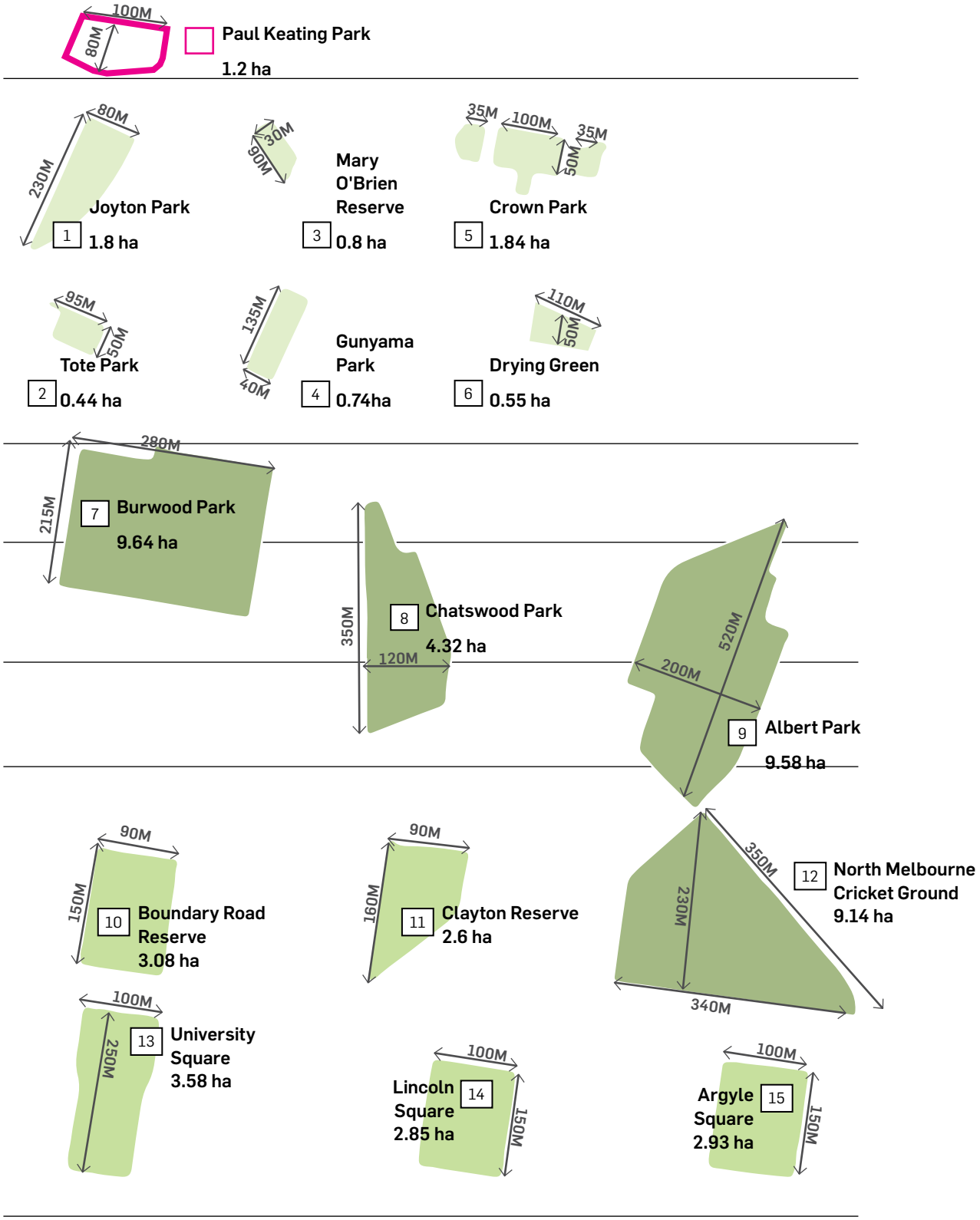
Council's commitment to the collaborative development of a control is reflected in the document and is underpinned by the following principles:

- must be informed by ***'evidence-based'*** studies; and
- demonstrate a ***'balanced approach'*** that considers ***'sensible development'*** and also achieves ***'adequate standards of amenity to'*** PKP.

Based on these findings, the next step is a review of Council's evidence-based study (Open Spaces in City Centres Solar Amenity Study Case Study: Paul Keating Park) to consider its alignment with the above principles.

Table 1 Park characteristics and contexts comparison

COUNCIL	REF	PARK NAME	PARK ORIENTATION	LAND STRATEGIC CONTEXT	PARK SIZE
		Paul Keating Park	East West	Strategic Centre - Civic & Mixed Use	1.2 ha
City of Sydney	1	Joynton Park	North South	Residential & Mixed Use	1.8ha
	2	Tote Park	East West	Residential & Mixed Use	0.44ha
	3	Mary O'Brien Reserve	North South	Residential & Mixed Use	0.8ha
	4	Gunyama Park	North South	Residential & Mixed Use	0.74ha
	5	Crown Park	East West	Residential & Mixed Use	1.84ha
	6	Drying Green	East West	Strategic Centre - Civic & Mixed Use	0.55ha
Burwood Council	7	Burwood Park	East West	Strategic Centre - Civic & Mixed Use	9.64ha
Willoughby City Council	8	Chatswood Park	North South	Strategic Centre - Civic & Mixed Use	4.32ha
City of Auckland	9	Albert Park	North South	Major Inter Regional Hub - Civic & Mixed Use	9.58ha
City of Melbourne	10	Boundary Road Reserve	North South	Urban Renewal - Civic & Mixed Use	3.08ha
	11	Clayton Reserve	North South	Urban Renewal - Residential & Mixed Use	2.6ha
	12	North Melbourne Cricket Ground	East West	Urban Renewal - Civic & Mixed Use	9.14ha
	13	University Square	North South		3.58ha
	14	Lincoln Square	North South	Urban Renewal - Residential & Mixed Use	2.85ha
	15	Argyle Square	North South		2.93ha


100M
80M
Paul Keating Park
1.2 ha
80M
230M
Joyton Park
1
1.8 ha
30M
90M
Mary O'Brien Reserve
3
0.8 ha
35M
100M
35M
50M
Crown Park
5
1.84 ha
95M
50M
Tote Park
2
0.44 ha
135M
40M
Gunyama Park
4
0.74ha
110M
50M
Drying Green
6
0.55 ha
280M
215M
7
Burwood Park
9.64 ha
350M
120M
8
Chatswood Park
4.32 ha
520M
200M
9
Albert Park
9.58 ha
90M
150M
10
Boundary Road Reserve
3.08 ha
90M
160M
11
Clayton Reserve
2.6 ha
350M
230M
340M
12
North Melbourne Cricket Ground
9.14 ha
100M
250M
13
University Square
3.58 ha
100M
Lincoln Square
14
2.85 ha
150M
100M
Argyle Square
15
2.93 ha
150M

OPEN SPACES IN CITY CENTRES SOLAR AMENITY STUDY CASE STUDY: PAUL KEATING PARK

The PKP Solar Amenity Case Study for PKP undertaken by Council tested the solar amenity impacts of four different development scenarios for the sites surrounding PKP against the existing built form. The purpose was to understand the ability to achieve the best practice solar amenity control identified in the previous study in a site-specific context to inform a solar amenity control for PKP.

The study concluded:

- Scenario 2 which tests a compliant built form with existing buildings meets the criteria for best practice solar amenity controls as identified in Council's research, which means that a complying development on the proposed WSU site would fulfil Council's proposed solar amenity controls provided that surrounding developments were not developed to the permissible building height and FSR controls.
- The proposed Western Sydney University building be amended to reduce building bulk and FSR to comply with the solar amenity control proposed in Council's Best Practice Research.
- Council review the LEP 2015 Zoning, Height of Building and FSR controls for the Council Chambers and BLaKC sites.

A review of this study in the context of the principles of "***sensible development"*** and a "***balanced approach"*** identifies:

- Any future scenario testing need only consider the existing built form for the Council Chambers and BLaKC sites.
- There is no acknowledgement the strategic value and Council's existing commitment with WSU that identifies the site at 74 Rickard Road as a suitable location for a vertical university campus of scale as reflected in the District Plan and CBC LSPS.
- It does not acknowledge the existing LEP controls for the site do not facilitate the overall quantum of development required to accommodate the WSU campus.
- The compliant built form depicted on the WSU site at 74 Rickard Road as developed by Council does not represent ***"sensible development"*** for a vertical university campus in a high-density city centre location as it does not meet the WSU design brief or educational requirements for floorplate size. The average tower floorplate for the WSU proposal is 1,700sqm and some functions, such as collaborative spaces, require over 2,000sqm. Council's complying built form has floorplates of only 1,000sqm, which is more suitable to residential uses. Additionally they are not of regular configuration being an 'L' shaped form.
- The study did not consider alternative interpretation of the solar amenity parameters that could also achieve the intent of the control being adequate sunlight for people and plants. For example:
  - two 4 hour periods of continuous sunlight within the 5 hour window.

KEY INSIGHTS:

It is considered the Council's solar amenity case study of PKP does not fully reflect the principles identified as underpinning the identification of their solar amenity control for the following reasons:

- The compliant built form depicted on the WSU site at 74 Rickard Road as developed by Council does not represent ***"sensible development".***
- It acknowledges that the WSU proposal does not meet Council's interpretation of their controls however does not explore alternative interpretation of the controls that still meet the intent of the solar amenity outcomes.

Therefore, it is considered that the conclusions identified in the study do not reflect a collaborative and ***"balanced approach"*** between development and PKP solar amenity outcomes.

To address this, the following section of this report analyses solar amenity to Paul Keating Park considering:

- a complying building form that reflects WSU's design brief and educational requirements, to the extent possible within the current LEP height and FSR controls; and
- explores alternative interpretation of the controls that meet the intent of the solar amenity outcomes.

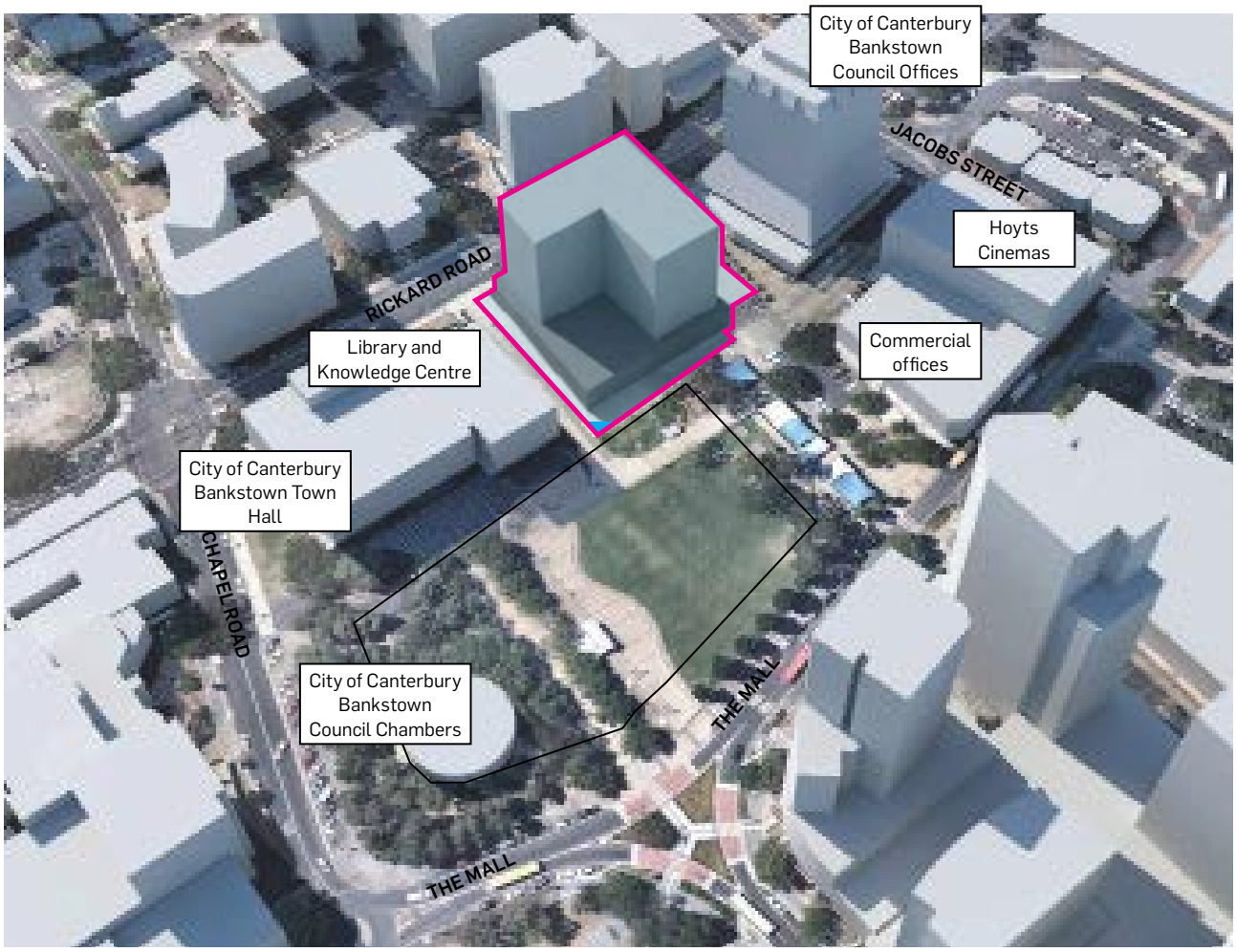


Figure 7 Scenario 2: Existing Built Form with BLEP 2015 Complying Built Form on WSU

4.0 REVISED SOLAR AMENITY ANALYSIS

This section of the report undertakes a revised evidence-based analysis of solar amenity to PKP park comparing three scenarios being:

- Scenario 1: An LEP compliant built form that represents 'sensible development' on the WSU site.
- Scenario 2: The WSU Proposed Building in accordance with the SSDA lodged in December 2019.
- Scenario 3: A WSU Reconfigured Building which proposes changes to the current building massing at the mid-tower and cantilever levels to adjust the 11am shadow cast on PKP.

The purpose of this revised analysis is to:

- Understand if Council's proposed solar amenity control of 4 hour continuous sun to a 50% area of the Park could be achieved under either scenario within the 10am-3pm timeframe; and
- Identify alternative interpretation of Council's proposed solar amenity control that meet the intent of the solar amenity outcomes whilst facilitating 'sensible development' on the WSU site.
- Identify if amendments could be made to the proposed WSU building that would increase solar amenity to PKP.

METHODOLOGY

The methodology for this study involves five different steps as follows:

4. **Interpreting Council's Proposed Solar Amenity Control:** A break down of the different components and parameters that make up Council's proposed solar amenity control confirming the rational and application.
5. **Defining a 'sensible' compliant built form:** Prepare massing model of compliant built form that reflects WSU's design brief and educational requirements, to the extent possible within the current LEP height and FSR controls. This built form also incorporates the high-level design excellence outcomes in response to local context as incorporated into WSU proposed building.
6. **Identifying An alternative scenario:** Explore alternative massing scenarios to identify if it is possible to meet a 50% solar amenity outcome on Paul Keating Park with adjustments to the existing proposal.
7. **Hourly Solar Amenity Analysis:** Prepare a comparative analysis between Scenarios 1 - 3 on an hourly basis for 21st June (winter solstice) to determine Scenario 1 as the baseline shadow impact, identify the extent of additional shadowing cast by scenarios 2 and 3 and quantify the total solar amenity achieved in PKP throughout the day under each scenario. This analysis identifies if sufficient solar amenity is achieved in the park for people to access sunlight.
8. **Composite Solar Amenity Analysis:** Prepare composite solar amenity analysis to compare and quantify the 'continuous' solar amenity outcomes for Paul Keating Park across all scenarios. This includes:
   - 4 hour composites - analysis of the two different four (4) hour periods between Council's proposed timeframe being 10am-2pm and 11am-3pm;
   - 5 hour composite - analysis of the cumulative solar amenity achieved across 4 hour periods within the 5 hour window from 10am-3pm; and
9. This analysis identifies if sufficient solar amenity is achieved in the park for the growth of plants and turf.

INTERPRETING COUNCIL'S PROPOSED SOLAR AMENITY CONTROL

Council resolved to support the Planning Proposal subject to the adoption of the following solar amenity control for Paul Keating Park at the Ordinary Meeting of 22 October 2019:

"Development must allow for 4 hours of continuous solar amenity to a consolidated area of Paul Keating Park between 10am and 3pm on 21 June (inclusive of existing shadow). The size of the consolidated area must be a minimum 50% of the area of Paul Keating Park (not including the footprint of the Council Chambers)."

This solar amenity control was identified as best practice through the studies as follows:

*"Allowing **sensible development** to occur on lots near parks while maintaining **adequate standards of amenity** to the parks, thus achieving a **balanced approach** between public benefit, amenity, development and urban densification."*

Source: Best Practice Research: Open Spaces in City Centres - Solar Amenity Controls (page 5).

INTERPRETING THE CONTROL

Council's solar amenity control for Paul Keating Park at the winter solstice comprises a number of different requirements across two key elements being timeframes and area as detailed below. The rationale for these requirements as outlined in the Council's studies are also summarised.

- **Timeframe:** Three timeframe requirements are identified:
  - **Duration of 4 hours:** Council's research identified best practice uninterrupted sunlight for turf and plants in winter are 5 hours and 4 hour respectively. No specific minimum requirements for the duration of sunlight were identified for people's well-being.
  - **From 10am - 3pm on 21st June:** While no specific commentary was made on the identification of these times specifically, it is noted that shadows cast in the early morning and late afternoon in winter are long and these timeframes reflect the times in which shadows cast are smallest.
  - **Continuous:** This means uninterrupted sunlight. Council's research identified best practice uninterrupted sunlight for turf and plants in winter are 5 hours and 4 hour respectively. It was identified that most benchmarked solar amenity controls included 'continuous' provisions.
- **Area:** Two area requirements are identified:
  - **Minimum 50% of the total park area:** Council identified that most benchmarked solar amenity controls included minimum area provisions as a % of the total park area.
  - **Consolidated** - Means one larger contiguous space, rather than a number of separate spaces separated by areas in shade.

DEFINE A 'SENSIBLE' COMPLIANT BUILT FORM

Three built form scenarios are compared throughout this section of the report. They are depicted below and defined as:

- **Scenario 1 - Compliant Built Form:** A built form that complies with the height, FSR and other controls in the 2015 LEP and DCP, while also reflecting the site's physical context and WSU's design brief and educational requirements; and
- **Scenario 2 - WSU Proposed Building:** as per the SSDA DA.
- **Scenario 3 - Revised Cantilever and Mid-Tower Building:** Considers changes to the upper massing volumes only.

(Please refer to following pages for detailed design development of these scenarios.)

SCENARIO ASSUMPTIONS:

Both scenarios are based on the following assumptions for the purpose of understanding the solar amenity controls and impacts:

Surrounding Buildings:

- **80 Rickard Road:** Located immediately to the west of the subject site and to the north of Paul Keating Park. Occupied by Bankstown Town Hall and the Bankstown Library and Knowledge Centre (recently built in 2014). This is modelled as per existing built form.
- **375 Chapel Road:** Located within the western extent of Paul Keating Park is Council Chambers - a heritage listed circular building within the park. This is modelled as per existing built form.
- Solar amenity studies are based on existing buildings only. Council, as owner of these sites, would prepare a master plan to consider any redevelopment of the civic precinct, to ensure Paul Keating Park continues to receive adequate sun light.
- **Paul Keating Park:** Defined as per Council's definition, excludes Council Chambers and has a total area of 12,207 sqm.

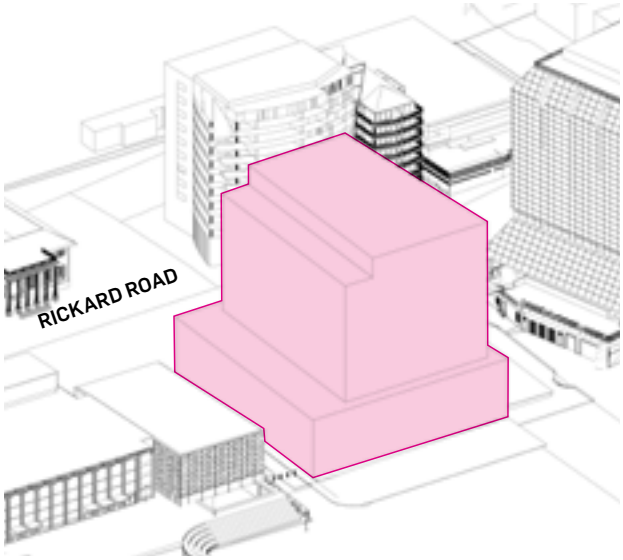


Figure 8 Scenario 1: Compliant Built Form

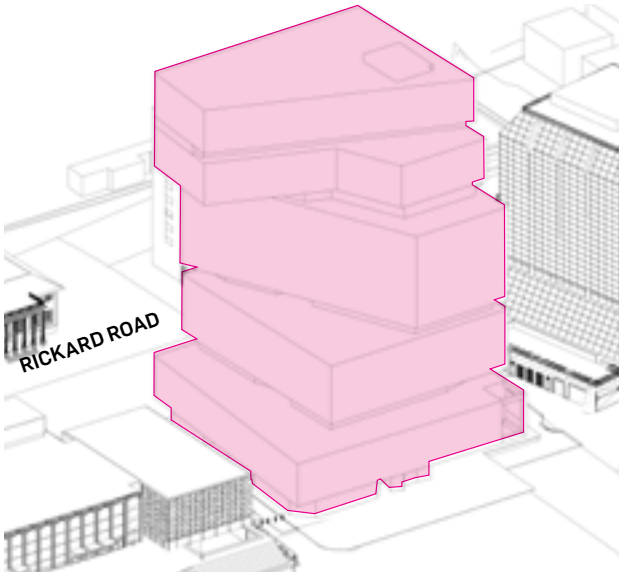


Figure 9 Scenario 2: WSU Proposed Building.

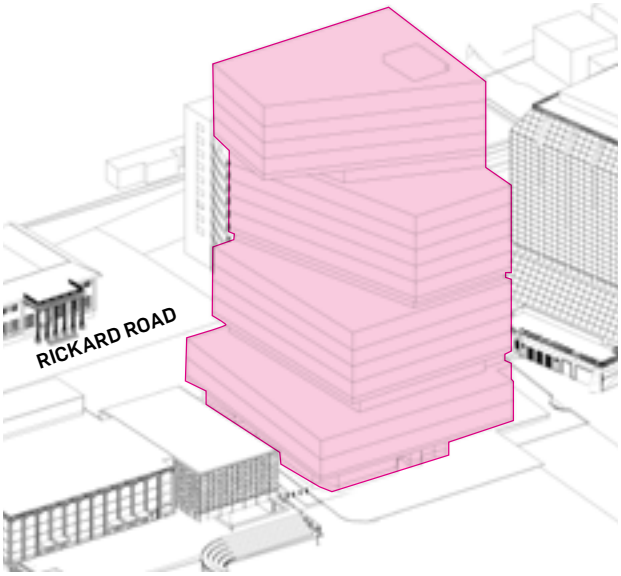


Figure 10 Scenario 3: Revised Cantilever and Mid-Tower

SCENARIO 1: COMPLIANT BUILT FORM

The compliant built form reflects building floorplate requirements of a vertical university campus whilst still being compliant under the current LEP and DCP controls.

The following design considerations have been integrated into the compliant built form:

Bankstown LEP 2015:

- Use: B4 Mixed Use
- Maximum Building Height: 53m
- Floor Space Ratio: 4.5:1

Bankstown DCP 2015:

- Street Wall Setbacks: Rickard Road - 0m, all other boundaries 0m.
- Podium Setbacks: 3m from street wall.

Response to Local Context:

- Setbacks
  - Eastern: Setback to provide clear through sight lines along Appian Way alignment.
  - Southern / Paul Keating Park: Aligned to southern extent of Library and Knowledge Centre building to (0m from site boundary).
  - Western: Setback 0m to western boundary to maintain minimum 10m separation for street wall maintaining visual links to Paul Keating Park.
  - Tower: Maximise western setback to achieve solar amenity requirements.
- Heights:
  - Podium height to respond to Knowledge Hub - approx 13.5m.

WSU Design Considerations:

- Heights:
  - Ground floor height: varies from 4.86m (north west corner of site) to 6m;
  - Podium floor to floor height: 4.32m; and
  - Tower floor to floor height: 4.16m
- Floorplates:
  - Building efficiency of 85% (assumption an average of 15% of building GFA is services, circulation or exterior wall).
  - Minimum viable floorplate for tower form based on average of WSU proposal - 1,700 sqm. *(Please see notes below).*

NOTE - Vertical university campus floorplate requirements: *Floorplates for vertical campus facilities need to be large enough to accommodate both activity spaces and circulation space for substantial numbers of people.*

This includes providing clear foyer spaces adjacent to formal teaching spaces, to allow for students entering and leaving when classes changeover, and providing informal study and support facilities to facilitate collaboration and engagement within the University community.

Open vertical connections, including open stairs or escalators, as well as spatial voids, are also important to provide ease of movement and visual legibility within the campus.

Precedent Vertical University Campuses have floor plates providing between 1,000sqm and 2,900sqm NLA. The floor plate size impacts on the types of activities accommodated on each floor, with larger floor plates at lower levels of the building more suited to large population teaching spaces, and smaller floor plates at higher levels of the building more suited to staff workspaces.

Table 2 Scenario 1: Compliant Built Form Table of Development

LEVEL	FLOORPLATE (SQM)	GFA (85% EFFICIENCY, SQM)	# LEVELS	HEIGHT (M)	TOTAL GFA (SQM)
Podium:	2,640	2,244	3	13.50	6,732
Tower	1,700	1,445	6	27.00	8,670
Tower Top	1,350	1,148	1	4.50	1,148
Roof Parapet:				1.55	
TOTAL			**10**	**46.55**	**16,550**

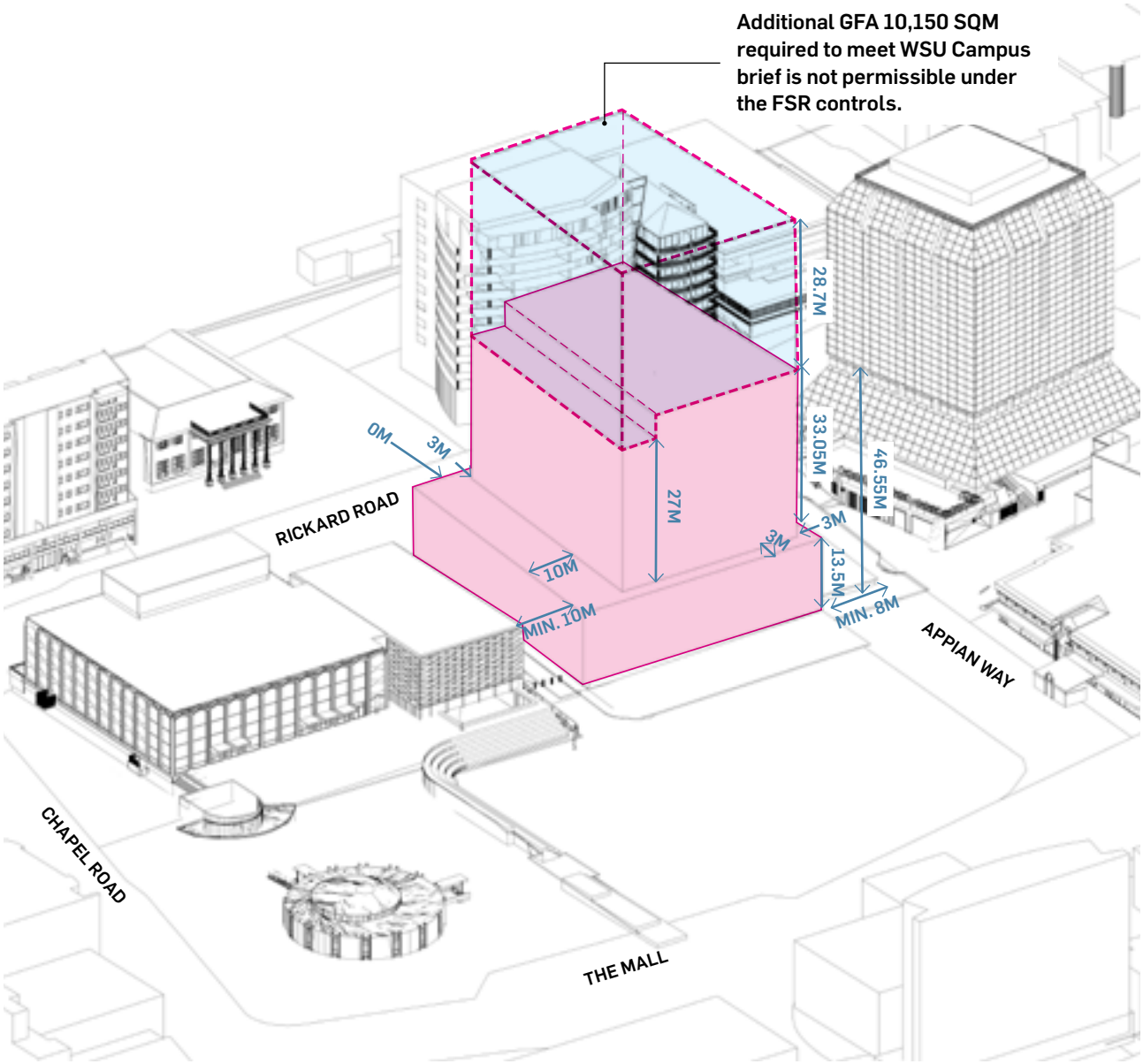


Figure 11 Scenario 1: Compliant Built Form

SCENARIO 2: WSU PROPOSED BUILDING

The WSU Proposed Building reflects the SSDA application and has been prepared to meet the requirements of a design brief for the WSU Bankstown City Campus and following a rigorous design development process. A summary of the design development process and evolution is provided on the following pages.

WSU DESIGN BRIEF

The following summarises the key considerations of the WSU Design Brief:

- Total NLA – 26,700sqm
- Retail space – at Ground Level, target 100sqm (included in total NLA)
- Floor to floor heights:
  - 3,960mm Typical floor – circulation, informal and formal learning spaces up to medium size, staff work spaces.
  - 4,320mm Level 1 & 2 – circulation, informal and formal learning spaces up to large size
  - 4,860mm Engagement floors – primary foyer and congregation floors (Ground and Student Hub)
  - 5,040mm Conference floor – Large flat floor seminar and congregation floor.
- Floorplate Sizes – nominally between 2,500 to 1,200sqm. It is noted the inset levels which provide building articulation are the smaller floorplates. Setting these aside floorplates for the tower range from 1,400 - 2,200 sqm with an average of all tower floorplates (including insets) being 1,700sqm.
- Integrated outdoor spaces – Access to external breakout spaces, supporting a variety of modes of activity and gathering capacities, integrated with adjoining floor uses.
- Building operating capability to align with PCA Grade A, including vertical transport efficiency and services distribution.
- ESD compliance: Greenstar 5 star
- DDA compliance: target AS 1,428.2 sqm

Table 3 Scenario 2: WSU Proposed Building Summary Table of Development

LEVEL	FLOORPLATE (AVE - SQM)	GFA (85% EFFICIENCY, SQM)	# LEVELS	HEIGHT (M)	TOTAL GFA (SQM)
Podium:	2,618	2,225	3	13.5	6,732
- Ground					
- Level 1-2					
Tower:	**1,702**	**1,446**	**16**	**66.48**	**23,147**
- Inset	1,781	1,513	1		
- Mid-Levels 1	2,206	1,875	3		
- Inset	1,479	1,257	1		
- Mid-Levels 2	1,656	1,407	5		
- Inset	1,287	1,093	1		
- Cantilever 1	1,776	1,509	2		
- Cantilever 2	1,414	1,201	3		
Roof Parapet:				1.55	
TOTAL			**19**	**81.53**	**29,879**

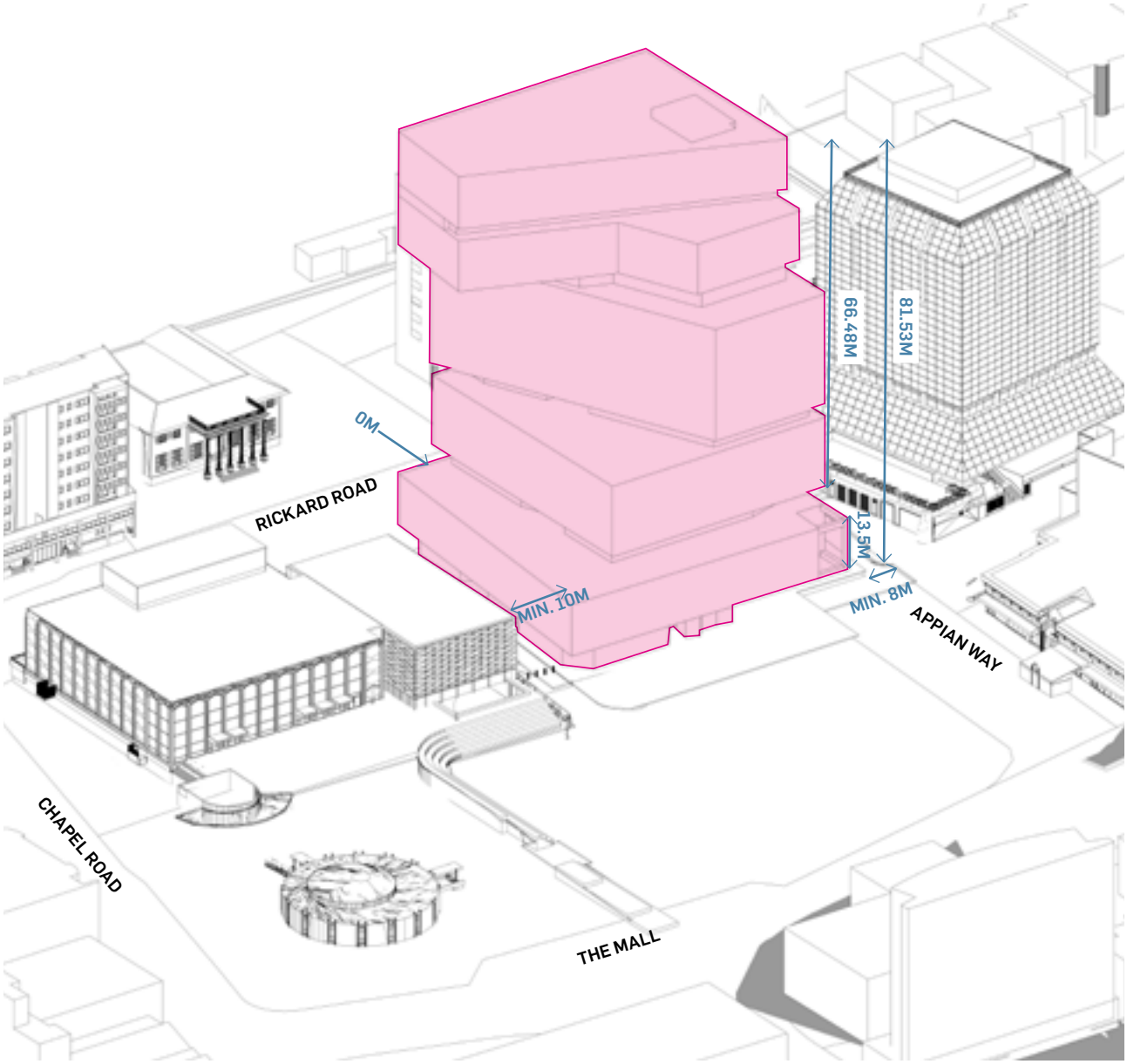


Figure 12 Scenario 2: WSU Proposed Building

WSU PROPOSED BUILDING - DESIGN EVOLUTION

The following sequence of diagrams outlines the design development and evolution of the WSU Proposed Building.

The proposed form was generated through a rigorous and an iterative design development process including:

- Providing a building that can accommodate a vertical university campus; and
- Responding to the local context, including maximising solar amenity to Paul Keating Park.

This evolution demonstrates the response the proposed building has in realising the aspirations of the South District Plan and CB LSPS for the Civic Precinct and as a catalyst for investment in and development of the emerging Bankstown-Lidcombe Health and Education Precinct.

Figure 13 WSU required NLA

The spatial volume of the building, generated by extruding the Site area to the height needed to create the required floor area (26,622sqm NLA);

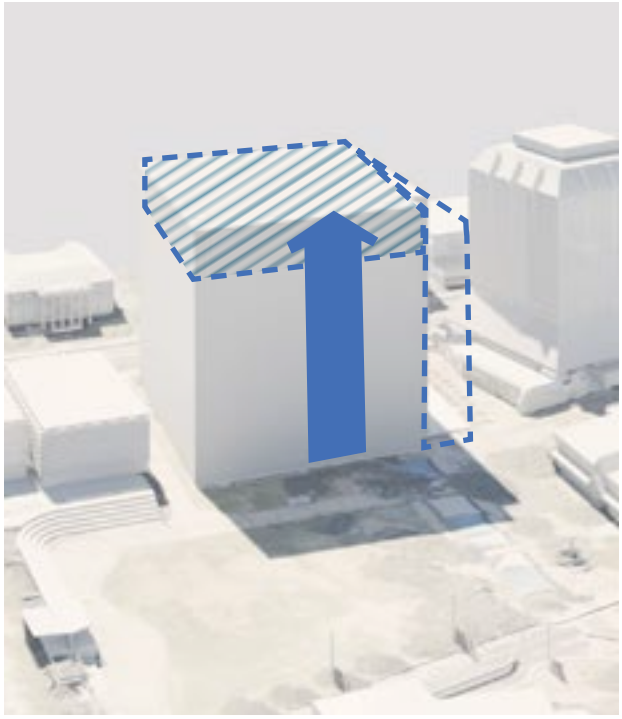


Figure 14 The Appian Way

The building form set back on the eastern side to maintain clear and open view along the Appian Way alignment;

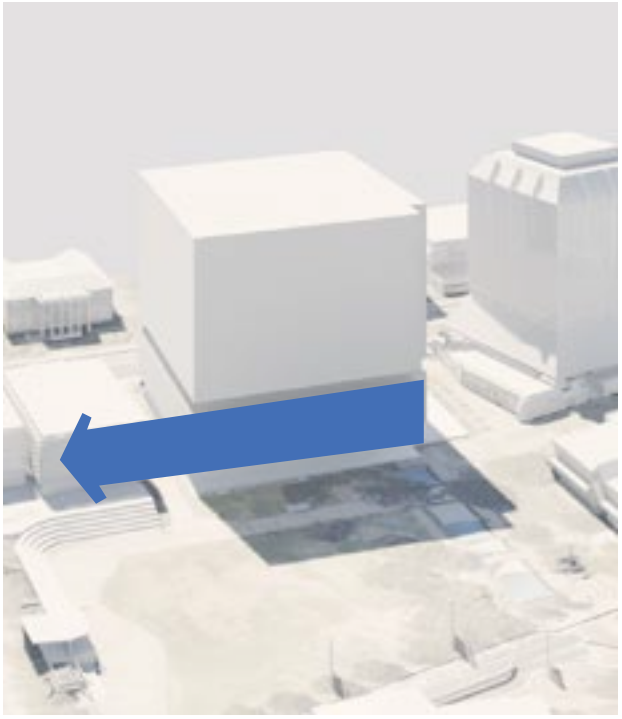


Figure 15 Align with Library

The building form has a horizontal break to align with the top of the adjacent Knowledge Hub and Bryan Brown Theatre buildings.

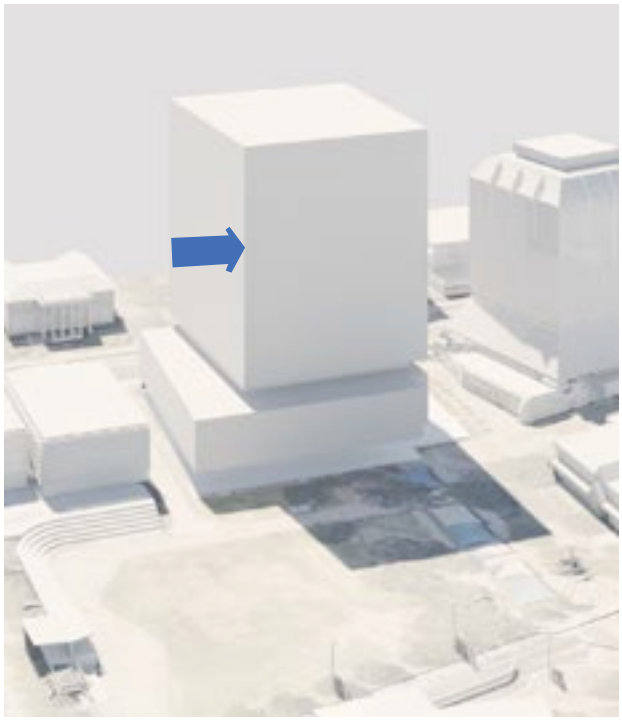


Figure 17 Setback from Knowledge Hub

The form above the horizontal break is set back to enable the alignment of the podium form to be read;

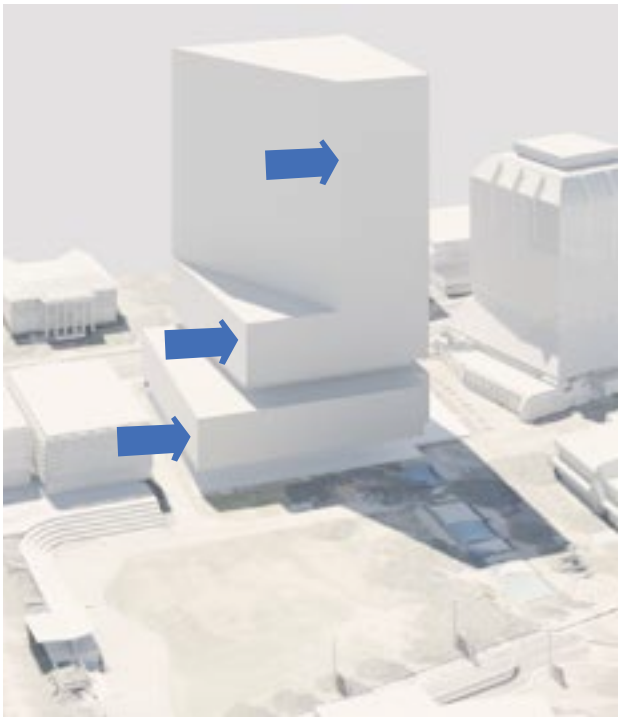


Figure 18 Narrow Paul Keating Park Frontage

To reduce the bulk of the tower form when seen from the Paul Keating Park and The Appian Way, the upper portion of the tower is narrowed at this end and shaped as a taller wedge;

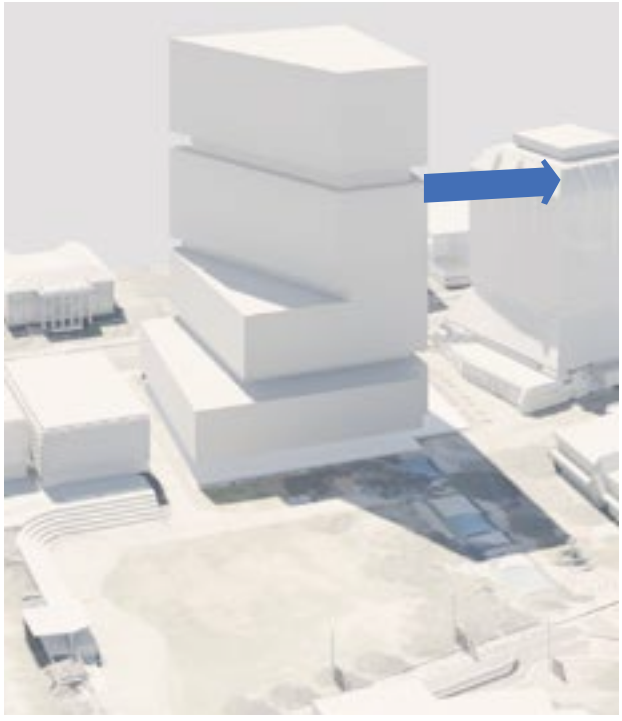


Figure 19 Align with Civic Tower

A horizontal break is introduced into the tower wedge, creating a volumetric relationship with the existing Civic Tower;

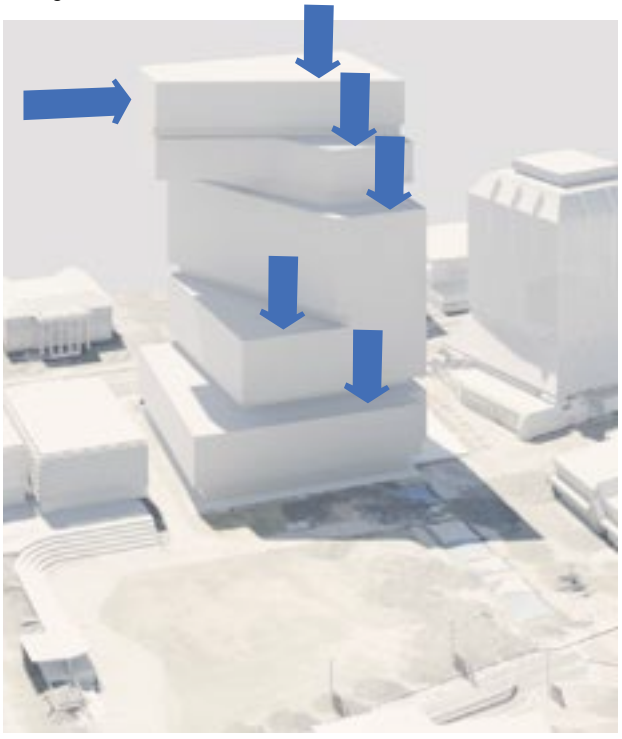


Figure 16 Rotate Tower

The top portion of the tower is rotated, stepping the form back from the Paul Keating Park, reducing the shadow cast onto the public open space whilst maintaining floor space within the maximised height;

SCENARIO 3:
REVISED CANTILEVER & MID-TOWER

The Revised Cantilever and Mid-Tower Building is based on Scenario 2 with changes proposed to the upper two massing volumes being the cantilever (top massing) and the mid-tower. This adjustment seeks to address the shadow impacts of the building cast at 11am which is the key time when the WSU proposal is impacting solar amenity access to PKP and thus the ability to meet Council's proposed control.

PROPOSED CHANGES

Lyons, WSU, Urbis and Walker developed Scenario 3 by testing amendments to the WSU proposed building, within the parameters of the architectural and structural design, and WSU's design brief and educational requirements, which has been resolved and refined over the past 2 years.

Building mass was moved to mid-tower, from the cantilever element, which was identified as blocking some solar access to the Park within the critical time frame on 21 June.

Scenario 3 retains the proposed building's refined edge to Paul Keating Park, which is created by the various building elements, articulation and stepping.

The following summarises the key changes proposed by Scenario 3 - Cantilever and Mid-Tower Building:

- **Cantilever:**
  - Reduces the western extent of the cantilever from Scenario 2, reducing potential the perception of bulk.
  - Simplifies the cantilever massing to a single form and reduces it from 5 levels to 4.
- **Mid-Tower:**
  - Improves the relationship of the mid-rise to Rickard Road and the apartment building opposite.
  - Marginally increases the western façade area on Levels 7 to 13.
- **Lower-Tower:**
  - Increased the lower tower massing by 1 level from 3 levels to 4 to accommodate the reduction on cantilever levels.
- **Other:**
  - Amendments are required to the current structural design, focused on the cantilever and supporting columns.
  - The southern façade area is reduced by 4.5%.

Table 4 Scenario 3: Revised Cantilever & Mid-Tower Summary Table of Development

LEVEL	FLOORPLATE (AVE - SQM)	GFA (85% EFFICIENCY, SQM)	# LEVELS	HEIGHT (M)	TOTAL GFA (SQM)
Podium:	**2,645**	**2,202**	**3**	**13.5**	**6,606**
- Ground	2,176	1,674	1		
- Level 1-2	2,880	2,466	2		
Tower:	**1,723**	**1,417**	**16**	**66.48**	**22,684**
- Inset	1,832	1,505	1		
- Mid-Levels 1	2,222	1,915	4		
- Inset	1,537	1,257	1		
- Mid-Levels 2	1,692	1,425	5		
- Inset	1,155	927	1		
- Cantilever	1,424	1,053	4		
Roof Parapet:				1.55	
TOTAL	**29,133**	**38,178**	**19**	**81.53**	**29,133**

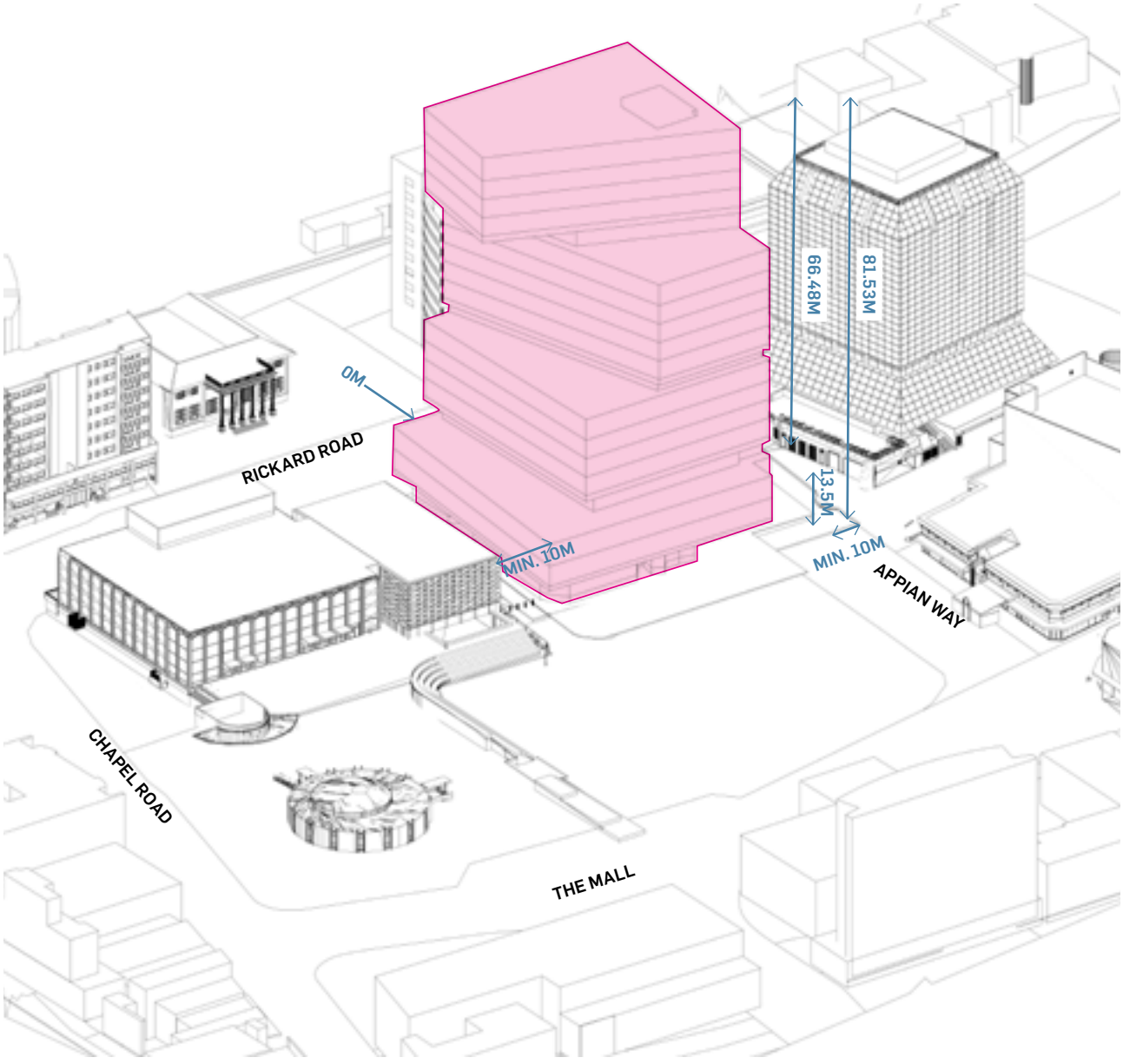
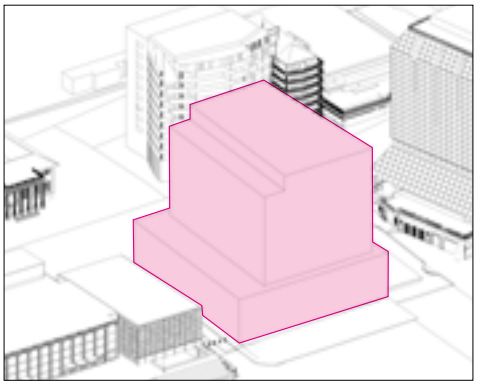


Figure 20 Scenario 3: Revised Cantilever & Mid-Tower

ASSESSMENT OF SCENARIOS AGAINST DESIGN & CONSTRUCTION BRIEF



CONSIDERATIONS	SCENARIO 1: COMPLIANT BUILT FORM	SCENARIO 2: WSU PROPOSED BUILDING
URBAN CONTEXT MASSING RESPONSE	• Responds to urban context. • Achieves a high level of solar access into the Park.	• Responds to urban context, and is a high quality architectural design. • Achieves a good level of solar access, while limiting building mass on the southern elevation and incorporating articulation and stepping to the Park.
TOTAL FLOOR AREA	16,550m²	29,132m²
WSU DESIGN BRIEF AND EDUCATIONAL REQUIREMENTS.	This scenario cannot accommodate all the learning, research and ancillary uses required for a successful university campus.	Meets all requirements
LANDSCAPING AND TERRACES	N/A - reference scheme only	Meets all requirements
STRUCTURAL DESIGN	N/A - reference scheme only	Base case
CONSTRUCTABILITY	Unlikely to be significant issues.	Base case.
IMPACT ON FIT OUT. **For example, ability to fit classrooms and other uses within the structural elements.**	This scenario cannot accommodate all the learning, research and ancillary uses required for a successful university campus.	Meets all requirements
KEY FINDINGS	Scenario 1 is not a sensible building form for the site, as it does not permit a feasible, vertical university campus, which regional and local strategic plans have identified as the desired use for the site. **This scenario is not considered further.**	Scenario 2 meets WSU's design brief and educational requirements. Its design is complete, and achievable. Building mass on the southern elevation is minimised, and articulation and stepping are incorporated to refine the building edge to the Park.

KEY FINDINGS:

This table reviews the three scenarios against the requirements of the WSU design and construction brief to consider the impacts of a an amended design on the feasibility, timeframes and outcomes of the project.

This analysis reveals that while Scenario 3 may result in some delays to timeframes and additional redesign costs, it also improves some of the construction and structural outcomes of the project. It also identifies that the integrity of the design outcomes in the current proposal can be retained in this scenario.

SCENARIO 3: REVISED CANTILEVER & MID-LEVEL

- Responds to urban context and is a high quality architectural concept.
- Achieves a very good level of solar access, while limiting building mass on the southern elevation and incorporating articulation and stepping to the Park. The southern façade area is reduced by 4.5%.
- Reduces the western extent of the cantilever from Scenario 2, reducing the potential perception of bulk.
- Improves the relationship of the mid-rise to Rickard Road and the apartment building opposite.
- Marginally increases the western façade area on Levels 7 to 13.

Approximately 29,389m² (+257m²)

Requirements can be accommodated

- Design of the Level 8 terrace has been revised, and its orientation is slightly improved (Level 7 in Scenario 2).
- Design of Level 14 terrace has been revised, providing a larger terrace on the southern elevation, overlooking the Park (Level 13 in Scenario 2).

- Amendments are required to the current structural design, focused on the cantilever and supporting columns.
- Greater efficiencies will achieved in the structural design.
- The design and delivery program will be extended.
- An estimated $1 million additional design costs.
- Opportunity to rationalise structural grid with removal of Level 13-15 southern protrusion
- Possible improvement to lift efficiency with increase in floor area distributed at lower levels
- The core fundamentals of Scenario 2 design are retained.
- Improved façade access for ongoing maintenance.

- The Level 14 external laydown area is significantly larger, providing a secure area that can be utilised during crane lifting activities, steel rigging and assembly.
- The reduction of the cantilever of 6.5 – 7 metres will reduce loads, angles and structural steel spans, which will simplify the construction method, making it faster and safer to build. The pitch of the racking columns will be increased, enabling loads to be connected into the conventional structure more directly.
- The area of soffit is reduced below Scenario 2. Installation and replacement is a difficult and high risk activity.

- Requirements can be accommodated, but a significant fit-out re-design is required:
  - On Levels 7 to 14
  - The Conference Level, which has a reduced floor plate.
  - Realignment of cantilever columns may impact fit-out and Rickard Rd Ground Level Entry
- The floor plate shape is improved for the fit-out, particularly on the southern side.
- The larger floor plates in low-rise volume are ideal for learning spaces.

- Scenario 3 can meet WSU's design brief and educational requirements.
- Some re-design is required, with consequential time and cost impacts, which are manageable within the context of the overall project. Importantly, Scenario 3 is based on the principal elements of the established architectural and engineering design, reducing the potential for additional issues and constraints to be uncovered.
- The building mass on the southern elevation is minimised as far as possible.
- Scenario 3 therefore achieves a balance between solar access and an architectural form that respects its location to the north of the Park.

HOURLY SOLAR AMENITY ANALYSIS

The following investigation undertakes solar amenity analysis to Paul Keating Park at hourly intervals between 9am and 4pm on winter solstice. This 7-hour period was analysed to understand the total solar amenity realised in the park throughout the day. The analysis identifies:

- Shadow cast by existing buildings;
- Additional shadow cast by the Scenario 1: Compliant Built Form compared with the existing buildings;
- Additional shadow cast by the Scenario 2 & 3: compared with the existing buildings and Scenario 1; and
- Contiguous area of the park in sunlight for Scenario 2: WSU Proposed Building.

LEGEND

Existing shadow

SCENARIO 1 : COMPLIANT BUILT FORM

Scenario 1 Shadow

SCENARIO 2-4 : ADDITIONAL SHADOW CAST

Scenario 3 Shadow (additional to 1)

Scenario 2 Shadow (additional to 1 & 3)

Scenario 2 Sunlight - contiguous

KEY INSIGHTS:

The findings of this investigation are summarised in the table and chart opposite. They reveal:

Scenario 1: Compliant Built Form: There is significant additional shadow cast by on the park especially in the morning. This ranges from 40% at 9am to 18% at 12pm.

For Scenarios 2 & 3:

- The additional shadow cast by scenarios 2 &3 is more significant in the morning ranging from 6% at 9am to 16% at 10am and 11% at 11am.
- There is only very minor additional shadow cast by scenarios 2 & 3 in the afternoon ranging from 2% at 2pm to 1% at 1pm and 3pm.

For Scenario 2 & 3: Contiguous areas comprising at least 50% of the park are in sunlight for a continuous period of 4 hours between 11am - 3pm. This ensures for each hour the park provides adequate solar amenity for significant numbers of people to occupy sunlit areas. *We note this is not necessarily the same contiguous 50% portion of the park across these four hours.*

For all: There is no additional shadow cast by and of the scenarios 1-3 at 4pm when over 85% of the park is already in shadow from existing buildings.

This analysis identifies that the solar amenity outcomes for people can be achieved in Scenario 2: WSU Proposed Building with 50% of the park receiving sunlight across 4 consecutive hours from 11am to 3pm.

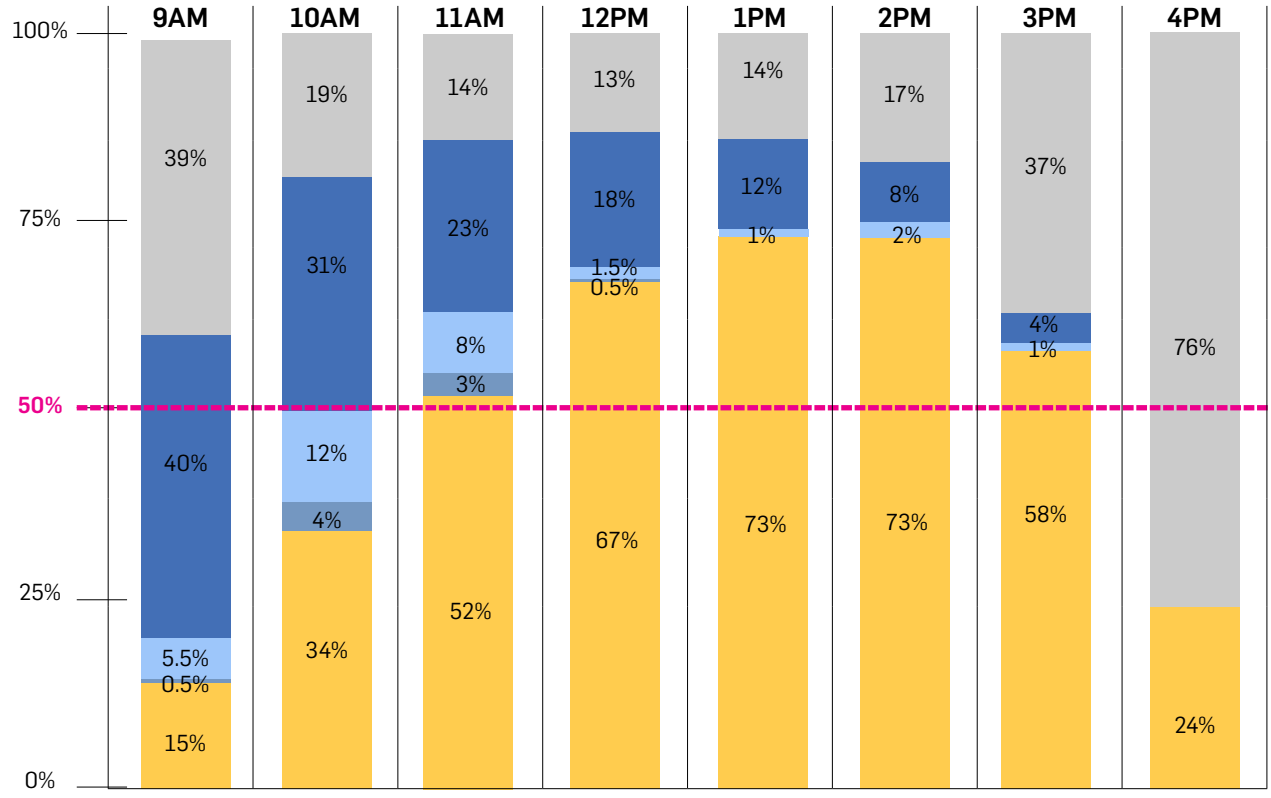
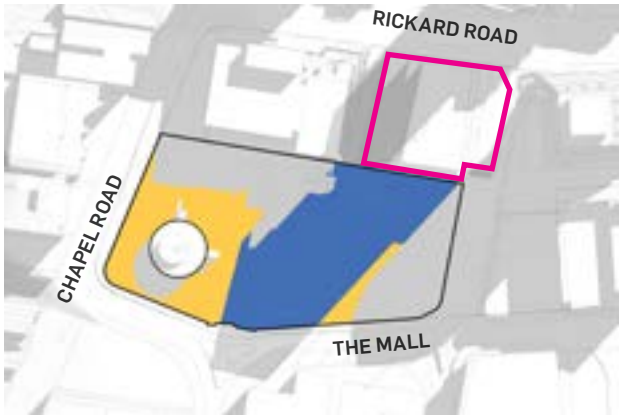
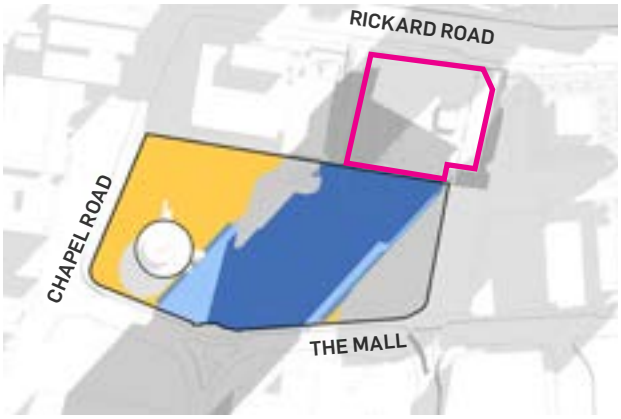


Figure 21 Solar Amenity Hourly Intervals Analysis

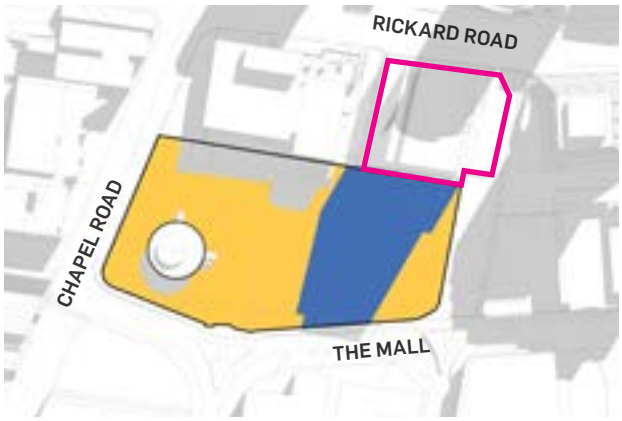
9 AM (COMPLIANT)



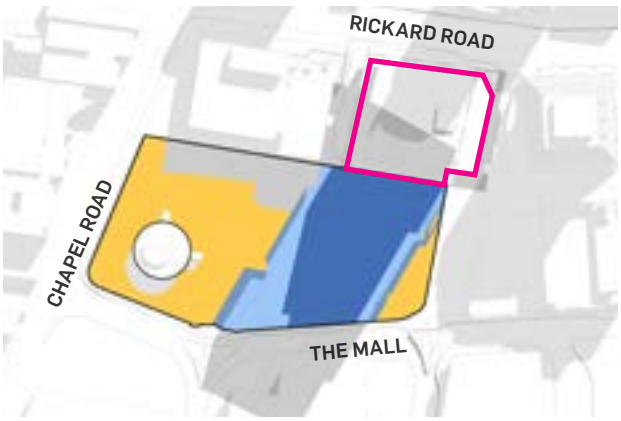
9 AM (PROPOSED)



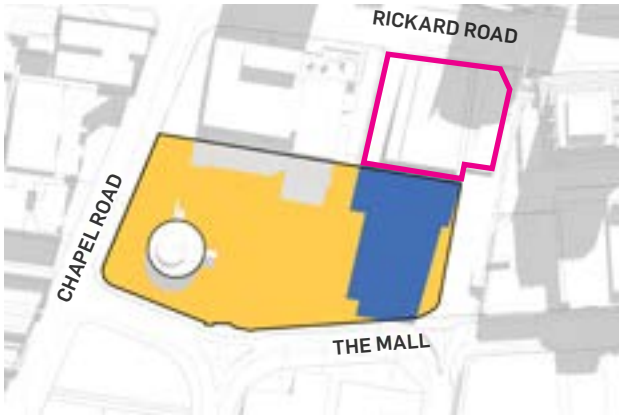
10 AM



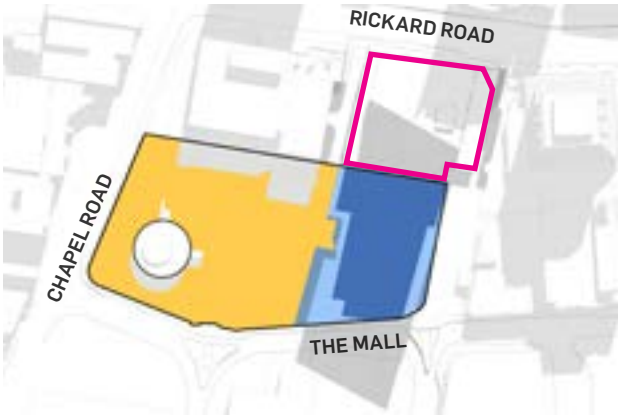
10 AM



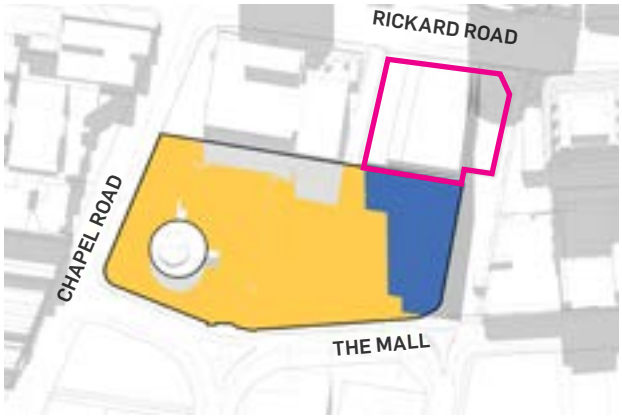
11 AM



11 AM



12 PM



12 PM

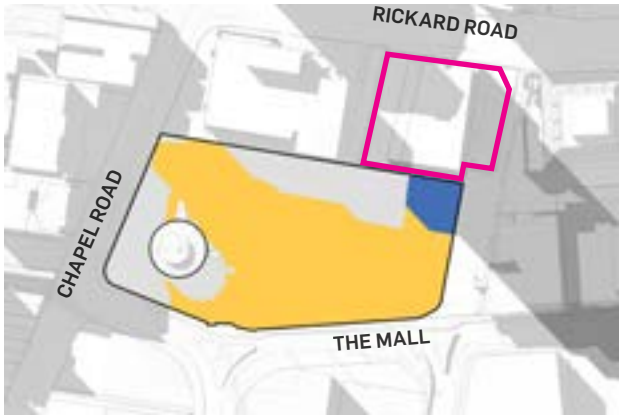
1 PM (COMPLIANT)

1 PM (PROPOSED)

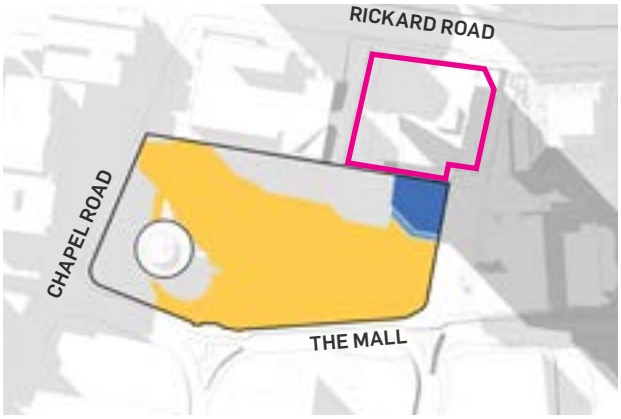
2 PM

2 PM

3 PM



3 PM



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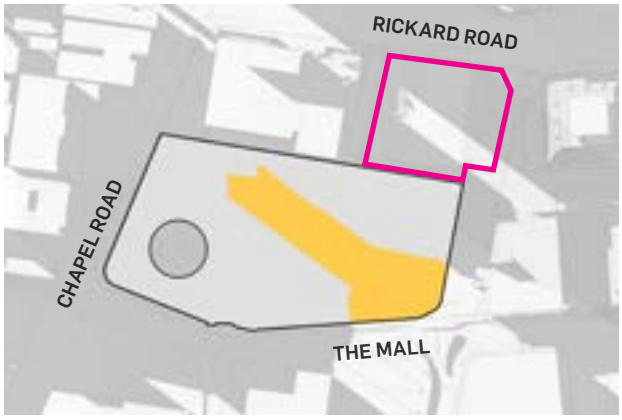

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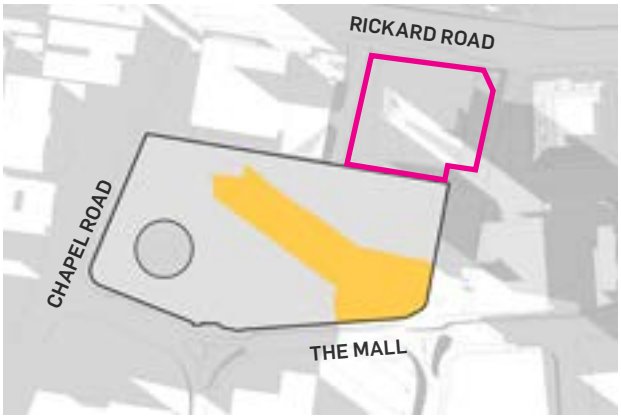
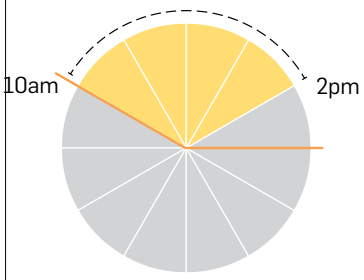


SOLAR AMENITY COMPOSITES

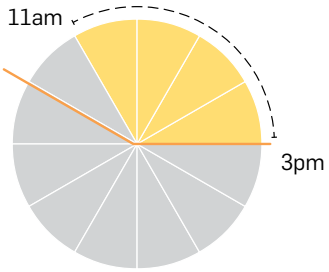
The following analysis compares solar amenity composites for Paul Keating Park. Solar amenity composites consider the cumulative solar amenity impacts across consecutive hours identifying areas in the park that meet the 'continuous' requirement of Council's proposed control.

4 HOUR COMPOSITES

The first two solar amenity composites consider two different 4-hour timeframes throughout the day being:



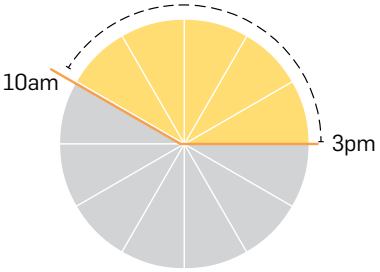
COMPOSITE A: Between 10:00 am and 2:00 pm: the first 4 hour period contained within Council's proposed solar amenity control;



COMPOSITE B: Between 11:00am and 3:00 pm: the second 4 hour period contained within Council's proposed solar amenity control.

5 HOUR COMPOSITE

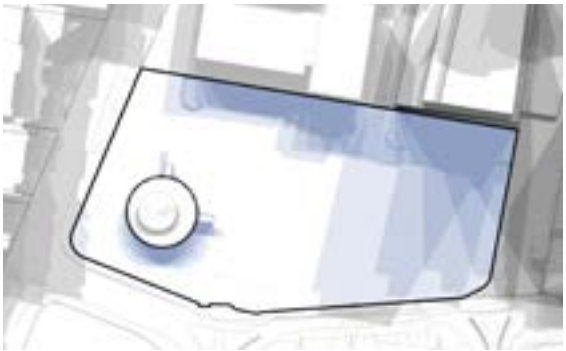
An additional solar amenity composite was subsequently prepared which combines the above 4 hour periods into a five (5) hour composite as follows:



Composite C: Between 10:00 am and 3:00 pm: a 5 hour period reflecting Council's proposed solar amenity control considers the cumulative areas of PKP which achieve 4 hours of continuous solar amenity.

COMPOSITES EXPLANATION

Composites are prepared by overlaying the shadow diagrams for each hour, on-the-hour, within the time period identified. These are multiplied upon one another to reflect cumulative shadows. For a four hour period, five hourly composites are overlaid i.e. from 10am to 2pm - 10am, 11am, 12pm, 1pm and 2pm are overlaid.



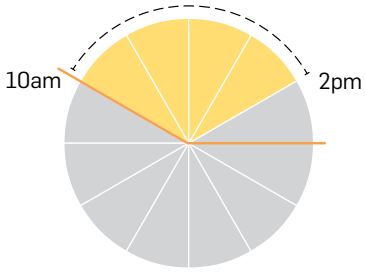
LEGEND

≥ 4 hrs solar amenity

1 hr shadow

4 hrs shadow

COMPOSITE A:
SOLAR AMENITY 10AM TO 2PM



This solar amenity composite considers the first 4 hour period contained within Council's proposed solar amenity control - from 10am - 2pm.

KEY INSIGHTS:

From 10:00am to 2:00pm a consolidated area of PKP receives 4 hours continuous solar amenity for:

- **Scenario 1 Compliant Built Form** - 43%. This area comprises mostly the existing tree grove around the Council Chambers building as well as the hard paved amphitheatre.
- **For Scenario 2 & 3 -** 33% through to 35% with the additional shadow falling on the open lawn and amphitheatre areas.

This analysis identifies that a 'sensible' compliant built form falls short of the 50% requirement of the proposed solar amenity control if considering a 4-hour timeframe only between 10am and 2pm.

LEGEND

		AREA (SQM)	%	AREA (SQM)	%
	Site boundary				
	Paul Keating Park	12,207sqm	100%		
		SHADOW		**TOTAL SUNLIGHT** 4 hr continuous (10am-2pm)	
	Existing buildings	3,948sqm	32%	8,259sqm	68%
Additional Shadow					
	Scenario 1	3,025sqm	25%	5,234sqm	43%
	Scenario 3	924sqm	8%	4,310sqm	35%
	Scenario 2	1,210sqm	10%	4,024sqm	33%

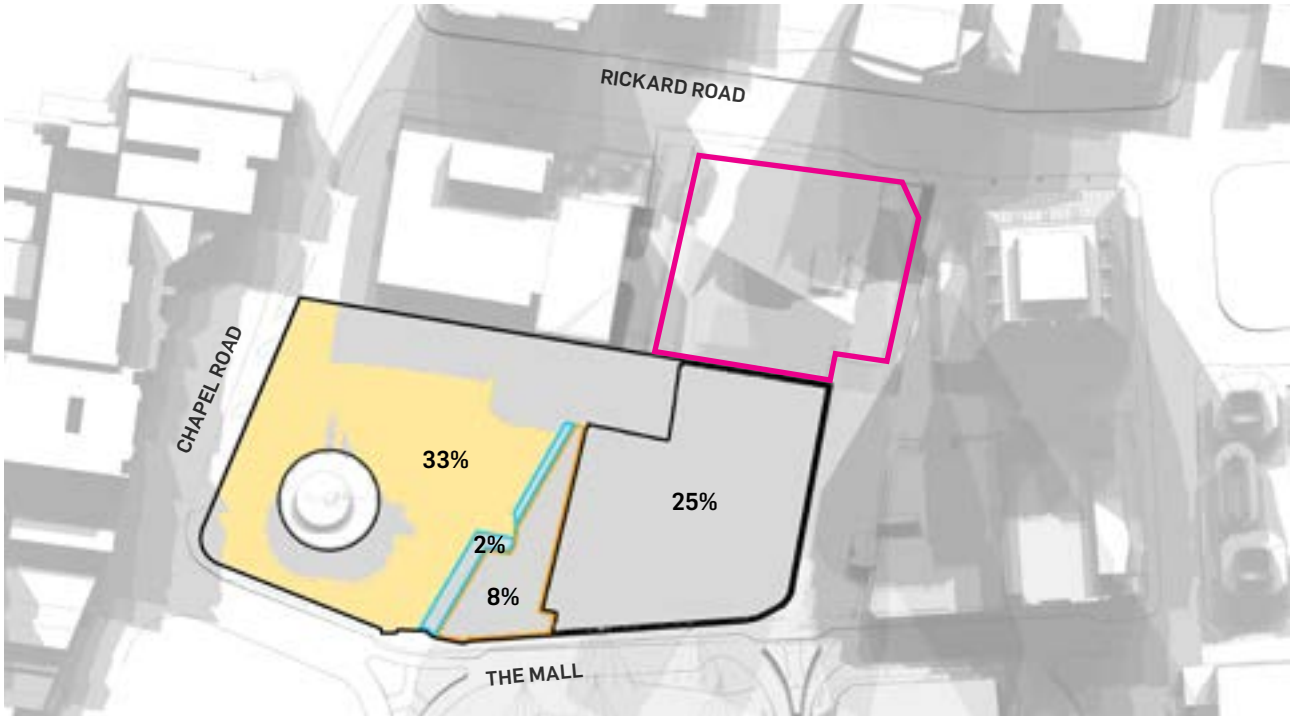


Figure 22 Overlay of Scenario 1-3 - Areas Greater than 4 hours Solar amenity 10am-2pm

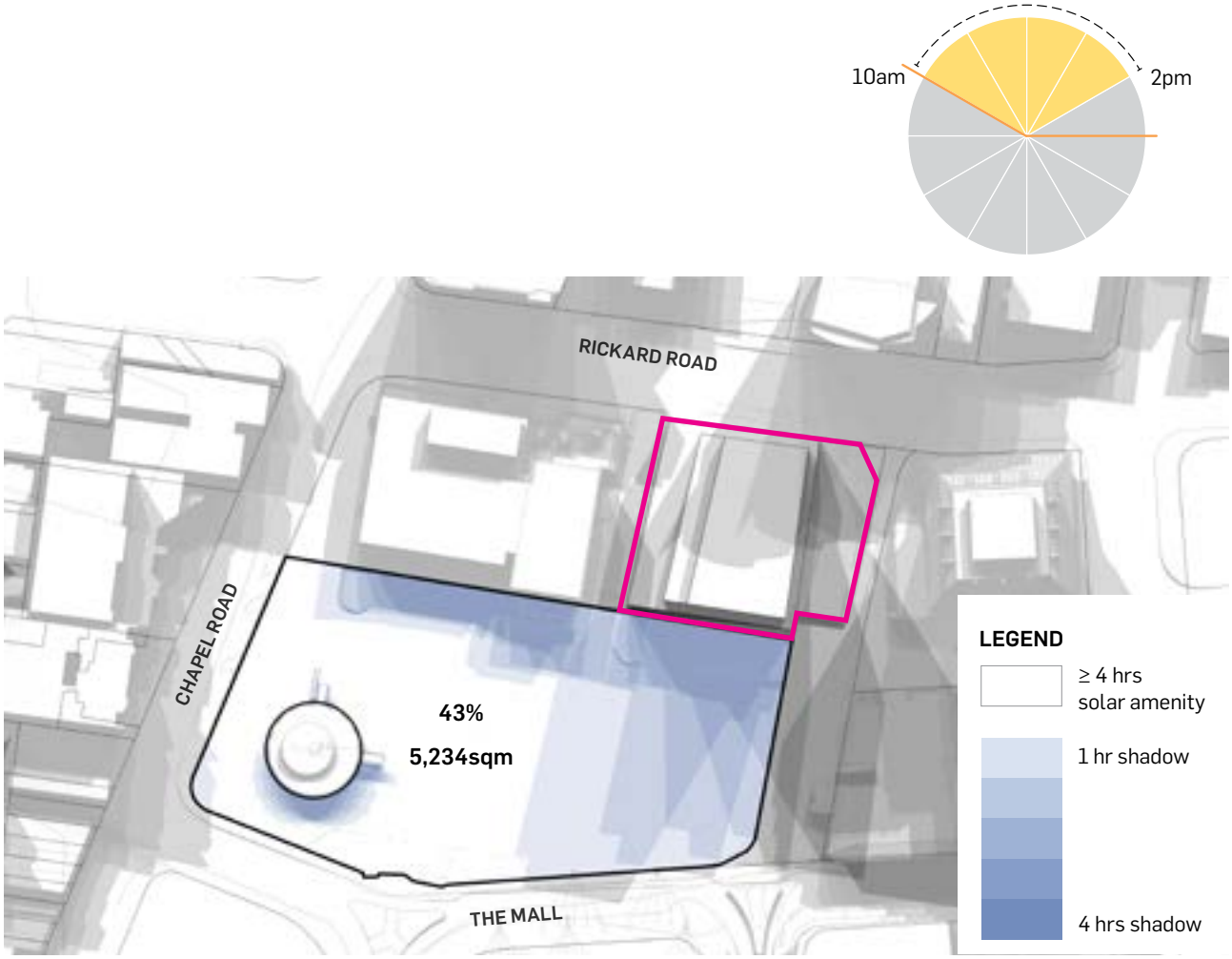


Figure 23 Scenario 1: Compliant Built Form - Solar amenity Composite 10am-2pm

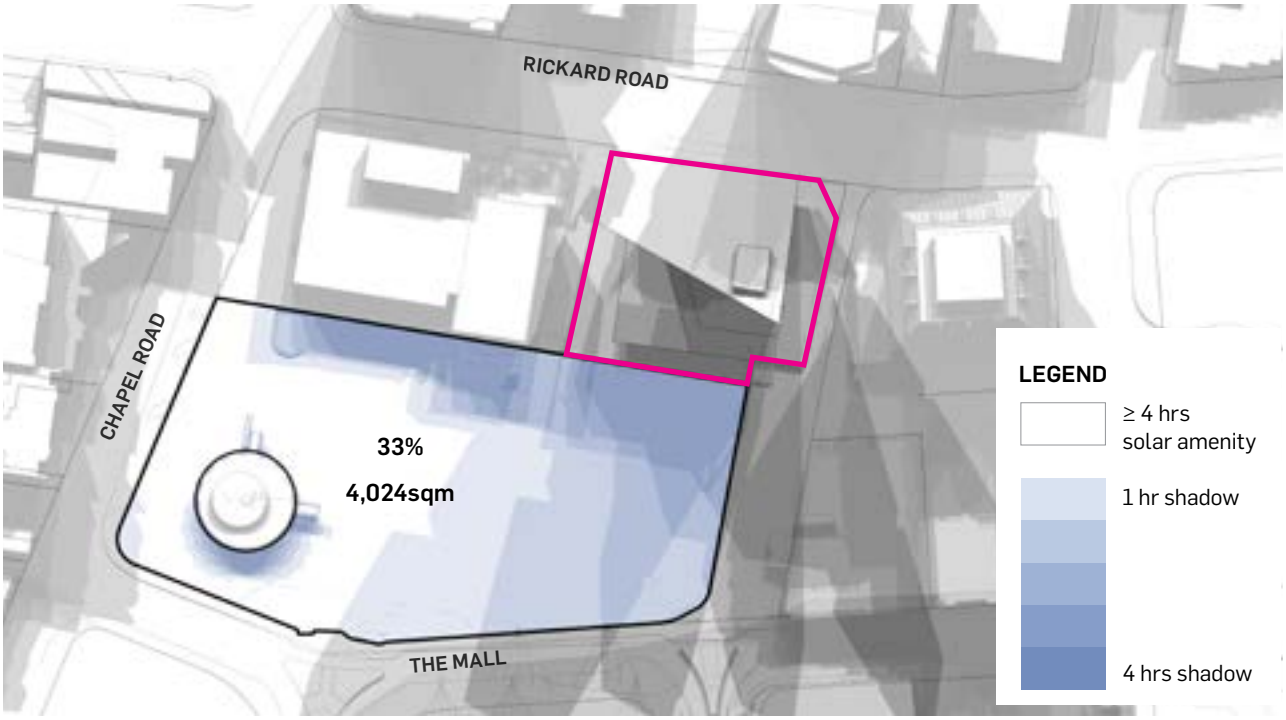


Figure 24 Scenario 2: WSU Proposed Building - Solar amenity Composite 10am-2pm

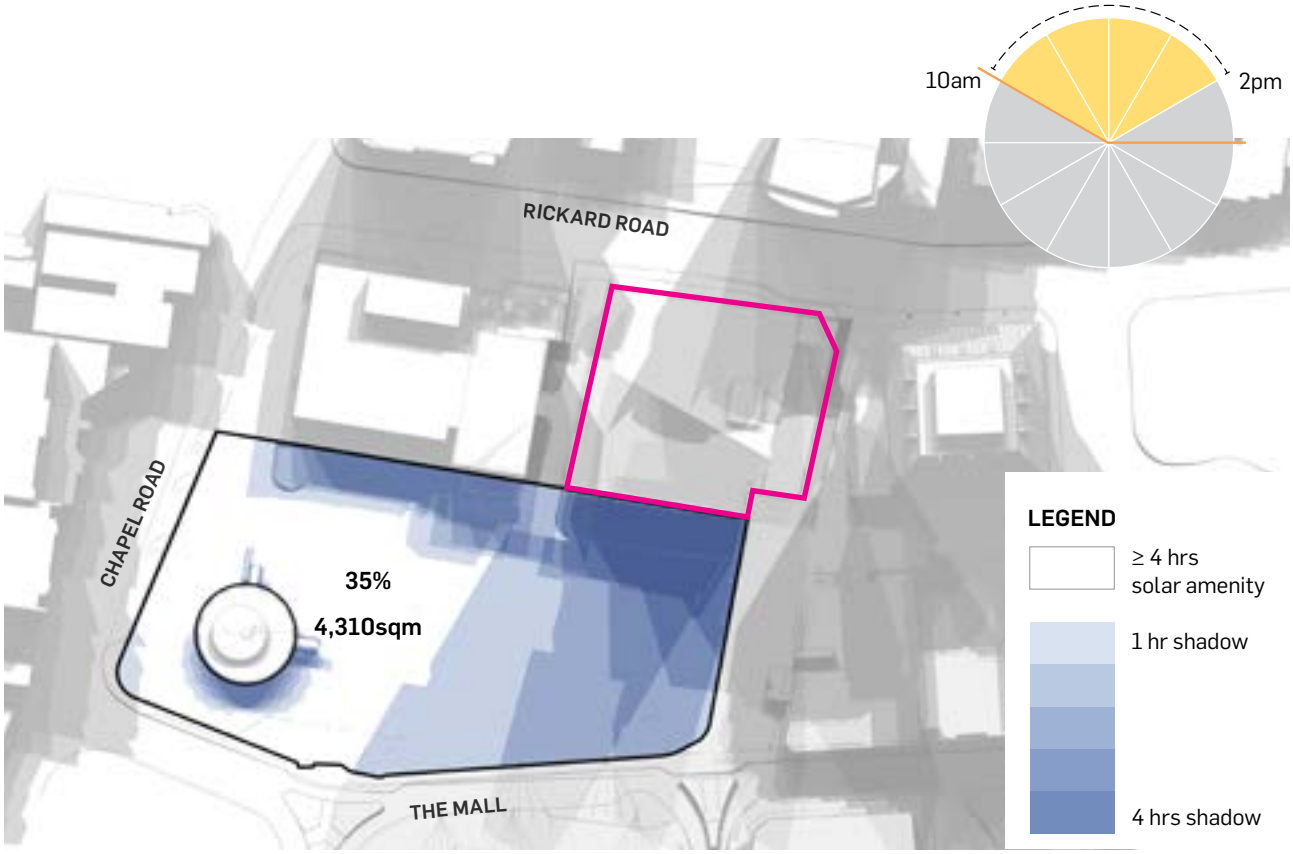


Figure 25 Scenario 3: Revised Cantilever & Mid-Tower - Solar amenity Composite 10am-2pm

COMPOSITE B: SOLAR AMENITY 11AM TO 3PM

This solar amenity composite considers the second 4 hour period contained within Council's proposed solar amenity control - from 11am - 3pm.

KEY INSIGHTS:

From 11:00am to 3:00pm a consolidated area of PKP receives 4 hours continuous solar amenity for:

- **Scenario 1 Compliant Built Form** - 45%. This area comprises part of the tree grove around the Council Chambers building, the hard paved amphitheatre and a significant portion of the lawn area.
- **Scenarios 2 & 3 -** 39% through to 42% with the additional shadow falling on the open lawn area.

This analysis identifies that a 'sensible' compliant built form cannot meet the 50% requirement of the proposed solar amenity control if considering a 4-hour timeframe only between 11am and 3pm.

LEGEND

Site boundary	AREA (SQM)	%	AREA (SQM)	%
Paul Keating Park	12,207sqm	100%		
	SHADOW		**TOTAL SUNLIGHT** 4 hr continuous (10am-2pm)	
Existing buildings	3,970sqm	33%	8,237sqm	67%
Additional Shadow				
Scenario 1	2,678sqm	22%	5,559sqm	45%
Scenario 3	471sqm	4%	5,088sqm	42%
Scenario 2	747sqm	6%	4,812sqm	39%

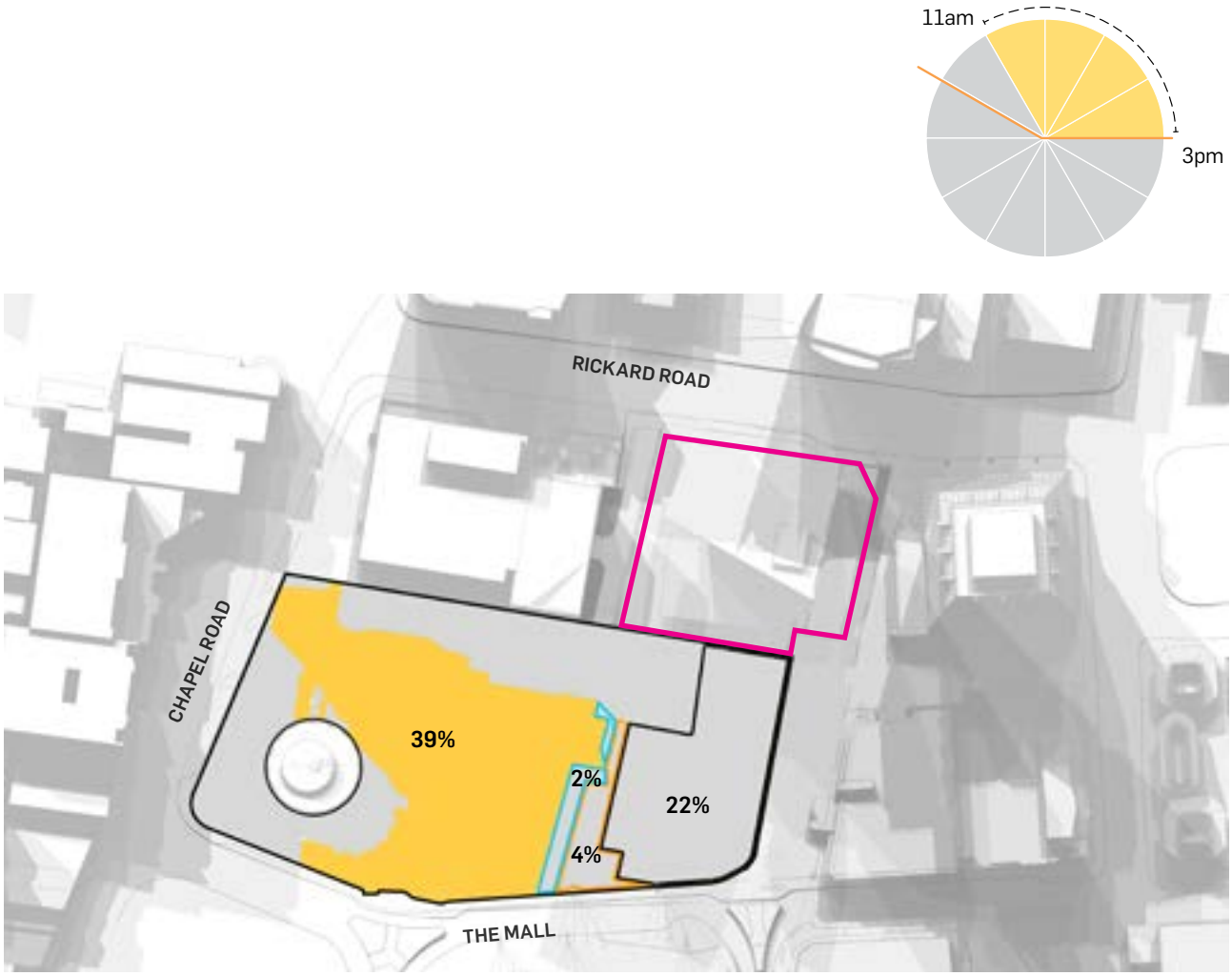


Figure 26 Overlay of Scenario 1-3 - Areas Greater than 4 hours Solar amenity 11am-3pm

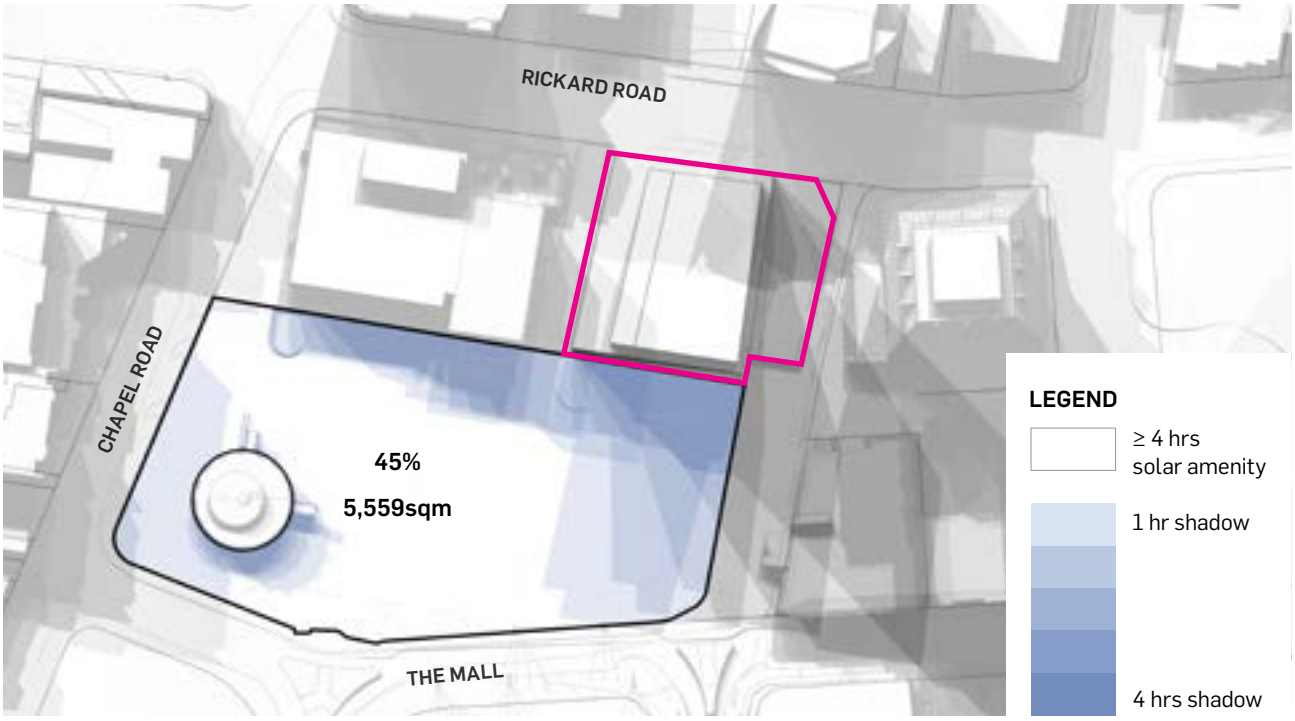
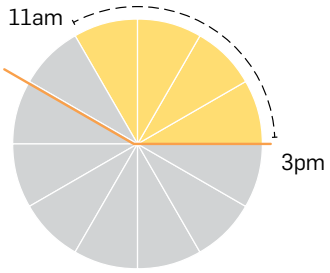


Figure 27 Scenario 1: Compliant Built Form - Solar amenity Composite 11am-3pm



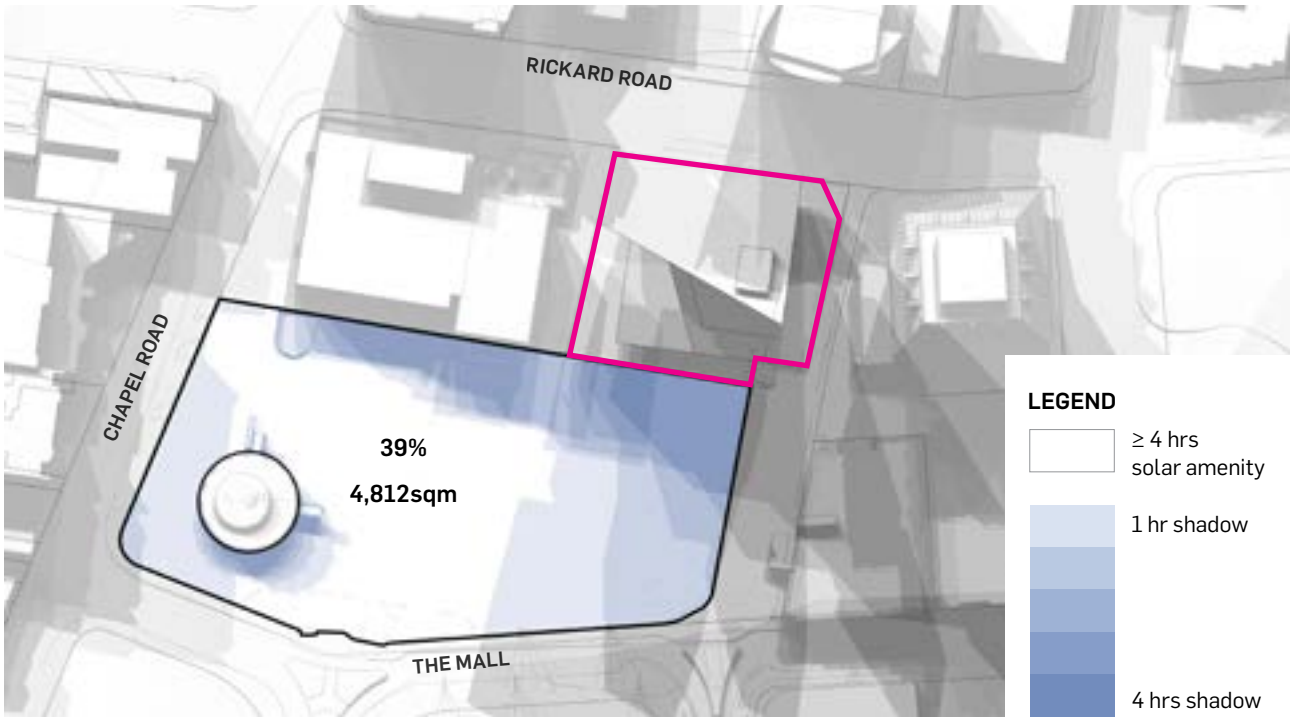


Figure 28 Scenario 2: WSU Proposed Building - Solar amenity Composite 11am-3pm

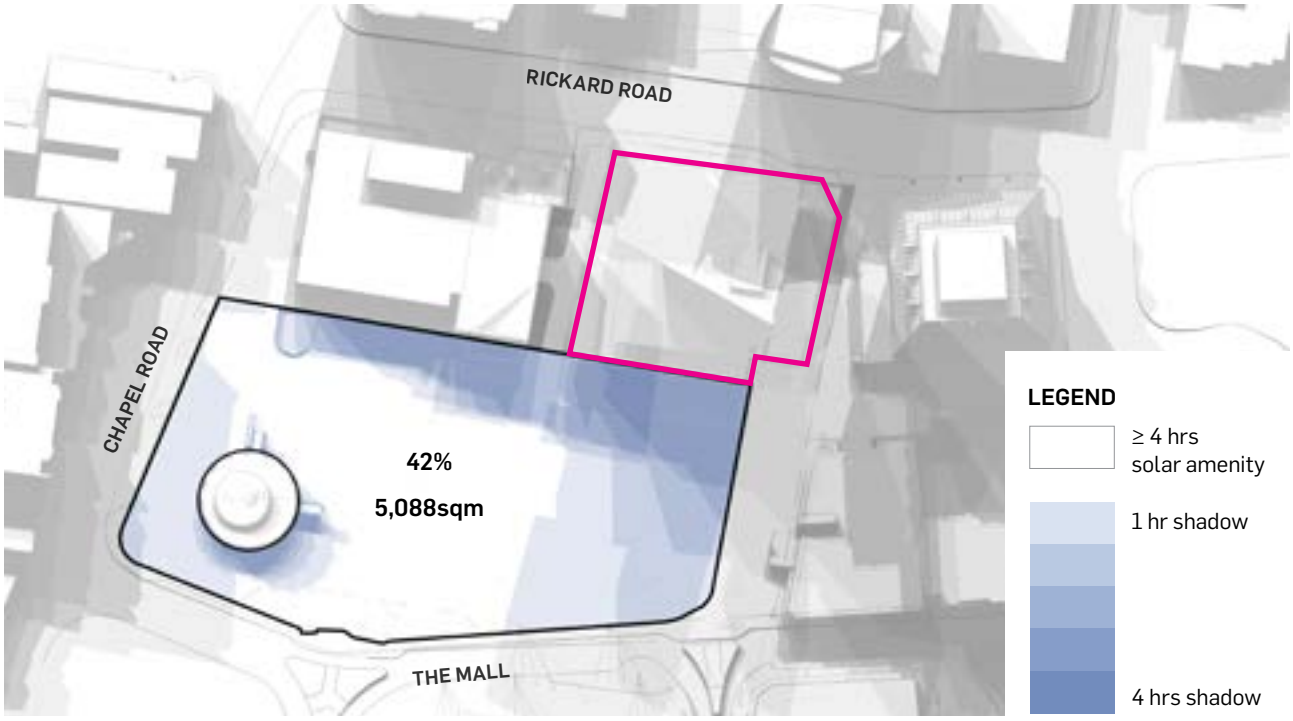
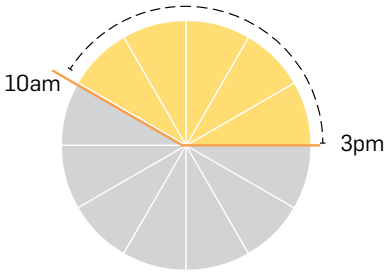


Figure 29 Scenario 3: Revised Cantilever & Mid-Tower - Solar amenity Composite 11am-3pm

COMPOSITE C:
SOLAR AMENITY 10AM TO 3PM



This solar amenity composite considers the cumulative areas of 4 hour solar amenity across the combined 5 hour period from 10am to 3pm by adding the areas within 10am-2pm and 11am-3pm together and discounting any overlapping areas. It compares the three different scenarios.

KEY INSIGHTS:

From 10:00am to 3:00pm a consolidated area of PKP receives 4 hours continuous solar amenity for:

- **Scenario 1 Compliant Built Form** - 7,276sqm (59.6%)
- **Scenario 2 WSU Proposed Building -** 5,928sqm (48.6%)
- **Scenario 3 Revised Cantilever & Mid-Tower -** 6,193sqm (50.7%)

The net impact of between Scenario 1 and Scenario 2 is a 11% reduction in the area of PKP with continuous 4 hours solar amenity from 10:00am to 3:00 pm.

This analysis identifies that the 50% continuous 4 hours solar amenity outcome for plants and grass areas can be achieved in Scenario 1 (59.6%) & Scenario 3 (50.7%) between the hours of 10am to 3pm. Scenario 2 achieves 48.6%. Considering Scenario 2 & 3 accommodate an additional 12,582sqm (76%) floor area the 9% and 11% reduction in solar access compared to the compliant scheme is considered an outcome that demonstrates the high-level of consideration solar amenity has had in the shaping of the building massing in both scenarios.

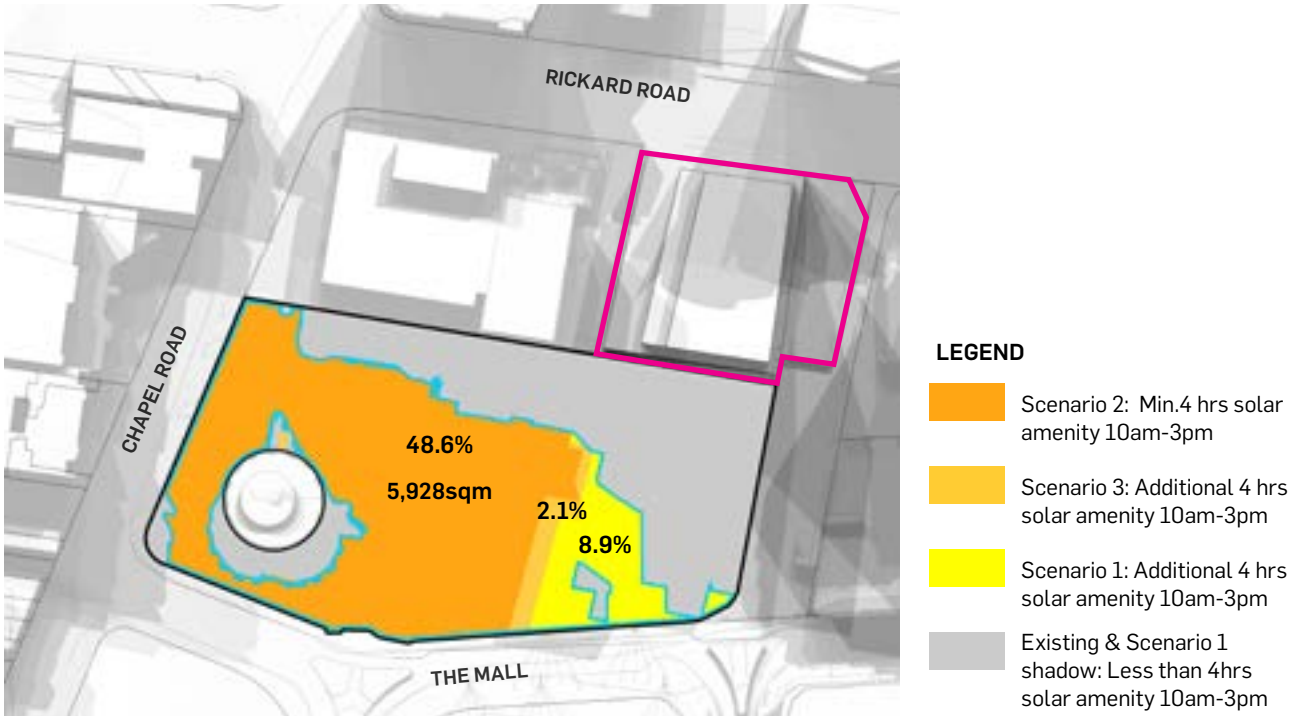


Figure 30 Difference between Scenario 1 -3 from 10am to 3pm

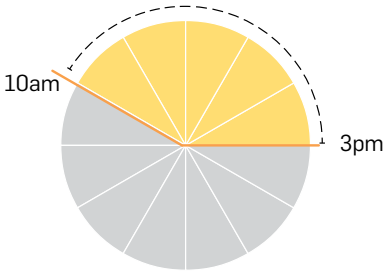


Table 5 Summary composite analysis calculations 10am -3pm

LEGEND		SCENARIO 1		SCENARIO 2		SCENARIO 3	
	Site boundary	AREA (SQM)	%	AREA (SQM)	%	AREA (SQM)	%
	Paul Keating Park	12,207sqm	100%	12,207sqm	100%	12,207sqm	100%
	Less than 4hrs solar amenity	4,931sqm	40.4%	6,279sqm	51.4%	6,014sqm	49.3%
Areas with ≥4 hrs solar amenity 10am-3pm							
	10am-2pm (4hrs)	1,282sqm	10.5%	1,285sqm	10.5%	1,283sqm	10.5%
	10am-3pm (5hrs)	4,751sqm	39%	2,810sqm	23%	3,127sqm	25.6%
	11am-3pm (4hrs)	1,243sqm	10%	1,833sqm	15%	1,783sqm	14.6%
Total Area with ≥4 hrs Solar amenity 10am-3pm		**7,276sqm**	**59.6%**	**5,928sqm**	**48.6%**	**6,193sqm**	**50.7%**

NOTE: These calculations are cumulative and do not involve overlapping areas. the methodology for this calculated the area receiving 5hrs solar amenity between 10am-3pm and added additional areas receiving 4hrs solar amenity to this baseline.

Please refer to plans on following pages for reference areas for the calculations in this table.

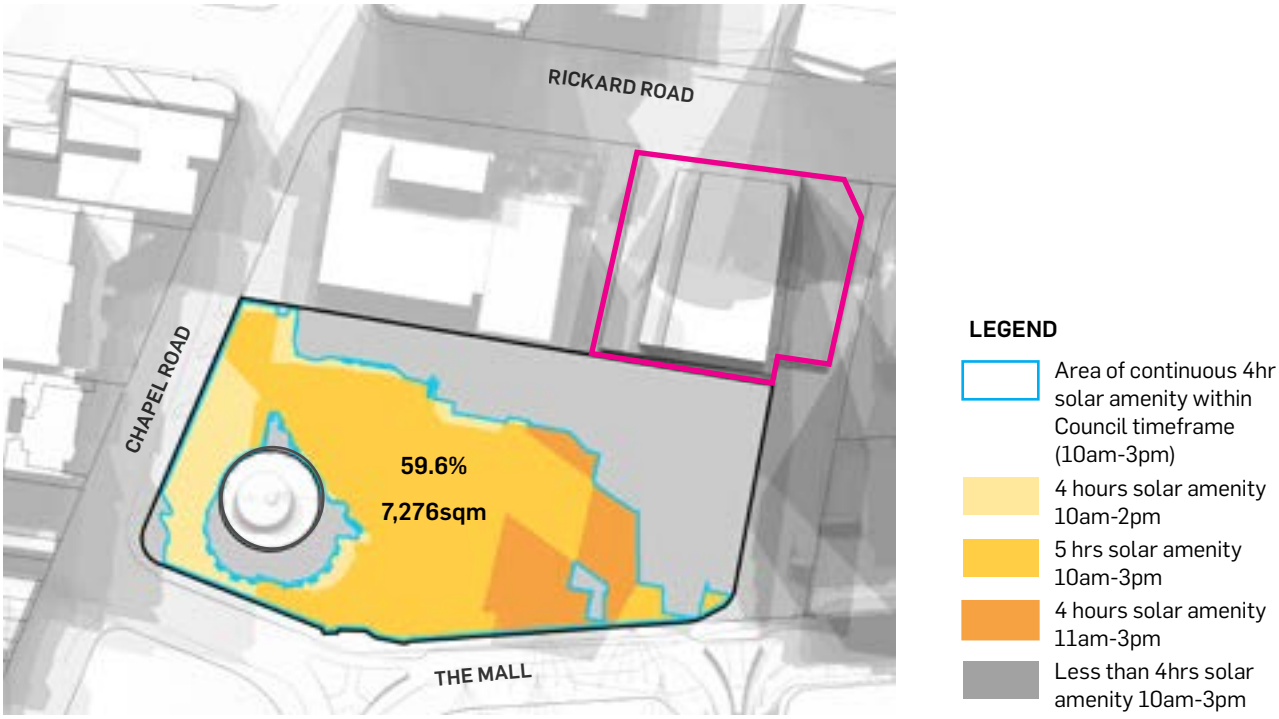
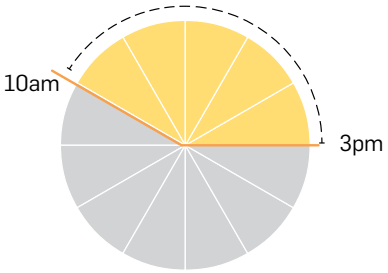
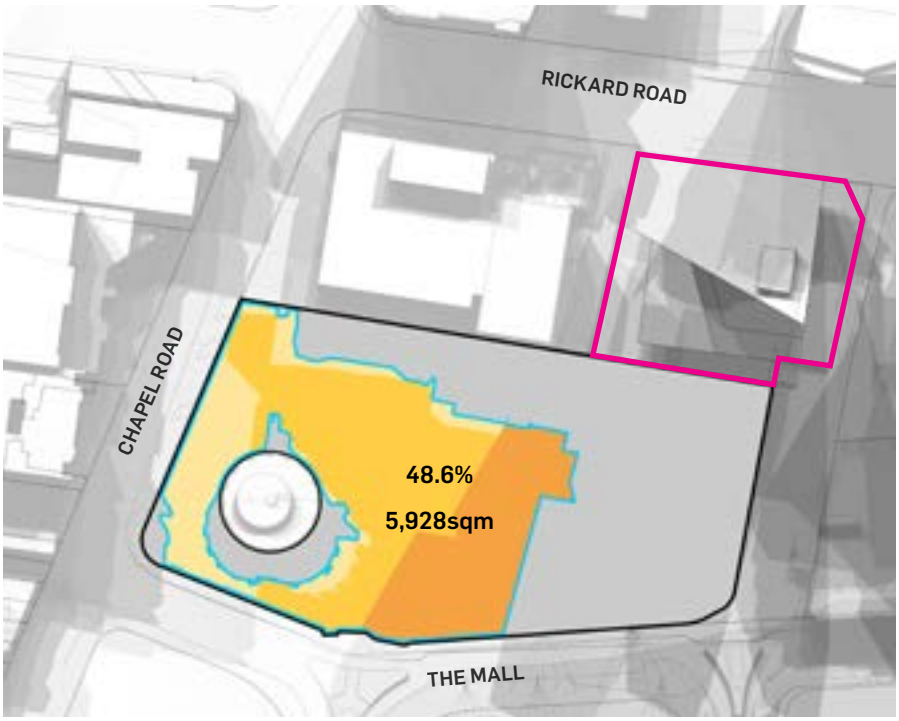


Figure 31 Scenario 1: Compliant Built Form - Areas Greater than 4 hours Solar Amenity 10am-3pm

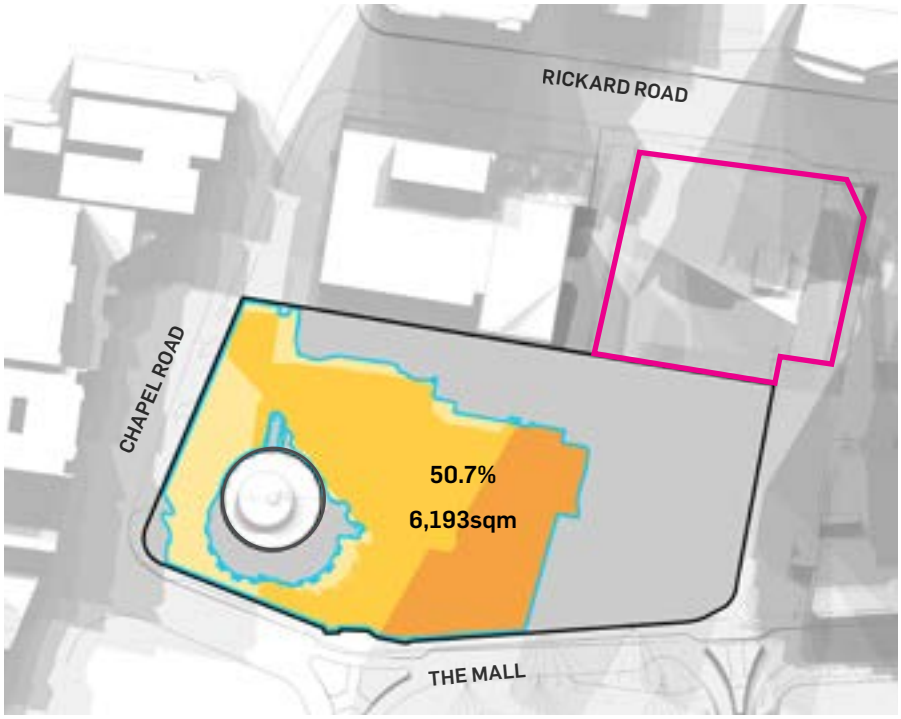




LEGEND

- Area of continuous 4hr solar amenity within Council timeframe (10am-3pm)
- 4 hours solar amenity 10am-2pm
- 5 hrs solar amenity 10am-3pm
- 4 hours solar amenity 11am-3pm
- Less than 4hrs solar amenity 10am-3pm

Figure 33 Scenario 2: WSU Proposed Building - Areas Greater than 4 hours Solar Amenity 10am-3pm



LEGEND

- Area of continuous 4hr solar amenity within Council timeframe (10am-3pm)
- 4 hours solar amenity 10am-2pm
- 5 hrs solar amenity 10am-3pm
- 4 hours solar amenity 11am-3pm
- Less than 4hrs solar amenity 10am-3pm

Figure 32 Scenario 3: Revised Cantilever & Mid-Tower - Areas Greater than 4 hours Solar Amenity 10am-3pm

5.0 OPPORTUNITIES FOR PAUL KEATING PARK MASTER PLAN

This section of the report considers the solar amenity outcomes of the WSU Proposed Building on the existing characteristics and features of Paul Keating Park to identify potential principles that could be considered in the development of the Master Plan for this space.

This analysis:

- Identifies five distinct character areas within the Park;
- Quantifies additional shading associated with Scenario 2 WSU Proposed Building, above Scenario 1 Compliant Built Form; and
- Recommends principles that could be applied to the Paul Keating Park Master Plan in response to the location, configuration and duration of sunlight into different parts of the park.

EXISTING CONDITIONS

The existing character and uses of the park fall into five key zones or areas of the park and can be classified as follows:

- **Tree Grove:** located to the west of the park around the Council Chambers building.
- **Pathways and Amphitheatre:** Hard surface areas in the centre of the park including pathways and tiered seating.
- **Open Lawn:** Central turf area.
- **Shaded Seating:** informal shaded seating area under tree canopy.
- **Playgrounds:** Children's playground areas to the eastern side of the park.

These have been identified and quantified in the diagram below and table opposite.

LEGEND	AREA (SQM)	%
Paul Keating Park classification		
Tree Grove	**3,429**	28%
Pathways and Amphitheatre	**4,093**	34%
Open Lawn	**2,796S**	23%
Shaded Seating	**1,318**	11%
Playgrounds	**571**	4%

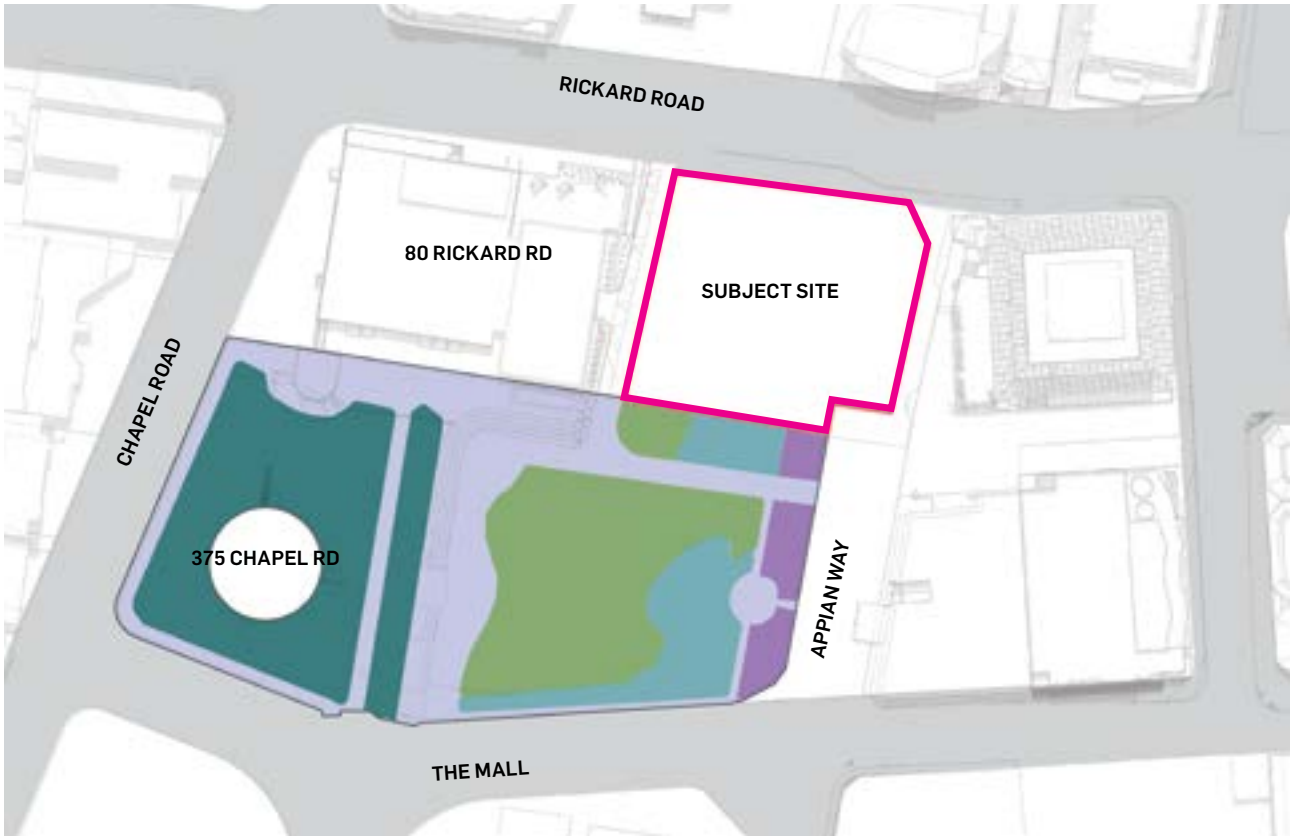


Figure 34 Paul Keating Park Characteristics and Features

SUNLIGHT ACCESS TO PAUL KEATING PARK FEATURES

The existing characteristics of PKP were overlaid on the solar amenity outcomes of the WSU Proposed Building to identify potential principles that could be considered in the development of the Park Master Plan.

This analysis includes:

- Quantifies the solar amenity outcomes for the different features and locations of the park in both area (sqm) and as a % (of the total area of that feature).
- Compares the solar amenity outcomes between scenario 1 and scenario 2 being those with the biggest variance.
- Based on these insights, identifies principles that could be considered in the preparation of the PKP Master Plan in response to the location, extent, configuration and duration of the sunlight into the park.

Table 6 Quantified Solar Amenity Outcomes for PKP at Winter Solstice

AREA REF #	SOLAR AMENITY OUTCOMES - SCENARIO 1 10:00AM - 3:00PM	SOLAR AMENITY OUTCOMES - SCENARIO 2 10:00AM - 3:00PM
1 Tree Grove	2,773 sqm (80%) of the tree grove will received 4 hours of continuous sunlight. *NOTE: Many of the trees are deciduous and therefore will be dormant during winter.*	As per scenario 1 - no change.
2 Open Lawn	1,988 sqm (66%) of the open lawn will receive 4hrs continuous sunlight.	1,560 sqm (55%) of the open lawn will receive 4hrs continuous sunlight.
3a Shaded Seating & Part Playground	644 sqm (100%) of this area receive less than 4hrs continuous sunlight.	As per scenario 1 - no change.
3b Northern Part of Playground	235 sqm (100%) of the northern part of the playground receive less than 4hrs continuous sunlight. *NOTE: This playground is protected from sun by substantial shade structures and provided with artificial turf.*	As per scenario 1 - no change.
3c East West Path	1,681sqm (92%) of the path along the park's northern boundary will receive less than 4hrs continuous sunlight. *NOTE: This area is hard paving.*	As per scenario 1 - no change.
4 Shaded Seating Area	477 sqm (40%) of the shaded seating area will receive 4hrs continuous sunlight. *NOTE: Existing trees in this area provide shaded amenity during summer.*	209 sqm (20%) of the shaded seating area will receive 4hrs continuous sunlight. An additional 115 sqm (11%) receives 3 hours of solar amenity in the afternoon from 1pm-4pm.
5 Southern Part of Playground	223 sqm (100%) receives less than 4hr solar amenity.	160 sqm (72%) receives 3 hours of solar amenity in the afternoon from 1pm-4pm.
6 North-South Path and Amphitheatre	1,133 sqm (96%) will receive 4hrs continuous sunlight. *NOTE: This area is made of concrete.*	1,027 sqm (90%) will receive 4hrs continuous sunlight.

PRINCIPLES FOR THE PAUL KEATING PARK MASTER PLAN

1. Retain the tree grove, and augment it with street tree avenues of suitable deciduous species.
2. Expand the open lawn area to the west, into the existing amphitheatre, where the amount of sunlight received is high.
3. Retain the east west hard paved pathway along the Park's northern boundary, where shading is unavoidable.
4. Cluster built facilities and amenities, hard paved areas, and potentially play equipment, which is provided with shade structures and soft paving, in areas that are shaded in mid winter, particularly in the Park's north and east areas.
5. Provide seating in different locations to ensure some seats are shaded in summer, and some are in sun in winter.
6. Provide some play areas in the Southern Part of the Playground, which receives 3 hours of continuous sunlight between 1:00pm and 4:00pm on the winter solstice. For example, water play areas may be suitable for that location.

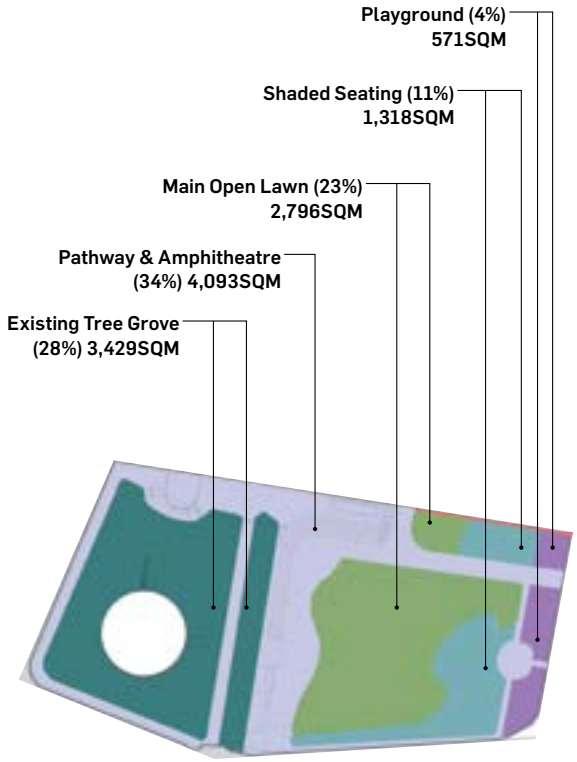
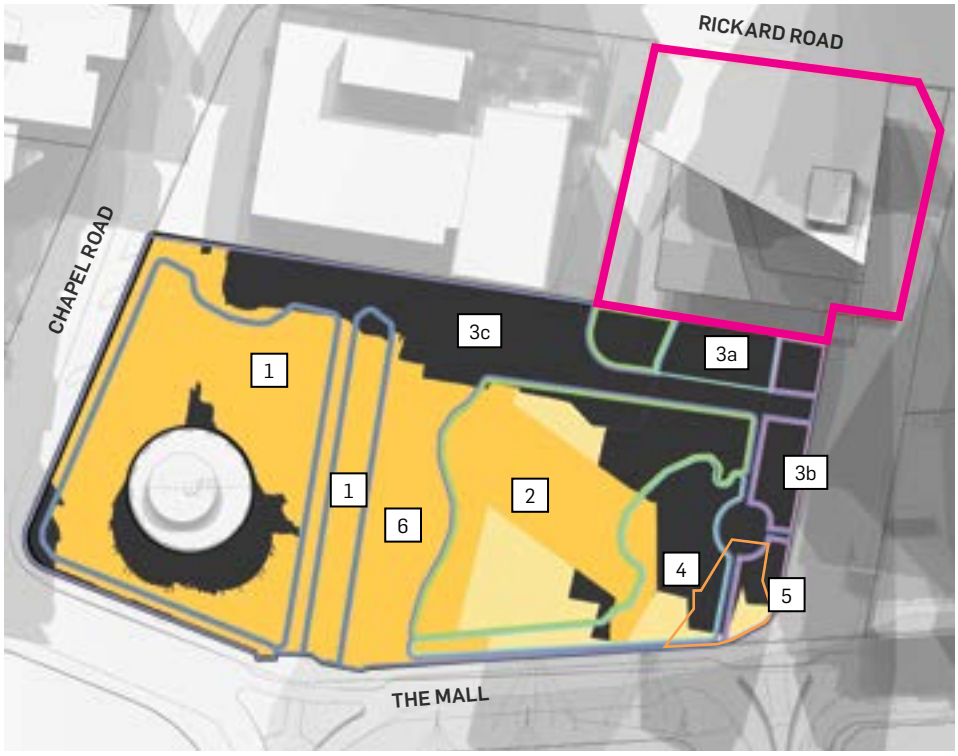


Figure 36 PKP Character Reference Plan



LEGEND

Subject Site

Paul Keating Park classification

Tree Grove

Pathways and Amphitheatre

Open Lawn

Shaded Seating

Playgrounds

PKP Solar amenity

Scenario 1: Areas <4 hrs solar amenity

Scenario 2: Areas ≥4 hrs continuous solar amenity

Scenario 1: Areas ≥4 hrs solar amenity (additional to scenario 2 only)

Scenario 2: Areas with 3 hrs continuous solar amenity

Figure 35 Proposed Scheme - Conclusion Diagram

6.0 KEY FINDINGS

The following key findings are a summary of the insights identified throughout the analysis and investigations contained within this report. These findings stretch across both development and amenity outcomes and consider objectives of the WSU Proposal and the opportunities of Paul Keating Park. The intent is to present a balanced perspective which informs a balanced position on the solar amenity outcomes and suggested amendments to the solar amenity control.

PLANNING CONTEXT

1 DELIVERING THE WSU BANKSTOWN CITY CAMPUS IS IN ALIGNMENT WITH STRATEGIC PLANNING DIRECTIONS.

The delivery of the WSU Bankstown City Campus on the site at 74 Rickard Road in Bankstown CBD's Civic Precinct is aligned with strategic planning directions in both the South District Plan and CBC's LSPS. This includes:

- Identification of the subject site as a suitable location for the type and quantum of development proposed.
- Documents the existing committment and collaborative approach between WSU and CBC.
- Identifies the importance of the university as a catalyst in the realisation of Bankstown's Health and Education Precinct.
- Identifies the quantum of development likely to be accommodated on the site is 10,000 students.

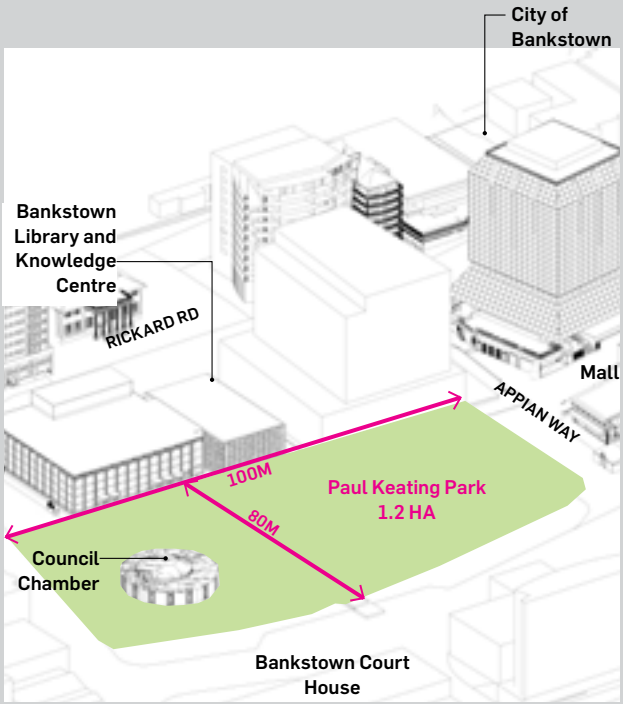


Figure 37 Paul Keating Park Context

2 NEW DEVELOPMENT CONTROLS ARE REQUIRED FOR 74 RICKARD ROAD TO ACCOMMODATE THE UNIVERSITY.

The current and proposed LEP controls for the site at 74 Rickard Road do not facilitate the quantum of development required for the WSU University Campus. While no changes have been proposed to the controls in the draft LEP which is currently on exhibition, in the supporting studies - specifically the draft Employment Land Study the need for new planning controls are referenced including:

- Acknowledgement of the strategic importance of WSU within the LGA.
- Acknowledgement of the quantum of development required to deliver the campus in line with the SSDA.
- Identification that a place-based approach is required to develop new planning controls for sites in the Commercial Core including civic administration precinct.
- Acknowledgement these controls need to adopt a balanced approach to deliver both ***"high amenity and sustainable development"*** and ensure ***"planning recognise and seek to maximise economic outcomes from the presence of strategic assets"***.

REVIEW OF COUNCIL'S SOLAR AMENITY BENCHMARKING STUDY

3 ANY SOLAR AMENITY CONTROL IS UNDERPINNED BY THE NEED TO ACHIEVE BALANCE BETWEEN SENSIBLE DEVELOPMENT AND AMENITY.

The Solar Amenity Control identified in Council's report reflects a best practice approach. However, the report also acknowledges Council's committment to the collaborative development of a control is underpinned by the following principles:

- must be informed by ***'evidence-based' studies***; and
- ***"Allows sensible development to occur on lots near parks while maintaining adequate standards of amenity to the parks, thus achieving a balanced approach between public benefit, amenity, development and urban densification."***
- The three key factors which affect the consideration of solar amenity controls are *(page 24)*: ***"Size and type of open space, site context and availability of open space in the area (or lack of)."***

4 THE CHARACTERISTICS AND CONTEXT OF PKP PRESENT SIGNIFICANT CHALLENGES IN PROVIDING HIGH LEVELS OF SOLAR AMENITY.

PKP is a small, east-west park located in the heart of what is envisioned to become a high-density, mixed-used strategic centre. Each of these factors individually impact the ability to achieve solar amenity outcomes. Cumulatively, they can have a significant impact. No parks identified in the benchmarking study were comparable to the characteristics of PKP.

PARK NAME	PARK ORIENTATION	LAND STRATEGIC CONTEXT	PARK SIZE
Paul Keating Park	East West	Strategic Centre - Civic & Mixed Use	1.2 ha

REVIEW OF COUNCIL'S PKP SOLAR AMENITY CASE STUDY

5 THE COMPLIANT BUILT FORM PREPARED IN COUNCIL'S PKP CASE STUDY DOES NOT REPRESENT 'SENSIBLE DEVELOPMENT'.

It is considered the Council's solar amenity case study of PKP does not fully reflect the principles underpinning the identification of their solar amenity control for the following reasons:

- The compliant built form developed by Council does not represent ***"sensible development"*** that meets the strategic intentions of the South District Plan and LSPS for a university on the WSU site.
- It acknowledges that the WSU proposal cannot meet the controls in full however does not explore alternative interpretation of the controls that still meet the intent of the solar amenity outcomes.

Figure 38 Council's Compliant Scheme

6 THE 'COMPLIANT' BUILT FORM SHOULD REFLECT THE INTENDED USE OF THE WSU SITE AS A UNIVERSITY.

This report has analysed the impacts on solar access to Paul Keating Park associated with a building on 74 Rickard Road. Three building scenarios were assessed:

- **Scenario 1: 'Compliant' Built Form** that reflects the constraints of current height and FSR controls, the urban context and the floor plate and design requirements of a university which the South District Plan and LSPS identify as strategically desirable for the site.
- **Scenario 2: WSU Proposed Building** reflecting the vertical campus as proposed.
- **Scenario 3: Revised Cantilever & Mid-Tower** reflecting the WSU vertical campus, amended to increase floor plates in the mid rise section and reduce the cantilever.

The analysis found that for ***'Scenario 1: Compliant Built Form'*** to meet Council's proposed solar amenity control, the cumulative areas that receive 4 hours solar amenity over the 5 hour period need to be considered (i.e. 10am-2pm + 11am-3pm).

The compliant built form results in 59.6% of PKP receiving 4hrs continuous solar amenity.

7 THE WSU PROPOSED BUILDING ACHIEVES THE INTENT OF COUNCIL'S SOLAR AMENITY CONTROL.

The hourly interval and composite solar amenity analysis identify that the intent of the solar amenity outcomes can be achieved with the WSU Proposed Building as follows:

- **At least 50% of the park is in sunlight for each hour between 10am and 3pm** *(refer to hourly analysis).* This outcome ensures there are large sunlit areas of the park for people to enjoy.
- **4 hours of continuous solar amenity is achieved to a consolidated area comprising 48.6% of Paul Keating Park between 10am and 3pm on 21 June** *(inclusive of existing shadow - refer to composite analysis).*
- This is only 1.4% less than Council's solar amenity control and also meets the university's requirements with the total amount of floor area provided (75% additional GFA to the compliant built form).

Therefore it is concluded that the current design reflects a scheme that meets the intent of Council's Solar Amenity Controls whilst delivering on other considerations including response to urban context, design excellence and the design brief of WSU.

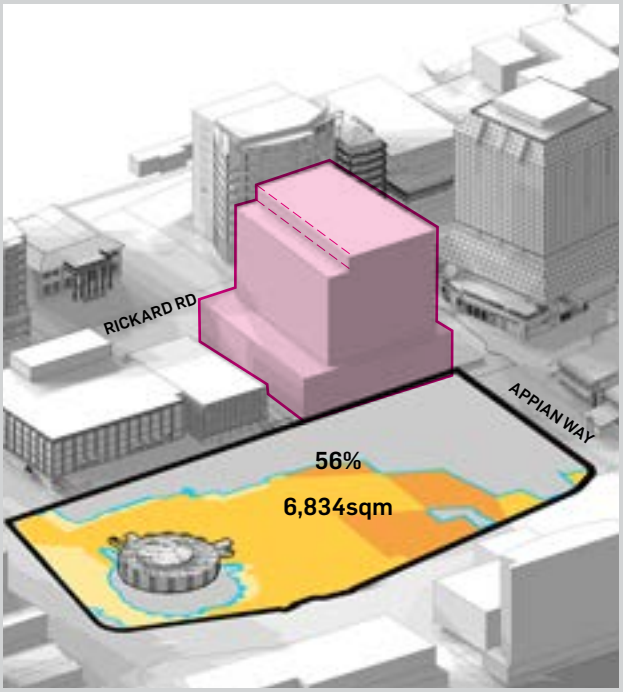


Figure 41 Scenario 1: Compliant Built Form Solar Amenity Outcome 10am - 3pm.

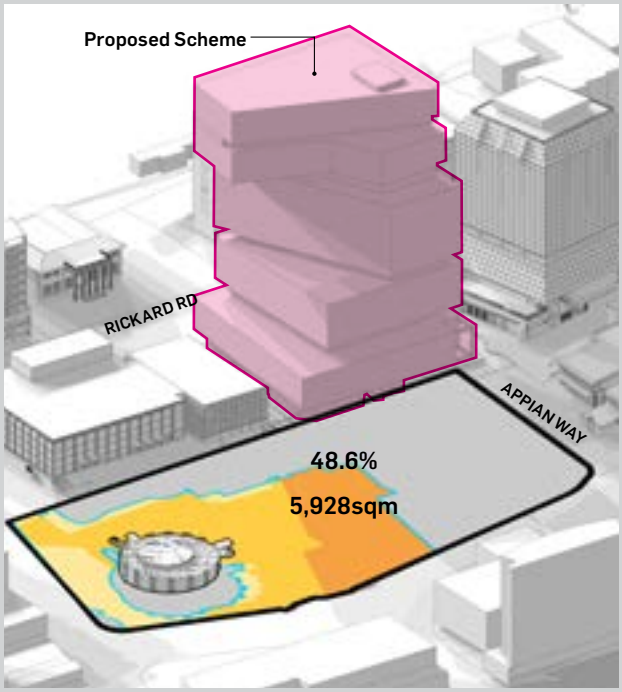


Figure 40 Scenario 2: WSU Proposed Building Solar Amenity Outcome 10am - 3pm.

8 SCENARIO 3: WSU PROPOSED BUILDING WITH AMENDED CANTILEVER & MID-TOWER MASSING MEETS COUNCIL'S SOLAR AMENITY REQUIREMENTS TO PKP PARK AND MEETS THE WSU DESIGN BRIEF.

The hourly interval and composite solar amenity analysis identify that the intent of the solar amenity outcomes can be achieved with Scenario 3: Revised Cantilever & Mid-Tower Building as follows:

- **At least 50% of the park is in sunlight for each hour between 10am and 3pm** *(refer to hourly analysis)*. This outcome ensures there are large sunlit areas of the park for people to enjoy.
- **Scenario 3 ensures 50.7% of PKP will receive 4hrs of continuous solar amenity between 10:00am and 3:00pm.** This meets Council's solar amenity control and also meets the university's requirements with the total amount of floor area provided. This outcome ensures that vegetation and lawn areas receive the solar exposure required to facilitate healthy and sustainable growth.
- **It is considered that the interpretation to calculate cumulative exposure is acceptable** as it meets the solar amenity outcomes which underpin Council's controls as well as the strategic planning objectives and social and economic benefits associated with the WSU Bankstown City Campus.

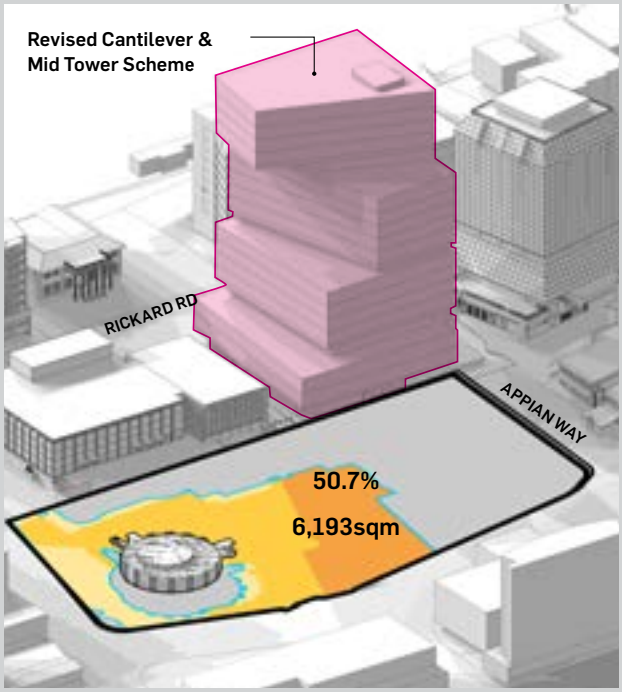


Figure 42 Scenario 3: Revised Cantilever & Mid-Tower Solar Amenity Outcome 10am - 3pm.

7.0 CONCLUSION

FINDINGS OF THIS STUDY

This study has identified:

Scenario 1: Compliant Built Form Massing:

- This scenario cannot accommodate all the learning, research and ancillary uses required for a successful university campus.
- This scenario can only meet Council's proposed solar amenity control if the 4 hours of continuous solar amenity to a consolidated area can be considered as a cumulative area of the two 4 hour blocks within the overall 5 hour timeframe.

Scenario 2: WSU Proposed Building:
Careful consideration of solar amenity to PKP has informed the massing of Scenario 2: WSU Proposed Building which reflects the current SSDA and achieves 48.6% solar amenity on PKP.

Scenario 3: Revised Cantilever & Mid-Tower:
It is possible to deliver an architectural scheme which retains the established architectural and engineering structural design components and achieves 50.7% solar amenity - meeting Council's proposed 50% requirement. This would result in:

- Additional design costs which can be mitigated through greater efficiencies in structural design and possible improvements in lift efficiency.
- Some extension to the delivery timeframe.
- A design which:
  - Retains the key elements of the building massing which have been designed in response to urban context and the design excellence process.
  - Results for improvements to the level 8 and level 14 landscape terraces and their relationship to PKP.
  - Reduces the western extent of the cantilever from Scenario 2, reducing the perception of bulk. This also results in reduced loads for improved constructability.
  - Results in minimal change to the massing of the building towards the southern elevation of PKP compared with Scenario 2.

RECOMMENDATIONS

RECOMMENDATION 1: CLARIFY THE PRINCIPLE OF CUMULATIVE CALCULATION

No change is required to the current wording to allow for the cumulative addition of different areas of the park which receive 4hrs of continuous solar amenity across different 4hr periods with the overall 5hr timeframe specified. However, based on the findings of our study we have identified a minor refinement to the wording of Council's proposed Solar Amenity Control, to include reference to the cumulative calculation. Additionally, Council may want to include an explanation of the cumulative calculation in any detailed references or explanations of the control for clarity.

Council's Proposed Control

Council resolved to support the Planning Proposal subject to the adoption of the following solar amenity control for Paul Keating Park at the Ordinary Meeting of 22 October 2019:

"Development must allow for 4 hours of continuous solar amenity to a consolidated area of Paul Keating Park between 10am and 3pm on 21 June (inclusive of existing shadow). The size of the consolidated area must be a minimum 50% of the area of Paul Keating Park (not including the footprint of the Council Chambers)."

Study Findings

This study found that no scenario can meet Council's solar amenity control if considering only one four hour period in the five hour window. This included a Scenario 1 - Compliant which only achieves 45%.

If adopting the cumulative calculation the study found that Scenario 1 and 3 can meet Council's proposed control achieving 59.6% and 50.7% respectively. Scenario 2 falls short by only 1.4% achieving 48.6%.

We believe both Scenarios 1 and 2 meet the intent and principles of Council's proposed solar amenity controls, however recommend Scenario 3 be adopted as:

- ***"Allows sensible development"*** to occur on the site at 74 Rickard Road which is located immediately adjacent to and on the northern boundary of Paul Keating Park given the strategic importance of the project and the committment to deliver a vertical university campus on the site; and
- ***"Maintains adequate standards of amenity"*** to Paul Keating Park at 50.7% meeting the 50% sought by the proposed control.
- ***"Thus achieves a balanced approach between public benefit, amenity, development and urban densification."***

Amended Control

We proposed adding a note to the wording of Council's proposed control to acknowledge the cumulative calculation reflecting a balance between the two strategic planning objectives of to providing solar access into Paul Keating Park and facilitating a vertical university campus at 74 Rickard Road for 10,000 students.

"Development must allow for 4 hours of continuous solar amenity to a consolidated area of Paul Keating Park between 10am and 3pm on 21 June (inclusive of existing shadow). The size of the consolidated area must be a minimum 50% of the area of Paul Keating Park (not including the footprint of the Council Chambers)."

NOTE: Consolidated area calculation can include cumulative areas across the two four hour periods (10am-2pm and 11am-3pm) within the 5 hour window 10am-3pm. However any overlapping areas (i.e. areas that receive 5 hours solar amenity) must only be counted once.

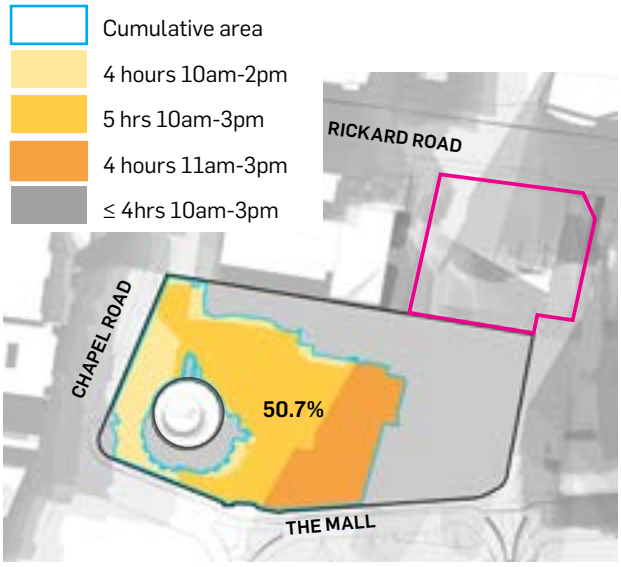


Figure 43 Proposed Control of Min 50.7% Solar amenity from 10am-3pm

RECOMMENDATION 3: COORDINATE SOLAR AMENITY OUTCOMES WITH PKP MASTER PLAN

Council is preparing a Master Plan for Paul Keating Park. It is recommended that consideration be given to applying the principles outlined in Section 5 of this report to the outcomes of the Master Plan, which seek to coordinate new and existing soft landscaping and activity areas with the availability and duration of solar amenity on June 21.

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